

GEESE AND AIR TRAFFIC IN THE NETHERLANDS

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In winter large numbers of geese stay in the Netherlands. The total number may approximate to 1 million. So, the Netherlands has great international importance for the management of migrating and wintering geese. The availability of sufficient information about the distributions and movements of geese in breeding areas, migration areas and wintering grounds is important to conduct an adequate management. Counts of geese receive special attention in the Netherlands. The system used to count the geese not only provides an overall picture of the Netherlands, it also gives a good idea of developments in specific areas and in movements of geese. Movements of geese occur primarily between the breeding areas and the wintering grounds in spring and autumn. But the geese also move a lot in winter. Changes in weather conditions may cause large numbers of geese to move in the Netherlands and Europe. These movements occur partly during the day and partly during the night. An important category of movements are the flights between roosts and forage areas. To obtain more information about the movements of geese, the network of enumerators will have to be enlarged internationally. Perhaps technical tools, such as radar, may also supply much additional information.

## THE IMPORTANCE OF THE NETHERLANDS TO GESE

of Europe the Netherlands counts only a small area. However, in spite of its small size it is of great importance to goose management in Europe. In winter large numbers of geese stay in the Netherlands. The total number of geese stays in the Netherlands is about 1 million. The geese that in summer are found in the Netherlands breed in various areas in which conditions are generally favourable for them. Due to the fact that the winters are generally mild and snow usually melts within a week or so, and as a result the geese have almost always access to the grass they feed on. The landscape is flat and open, crossed by rivers and such in lakes. An ideal combination of forage areas and safe zones for geese.

In recent years the number of geese wintering in the Netherlands has strongly increased. Figure 1 shows the total increase and the increase per species. White-fronted geese is the species that winters in the largest numbers in the Netherlands. This species comes from the region between the Baltic peninsula and the Aral peninsula. Between half December and the end of February almost the entire population breeding in this region is in the Netherlands. The development of the number of white-fronted geese wintering in the Netherlands is shown in Figure 2. Their number has gradually increased. Another species, Bean geese, shows a different development (see Figure 3). The number of Bean geese wintering in the Netherlands varies widely per season. In hard winters the number of wintering Bean geese is large. In mild winters the majority of Bean geese remains in East Germany and Poland. The Netherlands is also important as a wintering ground for Pink-footed geese, Barnacle geese, Great geese and Greylag geese. The total population of Pink-footed geese that breeds at Spitsbergen, about 25,000 birds, winters in the Netherlands. The number of Barnacle geese wintering in the Netherlands amounts to about 100,000, which is almost the entire breeding population of the islands of Vaygach and Novaya Zemlya in the Barents Sea (see Figure 4). Of the Dark-bellied Brent geese breeding on the Taymyr peninsula (see Figure 5) about 30% assemble in the Dutch wadden area in spring. Greylag geese is the only species that naturally breeds in the Netherlands.

An important breeding area is the Oostvaardersplassen, a marshland area that recently developed in the new polders in the centre of the Netherlands. About 200 Greylag geese breed here. It is also important as a moulting ground for Greylag geese. The number of moulting geese may run to 50,000.

These data show that the Netherlands has great international responsibility for the management of migrating and wintering geese. That is why the Dutch government conducts a policy which aims to protect and maintain the populations of geese, with due regard for the interests of agriculture and shooting.

Since geese often forage on farmland, agricultural interests should be considered as well. As a result of goose grazing much damage is done to arable lands and pastures. Goose grazing damage is reimbursed in full by the Game Fund, which passes the reimbursements on to the Ministry of Agriculture, Nature Management and Fisheries. Figure 6 shows that the

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## 2 DUTCH GOVERNMENT

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reimbursements paid have strongly risen. Especially arable land damage peaks in hard winters because then arable crops are more prone to damage and there are more geese in the Netherlands.

## 2 DUTCH GOVERNMENT POLICY WITH REGARD TO GEESE

The increase in the number of geese and in the damage caused by geese has prompted the Minister of Agriculture, Nature Management and Fisheries to reconsider the national goose policy and to adjust it where necessary. This has resulted in a memorandum, which is soon to be presented to Parliament. The memorandum focuses on the protection of populations of geese and the damage problems.

The Memorandum on Geese [Ganzennota] fits in with the framework of the Nature Policy Plan, a first version of which was published in May 1989. The Nature Policy Plan describes the policy of the national government with regard to nature protection in the next decades. The policy for the first period of eight years (the so-called planning period) is described in detail. Part of the planning period policy is the development of plans for the protection of so-called priority species; the Memorandum on Geese is to be seen as one of these plans.

The Memorandum on Geese focuses particularly on the more vulnerable species, such as Brent goose, Barnacle goose and Pink-footed goose. The vulnerability of these species is connected with their highly varying breeding success (Brent goose and Barnacle goose) and the relatively small size of the population (Pink-footed goose). The latter reason also goes for the Bean goose subspecies *fabalis*. The policy aims at giving structural shelter to vulnerable species. This means that in some areas land will be acquired to create reserve areas and that management agreements will be concluded with farmers to tolerate geese and to adjust land management to the presence of geese. Especially in the coastal area efforts are to be made to make sufficient space available for Brent goose. Moreover, with regard to the wintering grounds of vulnerable species arrangements are to be made with the local hunters to refrain from shooting during the period when the geese are staying there. The most important goose areas are also offered physical planning protection. The main objective is to secure the quiet and openness in these areas.

