

DRAFT

**INTERNATIONAL ACTION PLAN
FOR THE DARK-BELLIED BRENT GOOSE**

Branta bernicla bernicla

SECOND VERSION

This draft International Action Plan for the Dark-bellied Brent Goose (*Branta bernicla bernicla*) was commissioned by the Ministry of Agriculture, Nature Management and Fisheries, the Netherlands, and was prepared by the Institute of Forestry and Nature Research (IBN-DLO), based on the Dark-bellied Brent Goose Flyway Management Plan.
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Contents

Chapter		Page
	Summary	4
1	Introduction	6
2	Biological Assessment	9
3	Human Activities	11
4	Policies and Legislation	13
5	Framework for Action	17
6	Action by Country	21
7	Implementation	29
	Terminology	33
App. I	Summary Flyway Management Plan	35
App. II	Overview of key sites	41

Summary

What is the profile of the Dark-bellied Brent Goose?

The Dark-bellied Brent Goose breeds in Siberia. It migrates in autumn through Denmark and Germany, to winter especially in France, Great Britain and the Netherlands. In spring it stages in the Wadden Sea area. The population declined in the 1930s, recovered since the 1970s, and seems now to be stabilising at 250,000 – 300,000. The Dark-bellied Brent Goose is listed in Annex II.2 of the European Birds Directive (79/409/EEC), indicating that, “owing to their population level, geographical distribution and reproductive rate throughout the Community” they “may be hunted only in the Member States in respect of which they are indicated”. (Denmark, Germany) In the African-Eurasian Waterbird Agreement (AEWA), the Brent Goose is taken up in Category B2b, which requires Parties to regulate any taking so that it is sustainable, in order to maintain and restore the population to a favourable conservation status.

Why an international Action Plan for the Dark-bellied Brent Goose?

The population of the Dark-bellied Brent Goose is not threatened at present. However, the AEWA category B2b status of the Brent Goose indicates that it needs special attention, as it is dependent on (semi-)natural habitat types which are under severe threat, and because the geese frequently come into conflict with human activities. The need for an action plan was heightened by the growing interest in regulated hunting on the recovered population.

What is the basis of the Action Plan?

The Action Plan is based on the “Dark-bellied Brent Goose *Branta bernicla bernicla* Flyway Management Plan” (Van Nugteren, 1997), which is the result of an extensive consultation process. See appendix I for a summary.

What is the objective of the Action Plan?

The general objective of the plan is to permit the Dark-bellied Brent Goose to attain an equilibrium level of population, taking into account habitat requirements of the species throughout the annual cycle, and human interests (included farming, hunting, birdwatching etc.).

What does the Action Plan consist of?

The Action Plan presents a framework for management and conservation of habitats and the population. Measurable objectives are set at national and international level, and management options given for each country.

Which countries are involved?

Implementation of the Action Plan requires effective international co-ordination of organisation and action. Countries especially involved with the implementation are Denmark, France, Germany, Great Britain, the Netherlands, and Russia.

What should these countries do?

There should be commitment of all individual Range States. These should develop their own National Action Plans. In these Action Plans, management activities should be described, on the basis of the management options that have been presented in this International Action Plan.

How should the Action Plan be implemented?

A working group under the Technical Committee of the AEWA should be established for implementation of Single Species Action Plans. Activities mandated to the working group are listed. The plan should be formally adopted at the first meeting of the AEWA in November 1999, and be reviewed every three years thereafter.

2 Introduction

After the first international workshop on the Dark-bellied Brent Goose in the Wadden Sea, organized by the Dutch Society for the Preservation of the Wadden Sea, the ministers of the Wadden Sea states acknowledged at the 7th Wadden Sea Conference in 1994 that specific management requirements for the Brent Goose were necessary and the ministers invited the secretariat of the Bonn Convention to prepare an international conservation plan for this species.

In 1997, a flyway management plan for the Dark-bellied Brent Goose was produced (van Nugteren, 1997: "Dark-bellied Brent Goose *Branta bernicla bernicla* Flyway Management Plan"). The plan describes and evaluates the ecological and political status of the species throughout its geographical range. While taking into account the conservation status of the species, it focuses on the possibilities for the alleviation of conflicts with human interests and recognises a growing interest in several range states for some limited and regulated hunting opportunity on the recovered population. The Flyway Management Plan laid the scientific foundation for the development of this International Action Plan.

At an international workshop (Texel, the Netherlands, January 1997, see also appendix I), it was agreed that the successful conservation management of the Dark-bellied Brent Goose is the joint and equal responsibility of the governments on the migratory route: Denmark, Germany, the Netherlands, Great Britain, France, Russia and the fly-over countries (Finland, Estonia, Latvia, Lithuania, Sweden, Belgium and Poland). Objectives and directives for Brent Goose conservation management were discussed. Effective conservation of the population requires the involvement of a range of governmental and non-governmental organisations in all the contracting countries. International co-operation is required in the implementation of all aspects of the Action Plan. This will ensure its effective implementation.

With reference to 2.2.4 of the Flyway Management Plan, the general objective of this International Action Plan for the management of the Dark-bellied Brent Goose is, as follows:

- *To permit the Dark-bellied Brent Goose to attain an equilibrium level of population in relation to the capacity of the breeding, wintering and spring staging grounds, throughout the annual cycle;*
- *To seek the conservation and restoration of sufficient natural coastal habitats to support the population throughout its flyway (during breeding, staging and wintering periods);*
- *To minimize the effects of human disturbance in natural feeding habitats and reduce the general shyness of the geese;*
- *To eliminate the agricultural conflicts on the wintering and spring staging grounds.*

In order to reach this objective, the following principles need to be met:

- To ensure international co-operation between the Range States in joint programmes of monitoring, research, conservation, management, utilisation and liaison for the benefit of Dark-bellied Brent Geese, their habitats and the human populations with which the geese come into contact.

- To ensure that any consumptive or non-consumptive use made of Dark-Bellied Brent Geese should be based on an assessment of the best available knowledge of their ecology and is sustainable for the population as well as for the ecological system that supports them. Furthermore, the use should be compatible with other uses and other protection measures and aims.
- To fulfil all legal and other relevant obligations, such as the obligations taken up in European legislation (esp. the Birds Directive) and international conventions.

The Plan presents operational and measurable objectives, and management options to achieve these objectives. It is a framework to ensure the coherence of, and communication about, the national plans. The framework leaves room for manoeuvre for the Range States to tune their management policy to the national situation, as long as the objectives are achieved.

The success of the Action Plan depends to a large extent on:

1. the efforts of the Range States to draw up and communicate National Action Plans;
2. implementation aspects such as: a time frame for monitoring and evaluation and for the communication of progress and activities in the different Range States, insight into budgetary consequences;
3. organisational matters such as: a clear vision on the role of the African- Eurasian Waterbird Agreement (AEWA) Technical Committee and a decision on the potential establishment of a new working group in this committee.

The Texel Workshop agreed that a further technical meeting of experts should be convened , however as soon as possible, to test a simulation model for the population dynamics of the Dark-bellied Brent Goose. The outputs of this model would include the estimation of the impact of changes in the parameters (e.g. mortality, breeding success, habitat use) on numbers and distribution over habitat type. This exercise will provide the technical scientific basis to complete the process of assessing the feasibility of opening some hunting on Dark-bellied Brent Goose, to be managed in accordance with the objectives of the Management Plan.

The Plan applies for a period of 3 years, after which it will be evaluated and reviewed.

The culling of Dark-bellied Brent Goose is not a suitable management option for a reduction in the size of the Dark-bellied Brent Goose population. In most of the countries covered by the Action Plan presented here the legal basis for hunting is lacking or such a measure would not be feasible. However due to the present healthy state of the Dark-bellied Brent Goose population future changes in the hunting status of this species in the EU-Bird Directive can not be ruled out. In order to be prepared for possible changes in protection status of the Dark-bellied Brent Goos, the Action Plan calls for an extensive study on the effects of hunting the Dark-bellied Brent Goose population and the feasibility study on the setting up of bag limits for each country. The study on the effects of hunting must include its effects on the distribution, phenology and utilisation of Dark-bellied Brent Goose and other species within the Dark-bellied Brent Goose habitat; on its general effects on Dark-bellied Brent Goose habitats; on socio-economic impacts and its legal implications.

2 Biological Assessment

General information	The Dark-bellied Brent Goose (<i>Branta bernicla bernicla</i>) is a small migratory goose subspecies that winters along the coasts of western Europe and breeds in northern Siberia. It prefers natural and semi-natural habitats, ranging from the intertidal mudflats (<i>Zostera</i> -beds and green algae) to saltmarshes, but since the 1970s it also frequents agricultural fields for foraging.
Population development	<ul style="list-style-type: none">• Decline in 1930s, due to excessive hunting pressure, simultaneous with die-off of eelgrass (<i>Zostera</i>) beds• Recovery since 1970s, as a result of a variety of different factors• No further population growth in the 1990s
Distribution throughout the annual cycle	

Productivity	Highly variable (0-50% juveniles annually), due to: <ul style="list-style-type: none"> • Fluctuating predator pressure related to three-year lemming cycles. • Spring condition achieved in the Wadden Sea by building up body reserves. • Wind condition during spring migration. 		
Life history	<p>Breeding: In coastal habitat in the High Arctic Poor feeding conditions on arrival Clutch size 1-6 Incubation period 20-24 days Fledging period c. 40 days Mean brood size in winter flocks: 2-3</p>	<p>Feeding: Almost strictly vegetarian Selecting large quantities of relatively high-quality food Habitat switches determined by: <ul style="list-style-type: none"> • Changes in food quality • Ingestion rates in alternative habitats • Depletion of preferred food source • Disturbance Until 1970s almost exclusively feeding in intertidal zone, nowadays also on agricultural fields</p>	<p>Migration: Breeding in North Siberia and wintering along the coasts of western Europe, mainly in the Netherlands, England and France. Autumn staging in White Sea, and eastern part of Wadden Sea. Spring staging in Wadden Sea with stopover site in the White Sea.</p>
Habitat requirements	<p>Breeding habitat: Nesting in coastal habitat in the High Arctic on small islets, in extensive low-lying river deltas, dispersed along many small streams on the mainland tundra and on remote offshore islands with extremely poor vegetation. After hatching, most nest sites are abandoned by goose families in favour of the lush vegetation along river banks of the mainland.</p>	<p>Autumn and winter: In autumn the geese start foraging on the mudflats (<i>Zostera</i>) in the northern part of the Wadden Sea (Denmark and Schleswig-Holstein) and along the east and south coast of Britain and the west coast of France. In France also in winter the geese feed on the mudflats (shifting from <i>Zostera</i> to green algae). In Britain the geese turn to salt marshes and to farmland with cereals and agricultural grasslands. In the Dutch Wadden Sea most Brent Geese start feeding on the intertidal mudflats and to a lesser extent on the salt marshes in autumn. In late autumn they move to agricultural grasslands bordering the Wadden Sea, which then offer higher quality food. In the Dutch Delta Brent Geese change from feeding on mudflats to agricultural fields in late autumn.</p>	<p>Spring habitat: In spring (March-May) saltmarsh vegetation (in Wadden Sea) is highly preferred by Brent Geese. In late spring in the White Sea during a short stop <i>Zostera</i> is again the predominant food item.</p>

3 Human Activities

This chapter gives an overview of human activities potentially affecting the Dark-bellied Brent Goose population and their relevance by country

Overview on human activities related to the Dark-bellied Brent Goose

Human activities potentially affecting the Dark-bellied Brent Goose population can be subdivided into three categories:

1. Human activities potentially affecting the Dark-bellied Brent Goose population;
2. Human activities affecting the quality of the habitat, such as deterioration and contamination
3. Human activities affecting the quantity of the habitat, such as land claims for urban and industrial developments

The relation between Brent Goose and human activities is interactive. The increase in size of the Dark-bellied Brent Goose population, a decrease in the size and the quality of the natural and semi-natural habitat of this species and changes in agricultural practice have resulted in an increase in the use of agricultural land as feeding sites by the Dark-bellied Brent Goose. This conflicts with farming interests. Such conflicts need to be taken into consideration when defining management options (chapter 6).

Human activities potentially affecting the Dark-bellied Brent Goose population and their relevance by country

(This table is based on estimations made by Brent Goose specialists)

Human interest:	France	Britain	Netherlands	Germany	Denmark	Russia
1. Direct effects on the species						
Hunting				■		■
Disturbance						
A. Shellfish and bait gathering	■	■				
B. Recreational use	■	■		■		■
C. Disturbance by hunting	■		■	■	■	
D. Military training		■	■		■	
E. Aircraft	■	■		■	■	
F. Scaring in order to protect crops	■	■	■			
2. Affecting the quality of the habitats						
A. Contamination such as oil spills, lead shot poisoning, chemical pollution, etc.	■	■	■	■	■	■
B. Deterioration by Human activities in or near habitats, such as mentioned in categories 1 and 3	■	■	■	■	■	■
C. Conflicting nature management goals			■	■	■	
3. Affecting quantity of habitats						
A. Urban and industrial development		■				
B. Infrastructural development		■	■	■	■	
C. Recreational development	■	■	■	■	■	
D. Military training grounds		■	■		■	
E. Waste disposal		■				
F. Agricultural development		■				
G. Shellfish culture development	■	■	■			

■
High relevance

■
Limited relevance

□
No relevance

4 Policies and Legislation

In this chapter, an overview will be given of relevant national and international policies and legislation. Legislation regarding transport, agriculture, etc. will not be discussed, although they may

have a considerable indirect influence on the Brent Geese population.

International policies and legislation

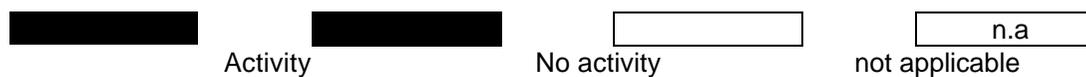
Title	Work title	Year	Signatories amongst the Dark-bellied Brent Goose Range States	Objective and relevance
Convention on Wetlands of international importance especially as waterfowl habitats	Ramsar Convention	1971	All Dark-bellied Brent Goose Range States	Stem increasing destruction of wetland habitats, by designating wetlands for inclusion on a list of "Wetlands of international importance". Conservation and wise use of these wetlands. Compensate for loss of wetlands. Consultation about implementation of the Convention.
Convention on the Conservation of Migratory Species of Wild Animals	Bonn Convention	1979	Belgium, Denmark, France, Germany, the Netherlands, United Kingdom (the Russian federation is not a signatory, but does support the AEWA)	Concerted action for the conservation and effective management of migratory species. Consists of two appendices: Appendix I: animals requiring strict protection. Appendix II: animals for which agreements need to be made for the conservation and management these species. AEWA is an example of such an agreement. AEWA stimulates Single Species Action Plans. The Dark-bellied Brent Goose falls within the AEWA category B2b, indicating that the population numbers over 100,000 individuals and is considered to be in need of special attention as a result of 1) dependence on a habitat type which is under severe threat and 2) frequent conflicts with human interests.
Convention on the Conservation of European Wildlife and Natural Habitats	Bern Convention	1979	Belgium, Denmark, Germany, the Netherlands, United Kingdom, France	Conservation of wild flora and fauna and their natural habitats especially those species and habitats whose conservation requires the co-operation of several states. "Special attention be given to the protection of areas that are of importance for the migratory species specified in Appendices II and III (incl. most birds) and which are appropriately situated in relation to migration routes as wintering, staging, feeding, breeding or moulting areas".
EU Council Directive on the Conservation of Wild Birds	EU Birds Directive	1979	EU-Member States: Belgium, Denmark, France, Germany, the Netherlands, United Kingdom	Conservation of birds and bird habitats by European co-operation. Establish network of protected areas: Special Protection Areas (SPAs). The Brent Goose is listed in Annex II(2), signifying that the Brent Goose may only be hunted in specified Member-States (Denmark and Germany), but only if hunting complies with the principles of wise use and ecological balanced management. Derogation is only possible in case of serious crop damage and if no other satisfactory solutions are available. The Birds Directive laid the foundation for the Habitats Directive.

EU Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora	EU Habitats Directive	1992	EU-Member States: Belgium, Denmark, France, Germany, the Netherlands, United Kingdom	Establish strategic network (Natura 2000) of European Habitats and protect the most threatened species in Europe. Implementation behind schedule. Countries have to submit lists of "Special Areas of Conservation (SACs)". Two annexes list habitat types and species. The article 6 obligations of the Habitats Directive also have to be implemented in the Special Protection Areas of the Birds Directive.
Convention on Biological Diversity	Biodiversity Convention	1992	Belgium, Denmark, Estonia, France, Germany, Latvia, Lithuania, the Netherlands, Poland, Russia, United Kingdom, European Community	Maintain a sustainable diversity and spread of flora and fauna across the world. Each contracting party shall develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity.

NB: The European Directives and international conventions can have different legal implications: the special legal status of EU Directives makes it possible to enforce implementation through the European Court of Justice, whereas the legal implications of conventions depend on their translation into national legislation

National policies, legislation and activities

National policies affecting Dark-bellied Brent Geese	France	Britain	Netherl.	Germany	Denmark	Russia
<i>Species</i>						
Legal protection status in all areas and periods						
Research						
Regular population census and monitoring						
<i>(Semi)-natural habitat</i>						
Site protection						
Site management						
Monitoring (use) of protected sites						
<i>Man-made habitats</i>						
Promotion of appropriate agricultural policies						n.a.
Policies to reduce potential agricultural conflicts						n.a.
<i>International co-operation</i>						
Regular meetings to discuss international monitoring						



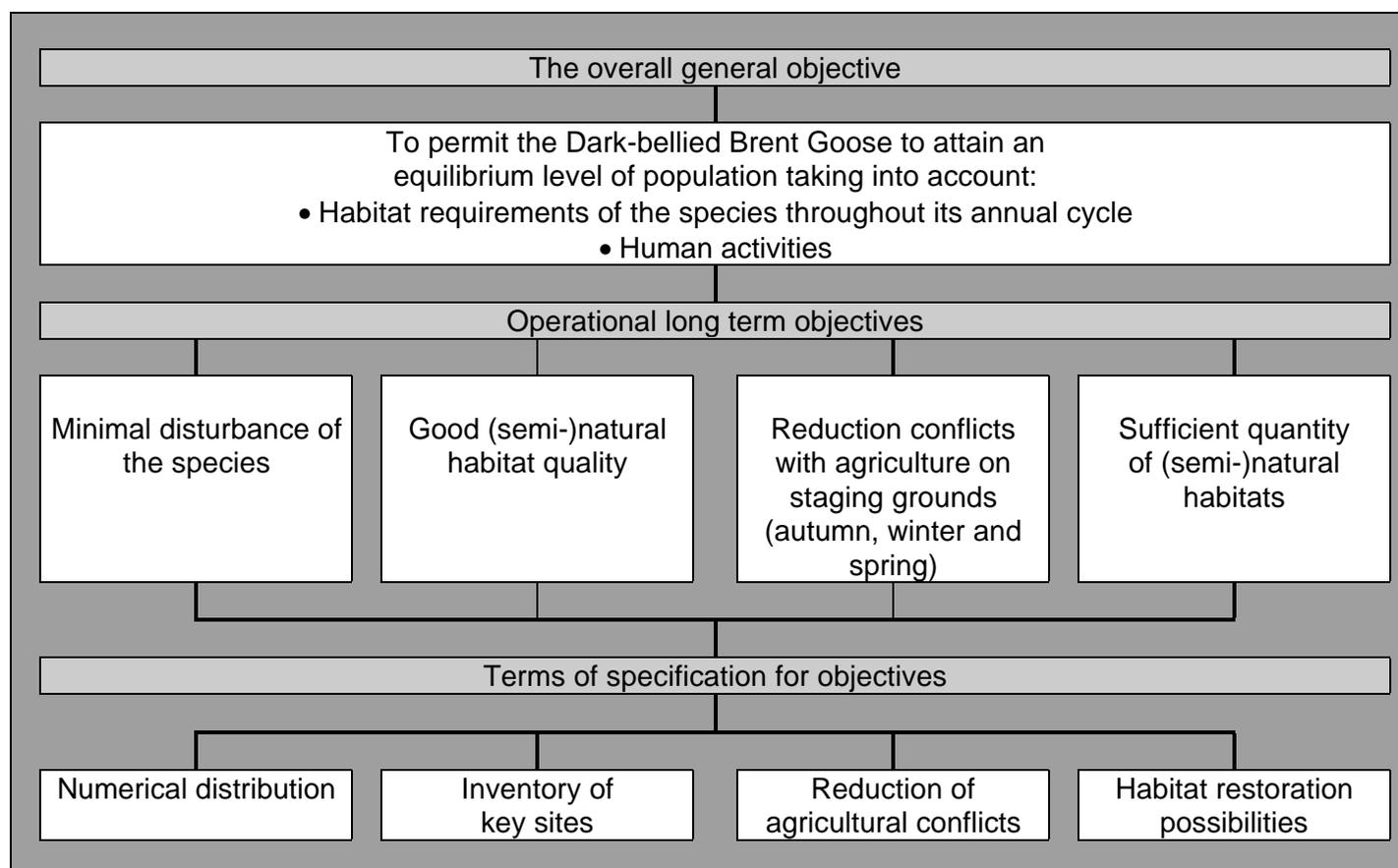
In the fly-over countries (Finland, Estonia, Latvia, Lithuania, Sweden, Belgium and Poland) the Dark-bellied Brent Goose is a protected species.

5 Framework for Action

The individual countries on the fly-way of the Dark-bellied Brent Goose are responsible for the success of this Action Plan. Without the commitment of the Range States and all interests groups

concerned, the Action Plan will remain ineffective. In this chapter the framework of objectives and a list of subjects that need to be taken up in the National Action Plans are presented.

Framework for Action



Measurable objectives

Numerical Distribution	Inventory of key sites	Reduction of Agricultural conflicts	Habitat restoration Possibilities
<p><i>Mean % of total geese population That should be accommodated:</i></p> <p>Dk autumn and spring staging grounds for 5% of the total population</p> <p>Fr winter staging grounds for 35-40% of the total population</p> <p>GB winter staging grounds for 40-50% of the total population</p> <p>Ge spring staging grounds for 45-50% of the total population and autumn staging grounds for 15% of the total population</p> <p>NL winter staging grounds for 20% of the total population and spring staging grounds for 40% of the total population</p> <p>Ru breeding grounds 100%</p> <p>White Sea area: spring and autumn staging grounds for 100% of the total population</p>	<p>Within three years, each country should have:</p> <ul style="list-style-type: none"> • completed an updated inventory of key sites (see Appendix II); • located and determined habitat threats to areas of international importance; • given indications of how to improve the status of these areas. 	<p>Within three years, each country (except Russia) should</p> <ul style="list-style-type: none"> • make an inventory of current national policies and regulations to deal with agricultural conflicts; • make a plan with actions to be undertaken to reduce the conflict in the future. 	<p>Within three years, each country should</p> <ul style="list-style-type: none"> • make an inventory of sites where natural habitats could be restored; • make a listing of sites that are threatened by degradation and loss, with the aim of analysing possibilities of preventing this.

All National Action Plans should include:

- Annual survey of geographical distribution, numbers and breeding productivity
- A comprehensive survey of key sites and their protective status

- Survey of human activities (See chapter 3)
- Overview of present or expected threats to sites of international importance (1% of the total population, $\geq 2,500$ birds)
- Survey of present or expected threats to sites of national importance (see Appendix II)
- Identification and localisation of “stakeholders”

- Survey of existing policies and legislation (See chapter 4)
- Proposed management options to deal with these threats (See chapter 5 and 6)
- Overall expected effects of measures taken

- Elaboration and implementation of monitoring and control systems (See chapter 7)
- Identification of financial consequences

- Communication plan (with AEWA, governmental- and non-governmental organisations)
- Public awareness and training plan

- Time frames

6 Action by country

To assist the Range States in developing their own National Action Plans, in this chapter per Range State objectives, management

options and the relation between the national objectives and the international objectives are presented.

Priority; H: high, M: medium, L: low

Denmark

Internat. Objective	Priority	National management options / actions	Measurable objective
A minimum disturbance of the birds	L	<ul style="list-style-type: none"> • Improve protective status of important roosting and feeding areas • Establish adequate disturbance-free refuge zones by: phasing out hunting of migratory species in the Conservation Area or in an ecological and quantitatively corresponding area in the Wadden Sea Area according to the Ministerial Declaration of the Trilateral Wadden Sea Conference in 1997 	* Accommodate 5 % of the population in autumn and spring
Good quality of habitats	L	<ul style="list-style-type: none"> • Maintain or enhance the current status of habitats • Encourage a protective status for all natural and semi-natural sites of importance for the Dark-bellied Brent Goose. For sites of international importance the status of SPA according to the EU Birds Directive, and/or the status of SAC according to the EU Habitats Directive, should be the objective. • Develop a proper management system for protected sites, if needed involving management plans. Measures should be balanced with overall conservation objectives of the protected areas, the Brent Goose being one component in the functional system beside others • Take account of requirements of the Brent Geese by compiling overall management plans for salt marshes. Include earlier successive plant communities in management practice. The salt marshes that have never been grazed for management reasons should preferentially remain ungrazed. On man-made salt marshes, Halligen and grazed areas of natural salt marshes grazing practices can be adjusted to enhance the carrying capacity for the Brent Geese, if appropriate evaluation is guaranteed. These measures should not jeopardise the overall objectives of National Parks and other protected areas. • Search for possibilities for the maintenance and recovery of eelgrass 	<ul style="list-style-type: none"> •* Inventory of key sites and determination of habitat threats. Actions for improvement * Inventory of sites where natural habitats could be restored. Listing of threatened sites
Sufficient quantity of habitats	L	<ul style="list-style-type: none"> • Encourage the re-establishment of former feeding areas by Brent-Geese as opportunities permit 	* Listing of policies and regulations. Actions to minimise conflicts in future
Reduction conflicts with agriculture	L	<ul style="list-style-type: none"> • Establish adequate disturbance-free refuge zones and time periods in feeding areas of international importance for Brent Geese • Apply Council Regulation 2078/92 on agricultural production methods compatible with requirements of the protection of the environment and the maintenance of the countryside • Integrate the needs of waterfowl and farmers in future development of the Common Agricultural Policy and other Community funding mechanisms 	<ul style="list-style-type: none"> •

France

Internat. Objective	Priority	National management options / actions	Measurable objective
Minimal disturbance of the species	H	<ul style="list-style-type: none"> • Improve protective status of important roosting and feeding areas by improvement of the network of 'Reserves de chasse maritime' and designation of essential feeding areas for the Brent Geese as Ramsar sites • Establish adequate disturbance-free refuge zones by: Restriction of shellfish fisheries and fishermen on foot; Restriction of hunting on other species on important Brent Goose sites; Restriction of recreational use; Temporal and spatial restriction of aircraft • Encourage the conservation management of areas that were previously of importance for Dark-bellied Brent Geese, with special attention to reduction of human disturbance 	Accommodate 35-40 % of the total population during winter Inventory of key sites and determination of habitat threats. Actions for improvement
Good quality of habitats	M	<ul style="list-style-type: none"> • Maintain or enhance the current status of Brent Goose natural habitats • Encourage a protective status for all natural and semi-natural sites of importance for the Dark-bellied Brent Goose. For sites of international importance the status of SPA according to the EU Birds Directive, and/or the status of SAC according to the EU Habitats Directive, should be the objective. • Develop a proper management system for protected sites. • Carry out human resource use in the coastal zone throughout the species range in a manner that maintains natural values. In this regard the loss of natural Brent Goose habitats due to shellfish fisheries and cultures is a cause for concern and requires further investigation 	Inventory of sites where natural habitats could be restored.. Listing of threatened sites
Sufficient quantity of habitats	L	<ul style="list-style-type: none"> • Encourage the re-establishment of former feeding areas by Brent-Geese where possible. (e.g. by minimising disturbing activities in natural habitats, by encouraging the conservation management with special attention to quietness, or by establishing adequate disturbance-free refuge zones). 	Listing of policies and regulations. Actions to minimise conflicts in future
Reduction conflicts with agriculture	L	<ul style="list-style-type: none"> • Create alternative habitats by management of natural grassland along the coast • Increase carrying capacity of natural habitats by reduction of disturbing factors • Apply Council Regulation 2078/92 on agricultural production methods compatible with requirements of the protection of the environment and the maintenance of the countryside • Integrate the needs of waterfowl and farmers in future development of the Common Agricultural Policy and other Community funding mechanisms 	

Germany

Internat. Objective	Priority	National management options / actions	Measurable objective
A minimum disturbance of the species	H	<ul style="list-style-type: none"> Improve protective status of important roosting and feeding areas Establish adequate disturbance-free refuge zones by: phasing out hunting of migratory species in the Conservation Area or in an ecological and quantitatively corresponding area in the Wadden Sea Area according to the Ministerial Declaration of the Trilateral Wadden Sea Conference in 1997 	Accommodate 45-50% of the population during spring and 15% in autumn
Good quality of habitats	M	<ul style="list-style-type: none"> Maintain or enhance the current status of habitats Encourage a protective status for all natural and semi-natural sites of importance for the Dark-bellied Brent Goose. For sites of international importance the status of SPA according to the EU Birds Directive, and/or the status of SAC according to the EU Habitats Directive, should be the objective. Develop a proper management system for protected sites. Measures should be balanced with overall conservation objectives of the protected areas, the Brent Geese being one component in the functional system beside others Take into account requirements of the Brent Geese by compiling overall management plans for salt marshes. Include earlier successive plant communities in management practice. On man-made salt marshes, Halligen and grazed areas of natural salt marshes grazing practices can be adjusted to enhance the carrying capacity for the Brent Geese, if appropriate evaluation is guaranteed. These measures should not jeopardise the overall objectives of National Parks and other protected areas. Search for possibilities for the maintenance and recovery of eelgrass 	<p>Inventory of key sites and determination of habitat threats. Actions for improvement</p> <p>Inventory of sites where natural habitats could be restored.. Listing of threatened sites</p>
Sufficient quantity of habitats	M	<ul style="list-style-type: none"> Restore natural habitats in some areas: Restore salt marshes, e.g. by de-embankment of summer polders, in restricted areas in an experimental way and accompanied by appropriate monitoring; Encourage the re-establishment of former feeding areas by Brent-Geese as opportunities permit 	Listing of policies and regulations. Actions to minimise conflicts in future
Reduction conflicts with agriculture	L	<ul style="list-style-type: none"> Establish adequate disturbance-free refuge zones and time periods in feeding areas of international importance for Brent Geese Integrate management for Brent Geese by farmers with their other nature management activities. This should be facilitated by establishing a dual strategy for creation of refuge areas at key sites on intensive agriculture (not applicable in Schleswig-Holstein), with other 'wider countryside' measures on semi-natural habitats and traditional farmland Apply Council Regulation 2078/92 on agricultural production methods compatible with requirements of the protection of the environment and the maintenance of the countryside Integrate the needs of waterfowl and farmers in future development of the Common Agricultural Policy and other Community funding mechanisms Make clear the policy and financial frameworks and the desired objectives for Goose conservation by activities, so that farmers can execute their professional skills and responsibility with these ends in mind Produce advisory material for farmers and government officials on the opportunities for management of Brent Geese on agricultural land and encourage the exchange of information at all levels, e.g. internationally and through local contact groups 	<ul style="list-style-type: none">

Great Britain

Internat. Objective	Priority	National management options / actions	Measurable objective
A minimum disturbance of the species	M	<ul style="list-style-type: none"> Establish adequate disturbance-free refuge zones by: Restriction of shellfisheries; Restriction of hunting; Restriction of recreational use; Restriction of aircraft by times and by zones 	Accommodate 40-50 % of the total population during winter
Good quality of habitats	M	<ul style="list-style-type: none"> Maintain or enhance the current status of habitats Encourage a protective status for all natural and semi-natural sites of importance for the Dark-bellied Brent Goose. For sites of international importance the status of SPA according to the EU Birds Directive, and/or the status of SAC according to the EU Habitats Directive, should be the objective. Develop a proper management system for protected sites. Carry out human resource use in the coastal zone throughout the species range in a manner that maintains natural values. In this regard the impact of shellfisheries and cultures on the natural Brent Goose habitats is a cause for concern and requires further investigation 	Inventory of key sites and determination of habitat threats. Actions for improvement
Sufficient quantity of habitats	H	<ul style="list-style-type: none"> Inventory of natural habitats used by Brent Geese, which are threatened by sea-level rise. Stop the loss and degradation of natural habitats, e.g. by preventing erosion of salt marshes in areas where the natural processes are not balanced; prevent reclamation Possibilities for de-embankments in establishing valuable habitats Encourage the re-establishment of former feeding areas by Brent-Geese as opportunities permit 	Inventory of sites where natural habitats could be restored.. Listing of threatened sites.
Reduction conflicts with agriculture	H	<ul style="list-style-type: none"> Establish adequate disturbance-free refuge zones and time periods in feeding areas of international importance for Brent Geese Integrate management for Brent Geese by farmers with their other nature management activities. This should be facilitated by establishing a dual strategy for creation of refuge areas at key sites on intensive agriculture, with other 'wider countryside' measures. On semi-natural habitats and traditional farmland Apply Council Regulation (EEC) No. 2078/92 on agricultural production methods compatible with requirements of the protection of the environment and the maintenance of the countryside Integrate the needs of waterfowl and farmers in future development of the Common Agricultural Policy and other Community funding mechanisms Clarify the political and financial frameworks and the desired objectives for Goose conservation by activities, so that farmers can execute their professional skills and responsibility with these ends in mind Produce advisory material for farmers and government officials on the opportunities for management of Brent Geese on agricultural land and encourage the exchange of information at all levels, e.g. internationally and through local contact groups Establish local strategies for alleviation of crop damage problems in specific 'problem' areas Facilitate schemes of co-operation between farmers e.g. scaring activities in relation to alternative feeding areas 	Listing of policies and regulations. Actions to minimise conflicts in future

The Netherlands

Internat. Objective	Priority	National management options / actions	Measurable objective
A minimum disturbance of the species	L	<ul style="list-style-type: none"> • Improve protective status of important roosting and feeding areas • Establish adequate disturbance-free refuge zones by: phasing out hunting of migratory species in the Conservation Area or in an ecological and quantitatively corresponding area in the Wadden Sea Area according to the Ministerial Declaration of the Trilateral Wadden Sea Conference in 1997 	Accommodate 20 % of the population during winter and 40 % during spring
Good quality of habitats	M	<ul style="list-style-type: none"> • Maintain or enhance the current status of habitats • Encourage a protective status for all natural and semi-natural sites of importance for the Dark-bellied Brent Goose. For sites of international importance the status of SPA according to the EU Birds Directive, and/or the status of SAC according to the EU Habitats Directive, should be the objective. • Develop a proper management system for protected sites. If needed involving management plans. Measures should be balanced with overall conservation objectives of the protected areas, the Brent Goose being one constituent in the functional system beside others • Take into account Brent Goose requirements by compiling overall management plans for salt marshes. Include earlier successional plant communities in management practice. The salt marshes that have never been grazed for management reasons should preferentially remain ungrazed. On man-made salt marsh and grazed areas of natural salt marsh, grazing practices can be adjusted to enhance the carrying capacity for the Brent Geese, if appropriate evaluation is guaranteed. These measures should not jeopardise the overall objectives of National Parks and other protected areas. • Carry out human resource use in the coastal zone throughout the species range in a manner that is compatible with the natural values • Take the good quality of habitats for the Brent goose into account when deciding on gas exploitation activities 	<p>Inventory of key sites and determination of habitat threats. Actions for improvement</p> <p>Inventory of sites where natural habitats could be restored.. Listing of threatened sites</p>
Sufficient quantity of habitats	M	<ul style="list-style-type: none"> • Restore natural habitats: Restore salt marshes, e.g. by de-embankment of summer polders, in restricted areas in an experimental way and accompanied by appropriate monitoring; Explore possibilities for the restoration of eelgrass habitat. • Encourage the re-establishment of former feeding areas by Brent-Geese 	Listing of policies and regulations. Actions to minimise conflicts in future

The Netherlands, continued

Reduction conflicts with agriculture	H	<ul style="list-style-type: none"> • Establish adequate disturbance-free refuge zones and time periods in feeding areas of international importance for Brent Geese • Integrate management of farmlands for Brent Geese by farmers into their other nature management activities. This should be facilitated by establishing a dual strategy for creation of refuge areas at key sites on intensively used agricultural fields, with other 'wider countryside' measures on semi-natural habitats and traditional farmland • Apply Council Regulation (EEC) No. 2078/92 on agricultural production methods compatible with requirements of the protection of the environment and the maintenance of the countryside • Integrate the needs of waterfowl and farmers in future development of the Common Agricultural Policy and other Community funding mechanisms • Make clear the policy and financial frameworks and the desired objectives for Goose conservation by activities, so that farmers can execute their professional skills and responsibility with these ends in mind • Produce advisory material for farmers and government officials on the opportunities for management of Brent Geese on agricultural land and encourage the exchange of information at all levels, e.g. internationally and through local contact groups • Establish local strategies for alleviation of crop damage problems in specific 'problem' areas • Facilitate schemes of co-operation between farmers e.g. scaring activities in relation to alternative feeding areas • Integrate the needs of waterfowl and farmers in future development of the Common Agricultural Policy and other Community funding mechanisms 	
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Russia

Internat. Objective	Priority	National management options / actions	Measurable objective
A minimum disturbance of the species	H	<ul style="list-style-type: none"> • Improve protective status of important roosting and feeding areas • Ensure that policies for development of hunting tourism in Russia avoid areas of importance for Brent Geese • Safeguard important staging areas in the White Sea 	
Good quality of habitats	H	<ul style="list-style-type: none"> • Ensure maintenance or improvement of the current status of habitats • Encourage a protective status for all natural and semi-natural sites of importance for the Dark-bellied Brent Goose. • Develop a management system for the protected sites. Measures should be balanced with overall conservation objectives of the protected areas, the Brent Geese being one compound in the functional system beside others • Initiate comprehensive aerial survey to develop an inventory of key areas, human impacts and habitat threats. 	Accommodate the whole (100%) Brent Goose population during summer in the Arctic and during spring and autumn migration in the White Sea area
Sufficient quantity of habitats	H	<ul style="list-style-type: none"> • Prevent habitat loss in the White Sea area due to exploitation and eutrophication, as White Sea is an essential stopover site. 	Inventory of key sites and determination of habitat threats. ctions for improvement Listing of threatened sites.
Reduction conflicts with agriculture	Not applicable	Not applicable	Listing of policies and regulations. Actions to prevent conflicts in the future

7 Implementation

General preconditions

For the Action Plan to be successfully implemented, agreement on information exchange, communication and monitoring, clarity on necessary financial resources and a realistic time-schedule are a prerequisite. It is most important that individual countries will only consider measures that affect the population after a consultation process with the other involved countries has taken place. The Technical Committee of the AEWA will play a mediating role.

A special working group under the Technical Committee should be established to co-ordinate the implementation of the Brent Goose Action Plan. In this working group all Brent Goose Range States and interests groups should be represented. The Range States have a responsibility in monitoring national achievements, and communicating these to the AEWA Dark-bellied Brent Goose working group and other Range States. The population model will be a crucial instrument in relation to this monitoring. This chapter will describe these essential preconditions for the implementation of the international Action Plan.

Population model

A population model will be jointly developed by the IBN-DLO (Institute for Forestry and Nature Research, the Netherlands), NERI (National Environmental Research Institute, Denmark) and the ITE (Institute for Terrestrial Ecology, Furzebrook, England). This model shall be based on the current situation of the population and include actual data and parameters. In this model survival estimates for different age classes based on re-sightings of individually marked birds, as well as more general survival estimates derived from population

censuses and productivity assessments will be used. This model will be completed as soon as it can be done.

Monitoring

The success of this Action Plan stands or falls with the commitment of countries to monitor the population and habitats, as well as effects of management measures on the species. Only if countries demonstrate this commitment, can proper management decisions be made. All countries are requested to continue and/or initiate a regular population census, a co-operative ringing programme and monitoring of the population (including productivity/ age ratio censuses) and their (semi-)natural habitats, with special attention to monitoring of breeding and stop-over sites. During the time of peak occurrence per country extra data will be gathered (e.g. the use of agricultural land by the geese, or the extent of damage to agricultural land as a result of goose grazing). The monitoring in the Wadden Sea will be organized supervised by the Joint Monitoring Group of Migratory Birds (JMGB), a group which is the responsible trilateral group for the overall monitoring of migratory birds in the Wadden Sea. Collected data will be assembled within the Wetlands International IWC (International Waterbird Census framework). The working group will be vital in organising this monitoring process.

Organisation

In the organisation structure of the AEWA, the Agreement Secretariat plays a key role. The Agreement Secretariat co-ordinates flows of scientific information and technical advice. It also calls for meetings of the AEWA parties. The Technical Committee falls under the Agreement Secretariat. Article VII, paragraph 5 of

the AEWA gives the Technical Committee the possibility to install working groups for special purposes. This article can be used for the establishment of a Dark-bellied Brent Goose working group.

Dark-bellied Brent Goose working group

A special Dark-bellied Brent Goose working group under the Technical Committee of the AEWA will be established for implementation of this Action Plan.

The working group shall, under supervision of the Technical Committee and taking into account the role of the Agreement Secretariat, be mandated to undertake the following activities:

- Assist in and co-ordinate the process of National Action Plan preparation.
- Prepare and organise the triennial meeting with the Range States.
- Prepare and submit a review of the Action Plan to the triennial Range States' meeting and to the AEWA.
- Co-ordinate and facilitate information exchange between Range States (and between the AEWA and the Range States).
- Monitor implementation of the Action Plan.
- Collect country data and draft annual reports on the implementation of the Action Plan.
- Organise intermediate meetings with groups of Range States (training, emergency measures, etc.)

The working group will call for an emergency meeting with the Range States when;

- Total population size has declined by more than one third in any period of four or fewer than four consecutive years; or
- Major changes in relevant habitats, or sudden catastrophes occur within the range of the Dark-bellied Brent Goose liable to affect the population; or

- Behavioural changes occur that lead to a sudden dramatic increase in damage to agricultural land, e.g. if goose numbers using agricultural land or damage due to goose grazing increases by more than 40% in any period of four consecutive years.

An estimated 5000 US Dollar is needed annually for the Dark-bellied Brent Goose working group to perform its tasks.

The Dark-bellied Brent Goose working group should consist of a team of several technical advisors. To ensure effective communication between the Technical Committee and the working group, at least one member of the Technical Committee should also participate in the working group.

Detailed Terms of Reference based on the above description of activities will be prepared by the Technical Committee, and endorsed by the Range States before the Dark-bellied Brent Goose working group will start its work.

Country actions

In all communication between the AEWA-Parties, the Agreement Secretariat plays a co-ordinating role. To keep communication lines clear, countries should therefore provide information to the Agreement Secretariat. This is intended to ensure that all parties will get all relevant information. In order to implement the Action Plan, the Range State Countries should commit themselves to at least to the following points:

- Prepare, in co-operation with the working group, and based on chapter 5 and 6 of this International Action Plan a National Action Plan in one year's time.
- Implement this National Action Plan.

- Through the Agreement Secretariat, the working group should be informed about relevant issues in the country.
- Prepare an annual progress report.
- Endorse the Terms of Reference of the working group.
- Endorse this Action Plan.
- Pinpoint focal points, responsible for the communication with the working group and relevant stakeholders in the country.
- Prepare a review of the National Action Plans every three to five years.
- Maintain and further develop adequately funded monitoring programmes to deliver key data.

Time frame for monitoring, evaluation and communication

Activities can be started after development of the simulation model on the population dynamica of the Dark-bellied Brent Goose

Time path ⇒ 1^e 1^e year 2^e year 3^e year 4^e year

↓		↓		↓		↓		↓	
<i>Actions</i>	AEWA Technical Committee: <ul style="list-style-type: none"> • Prepare Terms of Reference for working group • Prepare Action Plan 	Working group: <ul style="list-style-type: none"> • Assist and co-ordinate National Action Plans • Monitor implementation of the (national and international) Action Plans and prepare annual progress report • Facilitate information exchange • Organise meetings/training 	Working group <ul style="list-style-type: none"> • Monitor implementation of the (national and international) Action Plans and prepare annual progress report • Facilitate information exchange • Organise meetings/training 	Working group: <ul style="list-style-type: none"> • Prepare triennial Range States meeting • Prepare Action Plan review • Monitor implementation of the (national and international) Action Plan and prepare annual progress report • Facilitate information exchange • Organise meetings/training 					
	Range States: <ul style="list-style-type: none"> • Endorse Action Plan • Endorse ToR working group 	Range States: <ul style="list-style-type: none"> • Prepare National Action Plan • Implement National Action Plan • Prepare annual progress report • Pinpoint national focal point • Exchange information 	Range States: <ul style="list-style-type: none"> • Implement National Action Plan • Prepare annual progress report • Exchange information 	Range States: <ul style="list-style-type: none"> • Implement National Action Plan • Prepare annual progress report • Exchange information 					
	⇓	⇓	⇓	⇓		⇓		⇓	
<i>Products</i>	<ul style="list-style-type: none"> • Endorsed Action Plan • Endorsed working group 	<ul style="list-style-type: none"> • National Action Plans • Annual progress report Range States • Annual progress report international Action Plan • National Focal Points • Meetings/training • Information exchange 	<ul style="list-style-type: none"> • Annual progress report Range States • Annual progress report international Action Plan • Meetings/training • Information exchange 	<ul style="list-style-type: none"> • Triennial Range States' meeting • Reviewed Action Plan • Three-year report Range States • Three year report internat. Action Plan • Annual progress report Range States • Annual progress report international Action Plan • Information exchange 					

Terminology

In this Action Plan, the following definitions have been used:

Equilibrium population level = stable level of animal population size, in which birth rate and death rate are equal.

Habitat = environment meeting the conditions required by a particular species.

Natural Habitat = environment of a particular species, which has not been changed by human interference; i.c. intertidal eel-grass-beds, arctic tundra, coastal salt-marshes like de Boschplaat.

Semi natural habitat = environment of a particular species, which has been moderately modified by humans; i.c. man-made salt marshes with artificial ditches, sheep and cattle grazing in the coastal zone, which are still exposed to natural tidal processes, particularly in the Wadden Sea.

Man-made habitat = man-made environment of a particular species; i.c. farmland.

Feeding areas = areas where animals forage; i.c. coastal tundras, mudflats, saltmarshes, farmland (grassland, winter cereals).

Range States = (independent) countries within the range in which a particular animal species occurs

Fly-over countries = those Range States where bird species only pass by on migration without actually staging for at least several days.

Staging grounds = areas where migratory bird populations stay for a prolonged period of at least several days during the non-breeding part of the year, where the birds can both forage and rest. Usually this term is only applied to so-called stop-over sites during autumn and spring migration.

Wintering grounds = staging grounds during the winter.

Spring staging grounds = staging grounds used during spring migration; i.c. areas used by Brent Geese from late March till early June (Wadden Sea and White Sea).

Key sites = areas which are essential for the survival of a significant part of the population (conform Ramsar criteria) at any stage of its annual cycle; i.c. for this migratory bird species: breeding grounds, staging areas and wintering sites.

Appendix I: Summary of the Dark-bellied Brent Goose *Branta bernicla bernicla* Flyway Management Plan

The Dark-bellied Brent Goose (*Branta bernicla bernicla*) is a migratory species, breeding in High Arctic Siberia and spending most of its annual cycle along the coasts of western Europe (EU countries). The geese traditionally occur on natural and semi-natural habitats, but nowadays they also make use of agricultural land. Due to the highly variable breeding success, which is characteristic of the Brent Goose, the population size shows large fluctuations.

Since the 1970s the geese have made a remarkable comeback from a very low population level in the 1950s, to a population of a 250,000 geese in the 1990s. Despite its present abundance the bulk of the stock occupies small geographical areas on the breeding, staging and wintering grounds.

The Flyway Management Plan concerns the Dark-bellied Brent Goose, a population that is classified as a species of Anatidae, which needs special attention as a result of its dependence on a habitat type which is under severe threat and which frequently comes into conflict with human interests (based on the African-Eurasian Waterbird Agreement [AEWA], 1995). The plan describes and evaluates the ecological and political status of the species throughout its geographical range and focuses on possibilities for the alleviation of conflicts with human interests, taking into account the conservation status of the population and the growing interest in regulated hunting on the recovered population. The plan contains a framework for management and conservation of (natural and cultural) habitats and the Brent Goose population. It provides very few prescriptions; these should be developed individually within each Range State, according to different national legal and cultural frameworks.

The need for a management plan for the Brent Goose is based on several pressures to, and characteristics of the geese. The most important of these are:

- The Brent Goose is a flagship species; the geese traditionally occur on natural and semi-natural habitats (salt marshes, mudflats, eelgrass beds). These habitats have been, and for a part still are under pressure (because of high rates of wetland loss and degradation of remaining wetlands), and hence have a high conservation priority. The Brent Geese are thus an indicator of wider conservation values.
- The geese frequently come into conflict with human activities, more specifically agriculture. The number of conflicts is increasing and governments are cautious about giving further compensatory payments. Countries have been taking measures to reduce crop damage independently. But if they would take joint measures, these would be more effective and a possible shift of the problem to neighbouring countries might be prevented.
- The ongoing population increase creates controversy, some parties concerned (esp. farmers) wish to know if or at what point the population will stabilise.
- The Brent Goose population is generally protected in Western Europe under the EU Birds Directive 79/409 and under various national legislation. Hunting is not permitted, except in some local regions. As a result of the recovery and further increase of population size, however, proposals have been made in some countries for a regulated harvest of Brent Geese.
- Because the Brent Goose is a migratory species, conservation management is an international responsibility. There is a need for harmonisation at an international level so as to avoid conflicting national policies.
- The Brent Goose is a success story in modern conservation; as a result of protection on the wintering grounds, together with other factors such as feeding on agricultural land and the

recovery of eelgrass beds, they recovered from a very low population level in the 1950s. Co-ordinated policies should ensure that this success is not reversed.

The successful management of Brent Geese is the joint and equal responsibility of the governments of all flyway countries. As such there would be considerable benefits from international coordination and cooperation through an international management plan to provide a framework for actions in each Range State.

A management plan for the whole population can address the various problems and opportunities of the population at an international level and facilitate cooperation between the Range States (e.g. a better coordinated international monitoring). The first step in this direction was taken in 1994 at the international workshop on the Dark-bellied Brent Goose in the Wadden Sea, an initiative of the Dutch Society for the Preservation of the Wadden Sea. In conformity with the results of this workshop, the 7th Trilateral Governmental Wadden Sea Conference 1994 declared:

- (72) To take note of the recommendations of the international workshop on the Dark-bellied Brent Goose in the Wadden Sea, Leeuwarden, 22-23 September 1994.
- (73) To acknowledge that the Wadden Sea is one of the major wintering and resting areas for the Brent Goose and that specific management requirements are necessary. Therefore, to invite the Secretariat of the Bonn Convention, in cooperation with the Russian Federation, where the main breeding areas are, to prepare an international conservation plan for this species, within the framework of the African-Eurasian Waterbird Agreement, and to note that the Netherlands would be prepared to act as a lead country to assist the Bonn Convention Secretariat in developing the conservation plan.

In consultation with the Secretariat of the Bonn Convention the Dutch Ministry of Agriculture, Nature Management and Fisheries decided in 1995 to prepare a Flyway Management Plan for the Dark-bellied Brent Goose, as a single species Action Plan linked to the AEW. The Dutch Society for the Preservation of the Wadden Sea drew up a Flyway Management Plan for the Dark-bellied Brent Goose. Because the aim is to achieve international support from the governments and relevant interest groups of all countries along the migration route, there has been a wide scale consultation among those groups during preparation of the plan. The work was guided by an international expert panel.

Workshop

In January 1997 a workshop, chaired by C. Kalden, president of Wetlands International, was convened on Texel in the Wadden Sea area of the Netherlands. Objectives and directions for Brent Goose conservation management were discussed by 50 participants from various organisations (farmers, conservationists, scientists, policymakers and hunters) from Denmark, Germany, the Netherlands, the United Kingdom, Belgium, France and Russia, together with representatives of governments, international bodies and non-governmental organisations.

During the workshop a draft international Management Plan for the Dark-bellied Brent Goose *Branta bernicla bernicla* was discussed extensively and the first impulse to produce an Action Plan was given.

The workshop closed with a declaration endorsed by all participants, in which the Workshop noted:

- The history of international technical meetings related to fostering greater cooperation and information exchange on the conservation management of Dark-bellied Brent Geese. Many of the key areas in Europe noted in earlier resolutions have been designated as either Ramsar sites and/or as EU Special Protection Areas since 1977. The population development and conservation successes since the first international technical meeting in 1977 was noted and welcomed. This has enabled many people to experience geese, thereby increasing support for conservation of coastal areas.
- The creation of extensive National Parks and other networks of protected areas in the international Wadden Sea, together with relevant intergovernmental coordination mechanisms, is a major achievement for the Netherlands, Germany and Denmark. The recent development of very significant nature reserves on breeding areas in arctic Russia, including the Great Arctic Reserve on Taimyr, was especially welcomed.
- The development of closer formal cooperation between Range States is considered important in the addressing of a range of issues now facing the population, including, amongst others, increasing agricultural conflicts and the desire for hunting, in wintering and spring staging areas. The development of an International Management Plan linked to the African-Eurasian Waterbird Agreement, would further assist the maintenance of favourable conservation status in the long run, particularly helping to resolve the above issues.

The Workshop confirmed the following ideal objectives for the long-term management of the population:

1. To permit the Dark-bellied Brent Goose to attain an equilibrium level of population in relation to the capacity of the breeding, wintering and staging grounds, throughout the annual cycle.

2. To seek the conservation and restoration of sufficient natural habitats to support the population throughout its flyway during breeding, staging and wintering periods.
3. To minimize the effects of human disturbance in natural feeding habitats and reduce the general shyness of the geese.
4. To eliminate the agricultural conflicts on the wintering and spring-staging grounds.

The workshop noted the following principles:

- a) To ensure international cooperation between the Range States in joint programmes of monitoring, research, conservation, management, utilization and liaison to the benefit of Dark-bellied Brent Geese, their habitats and the human populations with which the geese come into contact.
- b) To ensure that any consumptive or non-consumptive use made of Dark-bellied Brent Geese should be based on an assessment of the best available knowledge of their ecology and is sustainable for the population as well as for the ecological systems that support them and is compatible with other uses.
- c) To fulfil all legal and other relevant obligations.

Workshop participants further noted that:

- There are increasing signs that the population size is stabilizing.
- Internationally coordinated monitoring of population and habitat parameters is fundamental to the conservation management of the population in a scientifically informed manner. To this end, the Range States should maintain and further develop adequately funded monitoring programmes to deliver key data.
- Recent recognition of the White Sea and areas further east as crucial staging areas has highlighted the need for comprehensive survey of these arctic coastal zones so as to develop an inventory of key areas, human impacts and habitat

threats. This will facilitate adequate conservation measures to be established.

The participants at the International Workshop on Dark-bellied Brent Geese recommended the following specific actions:

a. That Russia, Denmark, Germany, the Netherlands, France and the United Kingdom agree and implement long-term cooperative measures including an international Action Plan for the conservation management of Dark-bellied Brent Geese drawing on the results of this Workshop and future discussions to be held at intergovernmental level. These countries should work also to involve Baltic countries (Poland, Estonia, Lithuania, Latvia, Finland and Sweden) along the migratory flyway used by the geese in the development and implementation of appropriate aspects of the plan.

The plan should be formally linked to the African-Eurasian Waterbird Agreement of the Bonn Convention which will facilitate future collaboration and funding possibilities. Progress should be reported.

b. That Russia, Denmark, Germany, the Netherlands, France and the United Kingdom develop and implement national conservation management plans for the Dark-bellied Brent Geese within this international framework. Progress should be formally reported.

c. That Denmark, Germany, the Netherlands, France and the United Kingdom be encouraged to make use of the opportunity that already exists in EC Council Regulation 2078 which they agreed on in 1992, to address the needs of waterfowl on farmland. These States, together with the European Commission, are further encouraged to integrate, in a more coherent manner, the needs of waterfowl and farmers in the future development of the Common Agricultural Policy (especially with regard to the need to address the issue in the future development of agri-environmental regulations), and other Community funding mechanisms.

d. Further to recommendations made at the First IWRB Technical Meeting on Western Palearctic Migratory Bird Management (1977, Paris) that the Dark-bellied Brent Goose population should have fully recovered before contemplating the re-introduction of hunting, the Texel Workshop agreed that a further technical meeting of experts should be convened in 1999 to test a simulation model for the population dynamics of the Dark-bellied Brent Goose.

The outputs of this model would include the estimation of the impact of changes in the parameters (e.g. mortality, breeding success, habitat use) on numbers and distribution over habitat type. This exercise will provide the technical scientific basis to complete the process of assessing the feasibility of opening some hunting on Dark-bellied Brent Geese, to be managed in accordance with the objectives of the Management Plan. At the same time, research would be valuable on disturbance and flight distances, directed to the different needs of farmers, and those wishing to make other non-consumptive use of the geese. This research and other important inputs such as ethical, educational and other considerations will assist policy decisions yet to be taken.

e. That Range States acknowledge the key importance of natural habitats for the long-term conservation of Brent Geese and accordingly strive to prevent further losses and degradation of these areas, including disturbance. In particular, they are urged to explore actively all possibilities for the restoration and further development of natural intertidal habitats, especially *Zostera* beds.

After the workshop the results and suggestions made by the workshop and/or participants were incorporated in the Flyway Management Plan, after which the plan was finalised. The first part of the plan provides a thorough descriptive background of information relevant to the management of the geese. Sections

cover distribution, population dynamics, ecology, agricultural conflict, level of protection and a wide range of other relevant information. The second part evaluates the descriptive information, to identify and confirm the important or significant features and finally to identify and allocate priorities to the Brent Goose management objectives.

The Management Plan holds a clear statement of objectives. These are separated into ideal objectives (which may never be achievable, but set long-term goals) and operational objectives, derived from those that are achievable in realistic time scales (*i.e.* can be related to organisational plans).

The Flyway Management Plan lays the foundation for the development of the Action Plan, in which the necessary prescriptions to implement the operational objectives are developed. The objective of the Action Plan is to provide a common international outline which governments of all concerned countries have to agree upon. Subsequently it has to be implemented in more detail by a series of national plans. The Action Plan will be part of a continuing process, which involves review and feedback as integral components.

J. van Nugteren, 1997

Dark-bellied Brent Goose *Branta bernicla bernicla* Flyway Management Plan

Co-production of the Dutch Society for the preservation of the Wadden Sea

National Reference Centre for Nature Management, Wageningen

Document C-17

Appendix II: Overview of key sites (source: Flyway Management Plan)

Status of key sites (> 2500 geese) for Dark-bellied Brent Geese in Britain (data provided by Rowcliffe, Wildfowl & Wetlands Trust).

site	Habitat-type	co-ordinates	area (ha) ¹	(inter)national designation (since what year) ²	peak numbers	peak month (number of months in use) ³	ownership	management responsibility
The Wash		52°52N 0°13E	66654 (63124)	S, R, N (1988)	22157	Jan (9)		
Thames Estuary		51°30N 0°30E	4745	s, r, N	19460	Oct (7)		
North Norfolk		52°58N 04°5E	8292 (7700)	S (1989), R, N (1976)	10821	Jan (7)		
Chichester Harbour ⁴		50°54N 0°53 W	2946 (5764) ⁵	S, R (1987)	10749	Jan (7)		
Blackwater Estuary ⁶		51°44N 0°53E	5184 (3657)	S, R, N (1995)	10503	Jan (7)		
Langstone Harbour ⁴		50°48N 1°0W	1925 (5764) ⁵	S, R (1987)	7329	Jan (8)		
Colne Estuary ⁶		51°49N 1°0E	2335 (2701)	S, R, N (1994)	5934	Jan (6)		
Hamford Water		51°53N 1°16E	2377 (2179)	S, R, N (1993)	5682	Jan (6)		
Crouch/Roach Estuary ⁶		51°37N 0°53E	2754 (906)	S, R (1995)	5509	Jan (6)		
Medway Estuary		51°25N 0°40E	6441 (3657)	S, R, N (1993)	4289	Jan (9)		
NW Solent ⁷		50°45N 1°29W	1367	s, r, N	3221	Jan (7)		
Pagham Harbour		50°46N 0°45W	265 (616)	S, R (1988)	3042	Jan (6)		
Portsmouth Harbour		50°49N 1°7W	1593 (1248)	S, R (1995)	2989	Jan (6)		
Wey/Fleet		50°35N 2°30W	1617 (763)	S, R (1985)	2794	Dec (5)		
Swale Estuary		51°21N 0°55E	3823 (6257)	S, R, N (1982-1993)	2737	Jan (6)		
Humber Estuary		53°36N 0°0	30357 (15230)	S, R, N (1994)	2509	Dec (7)		

Notes: ¹Estuary area (after Davidson *et al.* 1991) is given, with the area covered by SPA/Ramsar designation given in brackets. ²Protection status codes: S: Special Protection Area; R: Ramsar site; N: part National Nature Reserve. Capitals indicate currently designated, small letters indicate proposed designation. ³Peak counts are 5-year means for the period 1989/90 - 1993/94 (Cranswick *et al.* 1995). ⁴Designated as a single site (Chichester and Langstone Harbours). ⁵Protected area given is for the combined site. ⁶Designated as a single site (Mid-Essex Coast). ⁷Designated as a single site (Solent Marshes). The habitat of all sites comprises various proportions of mudflat, saltmarsh, and adjacent agricultural land. Ownership and management responsibilities are multiple in all sites.

Status of key sites (> 2500 geese) for Dark-bellied Brent Geese in Denmark (data provided by Madsen, Danmarks Miljøundersøgelser).

site	habitat-type	co-ordinates	area (ha) ¹	(inter)national designation (since what year) ²	peak numbers	peak month (number of months in use)	ownership ³	management responsibility ³
Ballum Forland	saltmarsh	55°08N 08°41E	c. 4 km ²	R, S (1994)	14000	Apr, May	C (S)	S
Tipperne	brackish saltmarsh	55°53N 08°12E	c. 20 km ²	R, S (1994)	3000	Apr, May	C (S)	S
Sydfynske Øhav	shallow waters, saltmarsh	54°55N 10°30E	c. 7 km ²	R, S (1994)	4000	Apr, May (4)	C, P	S, P
Rødsand	shallow waters	54°37N 11°38E	c. 8 km ²	R, S (1994)	2980	Apr, May (3)	C	S
Keldsand	intertidal mudflats	55°20N 08°30E	c. 8 km ²	R, S (1994)	6000	Nov, Dec	C	S

Notes: ¹Area is highly variable because of tide/water levels. ²Protection status codes: S: Special Protection Area; R: Ramsar site. ³Ownership/management responsibility: S: State; C: Public; P: Private.

Status of key sites (> 2500 geese) for Dark-bellied Brent Geese in France (data provided by Deceuninck, Ligue pour la Protection des Oiseaux).

site	habitat-type	co-ordinates	area (ha)	(inter)national designation (since what year) ¹	peak numbers	peak month (number of months in use)	ownership ²	management responsibility ²
Bassin d'Arcachon	Mudflats, dunes, salt marshes	44°34N 00°57W	20100	S: 2095 ha, N: 1115 ha, C (1973): 600 ha	38000	Jan (6)	S	reserves: SEPANSO
Golfe du Morbihan	Mudflats, salt marshes	47°31N 02°48W	c. 15000	C: 7850 ha (1973), R (1991), S: 5830 ha	34000	Nov (6)	S	-
Moëze-Oléron	Mudflats	45°46N 00°56W	6720	N: 6720 ha (1985), S: 6720 ha	26000	Nov (6)	S, P, CEL	LPO
Ile de Ré	Mudflats, rocky coast	46°11N 01°22W	c. 10000	N: 195 ha (1980), S: 5080 ha	20000	Nov (6)	S, P, CEL	reserve: LPO
Baie de Bourgneuf	Mudflats	46°42N 01°49W	> 12000	C (1973): 4200 ha, N: 48 ha	10000	Nov (6)	S	-; scaring: LPO
Baie du Mont-St-Michel	Mudflats, beaches, salt marshes	48°36N 01°35W	30000	C: 3000 ha (1973), S: 18000 ha, N: 21.5 ha, R (1995)	4600	Jan (5)	S	S
Baie de St-Brieuc	Mudflats, beaches	48°31N 02°40W	3130	C (1973): 650 ha, S: 1370 ha	4000	Dec-Jan (6)	S	-
Baie de Fresnaye	Mudflats	47°22N 02°19W	c. 2000	C (1973): 4400 ha	3300	Dec (5)	S	-
Presqu'île guérandaise	Mudflats, salt marshes	47°15N 02°24W	4650	C (1973); S: 550 ha, R (1995)	2800	Dec-Jan (5)	S + P	-
Rade de Lorient	Mudflats, beach	47°42N 03°20W	2800	C (1973): 130 ha, S: 480 ha	2500	Jan (3)	S	-

Notes: ¹Protection status codes: S: Special Protection Area, N: Nature Reserve, C: Réserve de Chasse Maritime, R=Ramsar site. ²Ownership/responsibility codes: S: State, P: Private, CEL: Conservatoire des sites Littoraux, LPO: Birdlife France, SEPANSO: Société d'Etudes, de Protection et d'Aménagement de la Nature dans le Sud-Ouest.

Status of key sites (> 2500 geese) for Dark-bellied Brent Geese in Germany (data provided by Stock, National Park Schleswig-Holstein and Südbeck, Staatliche Vogelschutzwarte).

site	Habitat-type ¹	co-ordinates	area (ha)	(inter)national designation (since what year) ²	peak numbers	peak month (number of months in use)	owner-ship ³	management responsibility ⁴
Sylt Kampen bis Hindenburgdamm	N, W	54°54N 8°24E	142	N, S, R, s, f	6000	Apr (4)	SH	S
Amrum	N, W	54°39N 8°21E	57	S, R, s, f	2860	Apr (4)		S
Föhr nördliche Vorländer	M, W	54°45N 8°30E	221	NP, R	5780	May (4)	SH	S
Langeness	H, M, W	54°39N 8°37E	1006	NP ⁵ , R	29500	Apr (4)	P, SH	S
Oland	H, M, W	54°41N 8°42E	204	NP ⁵ , R	3500	May (4)	P, SH	S
Gröde	H, W	54°39N 8°44E	230	R	15000	May (4)	P	S
Nordstrandischmoor	H, M, W	54°33N 8°49E	180	NP ⁵ , R	6600	May (4)	P, SH	S
Hooge	H, W	54°34N 8°33E	580	R	16000	Apr (4)	P	S
Süderoog	H, W	54°58N 8°33E	54	NP, R	5000	Apr (4)	SH	S
Südfall	H, W	54°58N 8°34E	40	NP, R	5000	Apr (4)	SH	S
Pellworm Buphevervorland	M, W	54°34N 8°42E	103	NP, R	6100	Apr (4)	SH	S
Rickelsbüller Koog	E	54°55N 8°40E	460	N, R, S, h	3300	Apr (3)		S
Osewoldter Vorland	M, W	54°43N 8°45E	183	NP, R	5100	May (4)	SH	S
Ockholm bis Hamburger Hallig	M, W	54°39N 8°51E	339	NP, R	15000	May (4)	SH	S
Hamburger Hallig	M, W	54°36N 8°50E	519	NP, R, s, h	15000	May (4)	SH	S
Beltringharder Koog (former saltmarsh)	E	54°55N 8°55E	910	N, R, s, h	2400	Apr (3)	SH	S
Nordstrand West u. Süderhafen	M, W	54°28N 8°50E	347	NP, R	5500	Apr (4)	SH	S
Vorland Husum bis Everschopsiel	M, W	54°26N 8°56E	240	NP (1985), R (1991)	5500	Apr (4)	SH	S

Germany, continued

site	Habitat-type ¹	co-ordinates	area (ha)	(inter)national designation (since what year) ²	peak numbers	peak month (number of months in use)	Owner-ship ³	management responsibility ⁴
Vorland Norderheverkoog	M, W	54°25N 8°43E	432	NP (1985), R (1991)	8500	Apr (4)	SH	S
Westerhever	M, W	54°24N 8°39E	199	NP (1985), R (1991)	3900	Apr (4)	SH	S
Tümlauer Bucht	M, W	54°22N 8°42E	404	NP (1985), R (1991)	3200	May (4)	SH	S
Vorland Friedrichskoog Nord	M	54°02N 8°53E	476	NP (1985), R (1991)	4900	May (3)	SH	S
Trischen	N	54°04N 8°41E	94	NP (1985), R (1991)	4550	Apr (4)	SH	S
Leybucht	M	53°31N 7°07E	650	NP, N (1994)	5600	Apr, May (5)	NI	S
Borkum	N, P	53°36N 6°45E	1500	NP (1986)	4000	Apr, May (5)	NI, P	S
Nordeney	N, P	53°43N 7°16E	750	NP (1986)	2500	Apr, May (5)	NI	S
Norderland	M	53°41N 7°24E	1100	NP (1986)	3500	Mar, Apr (3)	NI, P	S
Spiekeroog	N	53°46N 7°43E	1350	NP (1986)	3000	May (4)	NI	S
Mellum	N	53°43N 8°09E	700	NP (1986)	3500	Mar, Apr, May (4)	NI	S
Neuwerk	N, P	53°55N 8°30E	315	NP (1990)	3500	May (3)	Hamburg	S

Notes: ¹Habitat type: N: natural salt marsh; M: man-made salt marsh; H: Hallig salt marsh; W: mudflat, *Zostera* beds; E: embanked area `koog'; P: Polder. ²Protection status codes: NP: National Park; N: Nature Reserve; S: Scenery Reserve; R: Ramsar site; S: Special Protection Area; H: Special Area of Conservation (designation by EU-Habitats Directive). Capitals indicate currently designated, small letters indicate proposed designation. ³Ownership: SH: Schleswig-Holstein; NI: Niedersachsen; P: private. ⁴Management responsibility: S: State. ⁵Only man-made salt marsh has National Park designation.

Status of key sites (> 2500 geese) for Dark-bellied Brent Geese in the Netherlands (Data provided by van Nugteren, Landelijke Vereniging voor de Bescherming van de Waddenzee).

site	habitat-type	co-ordinates	area (ha)	(inter)national designation (since what year) ¹	peak numbers	peak month (number of months in use)	ownership ²	management responsibility ²
Terschelling	salt marsh, mudflats, grassland	53°25N 5°25E	9400	R (1984), S (1991), N	13000	May (8)	S, P	S, P
Ameland	salt marsh, mudflats, grassland	53°27N 5°48E	5900	R (1984), S (1991), N	12000	May (8)	S, NCO, P	S, NCO, P
Schiermonnikoog	salt marsh, mudflats, grassland	53°29N 6°13E	3800	R (1984), S (1991), NP (1988)	2500	May (8)	S, NCO	S, NCO, P
Frisian coast	salt marsh, mudflats, grassland	53°22N 5°49E	4000	R (1984), S (1991), N	32000	May (8)	S, P, NCO	S, P, NCO
Groningen N coast	salt marsh, mudflats	53°26N 6°34E	11100	R (1984), S (1991), N	7000	May (8)	NCO, P	NCO, P
Texel	salt marsh, mudflats, grassland	53°8N 4°54E	16100	R (1984), S (1991), N	9400	May (8)	S, NCO, P	S, NCO, P
Balgzand & Wieringen	salt marsh, mudflats, grassland	53°55N 4°55E	5800	R (1984), S (1991), N (1981) ³	3000	Jan (8)	S, NCO, P	S, NCO, P
Grevelingen	Grassland	51°45N 3°55E	1000	-	2500	Jan (8)	S	S
South coast Schouwen	Grassland	51°41N 3°47E	500	R (1987), S (1989), N	2500	Jan, Mar (8)	P	P

Notes: ¹Protection status codes: R: Ramsar; S: Special Protection Area; N: Nature Reserve, NP: National Park. R, S and N designations are only for areas located outside the dikes.

²Ownership/management responsibility: S: State; NCO: Nature Conservation Organisation; P: Private. ³Designation only for Balgzand.

Status of key sites for Dark-bellied Brent Geese in Russia (data provided by Syroechkovski Jr., Russian Academy of Sciences).

site	habitat type	co-ordinates	area (ha)	(inter)national designation (since what year)	peak numbers	peak month (number of months in use)	ownership	management responsibility
Sibirikov Island	tundra with many lakes, coastal marshes	72°10N 79°10E	c. 1000 km ²	Great Arctic Reserve (1993)	tens of thousands	Jun, Aug, Sep	State	State
Oleniy & Proklatye isles	tundra with many lakes, coastal marshes	72°17N 77°00E		Gydansky Strict Nature Reserve (1996)	tens of thousands	Jun, Aug, Sep	Gyda sovkhos	Gyda sovkhos
Dicksons surroundings	arctic coastal tundra	73°32N 80°41E	c. 300 km ²		tens of thousands	Jun, Aug	State and Dickson settlement administration	Dickson region administration
Pyasina delta	delta with many branches and islands with tundra vegetation		c. 500 km ²	Great Arctic Reserve (1993)	thousands	Jun, Aug	State	State, Dickson region administration
Ptichyi & Bakennye isles	rocky and sandy tundra islands	74°07N 86°25E	c. 10 km ² of land in c. 200 km ² of water	Great Arctic Reserve (1993)	thousands	Jun, Aug (3)	State	State
Voskresenskogo Bay	High Arctic coastal tundra	75°28N 89°20E	c. 100 km ²	Great Arctic Reserve (1993)	thousands	Jun, Aug (3)	State	State, Dickson region administration
Russki Island	High Arctic tundra and polar desert	77°08N 96°30E	309 km ²	Great Arctic Reserve (1993)	6000	Jun, Jul, Aug	State	State
Vil'kitskogo Island	sandy island with tundra vegetation and marshes	73°28N 75°49E	c. 100 km ²	Gydansky Strict Nature Reserve (1996)	thousands	Jun, Aug, Sep (4)	State	State
Neupokoieva Island	typical tundra vegetation and marshes	73°07N 76°20E	c. 100 km ²	Gydansky Strict Nature Reserve (1996)	thousands	Jun, Aug, Sep (4)	State	State
Arcticheskogo Instituta Isles	sandy High Arctic tundra and polar desert	75°22N 82°03E	315 km ²	Great Arctic Reserve (1993)	3000	Aug	State	State

Russia, continued

site	habitat type	co-ordinates	area (ha)	(inter)national designation (since what year)	peak numbers	peak month (number of months in use)	ownership	management responsibility
Izvesty Tsik Isles	High Arctic tundra and polar desert	75°57N 82°28 ^E	140 km ²	Great Arctic Reserve (1993)	5000	Jun, Jul, Aug	State	State
Sergeya Kirova Archipelago	High Arctic tundra and polar desert	77°15N 89°30 ^E	257 km ²	Great Arctic Reserve (1993)	thousands	Aug (4)	State	State
Veronina Island	High Arctic tundra and polar desert	78°12N 92°50 ^E	c. 50 km ²	Great Arctic Reserve (1993)	thousands	Aug (4)	State	State
Nordensheld Archipelago	High Arctic tundra with many rocky areas	76°30N 96°00 ^E	c. 1000 km ²	Great Arctic Reserve (1993)	thousands	Aug (4)	State	State
Shkhery Minina Archipelago	High Arctic tundra	86°00N 74°30 ^E	c. 800 km ²	Great Arctic Reserve (1993)	thousands	Aug (4)	State	State
Lower Taimyra River	flat arctic tundra with many lakes, deltas with many small tundras and rocky islands	99°40N 76°10 ^E	c. 500 km ²	Great Arctic Reserve (1993)	50,000	Jul (4)	State	State
Leningradskaya River	flat arctic tundra with many lakes, deltas with many small tundras, fjord coasts	76°20N 102°30 ^E	c. 300 km ²	Great Arctic Reserve (1993)	tens of thousands	Jul (4)	State	State
Coast North of Pronchisheva peninsula	arctic tundra with many lakes	75°45N ??E	400 km ²	part of Taimyrsky Biosphere Reserve (1994)	thousands	Jul, Aug (4)	State	State
Yavay peninsula coasts	coastal tundra	72°30N 75°40 ^E	200 km coastline	Gydansky Strict Nature Reserve (1996)	tens of thousands	May, Jun, Aug, Sept	local community	local community, Yamal district administration
Yugorsky Shar Strait, Velikaya river mouth	coastal tundra	69°40N 61°00 ^E	50-70 km coastline		tens of thousands	May, Jun, Aug, Sep	local community	local community, Nenets District administration

Russia, continued

site	habitat type	co-ordinates	area (ha)	(inter)national designation (since what year)	peak numbers	peak month (number of months in use)	ownership	management responsibility
Yamal coast N of Nebeyakha river mouth	coastal marshes	70°15N 66°40 ^E	c. 40 km ²		30,000	Jun, Sep	local community	local community, gas mining authorities, Yamal District administration
Sharapovy Koshky Isles and coast nearby	sandy islands, dunes, marshes, low wet tundra	70°57N 66°37 ^E	c. 200 km ²		thousands	Jun, Sep	local community	local community, gas mining authorities, Yamal District administration
Marasselskiye Koshky isles	sandy islands, dunes, marshes	69°32N 66°50 ^E	c. 80 km ²		thousands	Jun, Sep	local community	local community, gas mining authorities, Yamal District administration
Tobseda area	coastal meadows, dunes, tundra	68°40N 52°38 ^E	c. 30 km coastal line		thousands	May, Sep	local community	local community, Nenets District administration
Ruski Zavorot	sandy spit, marshes, wet tundra with lakes	69°00N 53°30 ^E	c. 30 km	Nenetsky Reserve (1987)	thousands	May, Jun, Sep	local community	local community, Nenets District administration
Kolguev Island	sandy spits, tundra, coastal marshes	68°45N 49°00 ^E	100 km		thousands	Sep	Kolguyev sovkhos, native communities	native communities, Nenets District administration
Shoyna area	many islands in estuary, salt marshes, sand dunes	67°55N 44°10 ^E	c. 100 km ²		tens of thousands	May, Oct	local community	local community, Nenets District administration
Mudyug Island and surrounding aquatory	mudflats, coastal marshes	64°55N 40°25 ^E	c. 200 km ²		20000	May, Jun	local community	local community, Arkhangelsk District administration
White Sea island near to Kem	rocky islands, mudflats, coastal marshes	65°05N 34°40 ^E	c. 200 km ² of aquatory		thousands	May, Jun	local community	local community, Arkhangelsk District administration
Unskaya Guba	mudflat	64°50N 38°20 ^E	c. 50 km ²		thousands	May, Jun	local community	local community, Arkhangelsk District administration