The policy aims at receiving the geese wherever possible in natural areas and on less damage-prone land. Scaring geese away from damage-prone crops (for instance, plots sown with damage-prone arable crops, and in the late spring cultivated pastures) to less damage-prone land (for instance, pasture plots, green cover crop plots and natural areas).

There will be no changes in the present possibilities of shooting geese. This means that White-fronted geese, Bean geese and Greylag geese can be shot in the period from 1 September to 31 January inclusive between a half hour before sunrise and 10 a.m. The use of living decoy geese in shooting is prohibited. The present large-scale shooting proves to have no negative effect on the populations, because they are still increasing. In the 1988/1989 season a total of about 50,000 geese were shot in the Netherlands, almost 7,000 of them Greylag geese, about 5,000 Bean geese and about 38,000 White-fronted geese.

#### 4 MOVEMENTS OF

Important in the government policy is the encouragement of cooperation between farmers, hunters and conservationists in the regional management of geese. This cooperation should be reflected in the development of regional goose management plans. The national government will encourage such plans through subsidies to local farmers' organizations, hunters' organizations and other bodies and through the dissemination of information.

A few years ago a study was completed at the request of the Ministry of Nature Management. One of the recommendations was to take into account the fact that hunting will take geese and lag into account. Several experiments were made to be carried out on dairy farms as well as on arable farms. In 1981, a research will be carried out on the distribution of geese during the development of the goose areas in the Netherlands. The results of the research will be used to develop a management plan. The research will also focus on the possibility of receiving the geese on green meadows. The research will be of great importance for the development of the goose areas in the Netherlands.

The last but certainly not the least objective mentioned in the Memorandum on Geese is international cooperation. This cooperation is important, especially with regard to migrating species such as geese. At present attempts are made to realize an Agreement and Management Plan for the West Palearctic Waterfowl. The Dutch Ministry of Agriculture, Nature Management and Fisheries contributes considerably to the realization of this Agreement and Management Plan.

The availability of sufficient information about the distributions and movements of geese in breeding areas, migration areas and wintering grounds is important to conduct an adequate management. In the following the collection of information in the Netherlands will be described at some length.

#### 3 COUNTS OF GEESE

Characteristic of bird counts in the Netherlands is that the major part of the work is done by volunteers. Between 1978 and 1983 an army of 5,000 volunteers counted the birds in the Netherlands throughout the year and charted them on a map. The results are found in the Dutch Bird Atlas [Vogelatlas van Nederland]. For each species a map was included showing its distribution in the Netherlands in the various months.

Counts of geese receive special attention. During the winter-time the numbers of geese in all potential goose areas are counted by volunteers. The counts are coordinated by a working group on geese, composed of seven members each specialized in a certain species of geese. Each year the working group publishes a report on the developments in the populations of geese.

The system used to count the geese not only provides an overall picture of the Netherlands, it also gives a good idea of developments in specific areas and in movements of geese. This is where we have the link with air traffic: movements of geese may involve dangers for in particular low-flying aircraft.

Movements of wintering geese, winter, too, and food supply use a network includes areas outside the

In winter the distribution parallel to numbers of geese occur partly

An important forage areas example concerning the Netherlands hard winters Bijland lake and some small cultivated quarters and back and forth. At sunset the geese generally come to the water. In the area of a dike, explosive geese are found in the Lower Rhine. hundreds, no shortage of general cover forage areas

Another form in shooting has been proposed and Bean geese on 31 January to as from 1 February

#### 5 FUTURE OBSER

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#### 4 MOVEMENTS OF GEESSE

Movements of geese occur primarily between the breeding areas and the wintering grounds in spring and autumn. Meanwhile it has been found that in winter, too, they move a lot. Depending on, for example, weather conditions and food supply the geese fly now to one area and now to another. The geese use a network of suitable areas, between which they migrate. This network includes areas within the Netherlands, but also areas (sometimes far) outside the Netherlands. An example is given in Figure 7.

In winter the weather conditions have a considerable influence on distributions of geese. Generally the distribution area of the geese moves parallel to the snow-line. Changes in weather conditions may cause large numbers of geese to move in the Netherlands and Europe. These movements occur partly during the day and partly during the night.

An important category of movements are the flights between roosts and forage areas. These flight movements are illustrated by an example. The example concerns the Lower Rhine area on the border between Western Germany and the Netherlands. Originally, mainly Bean geese occur in this area, in hard winters several tens of thousands. The area has one big roost, the Bijland lake which developed as a result of an excavation (see Figure 8), and some smaller roosts. Furthermore there are vast forage areas, mainly on cultivated land. In the morning the geese fly from their roosts in all quarters and spread over a large area to forage. Later in the day they fly back and forth between their roosts and forage areas to drink and to bathe. At sunset the geese fly to the roosts to spend the night there. They generally cover distances between 1 and 7.5 km. In recent years, however, Bean geese are frequently spotted flying from the Bijland lake to a forage area at a distance of about 50 kilometres. Possibly this is due to an explosive growth of the number of White-fronted geese wintering in the Lower Rhine area. In the first part of the 1970s there were several hundreds, now more than 60,000 of them. This development may have led to a shortage of food, because of which the Bean geese (it is known that they in general cover larger distances than White-fronted geese) move to farther forage areas.

Another form of movements in the Lower Rhine area is related to differences in shooting regimes. In the German province Nordrhein-Westfalen shooting has been prohibited, whereas in the Dutch border area White-fronted geese and Bean geese can be shot up to 31 January inclusive. As a result, up to 31 January the geese are mainly foraging in the German part of the area and as from 1 February they come in large numbers to the Netherlands.

#### 5 FUTURE OBSERVATIONS

There is insufficient insight into the movements on a larger scale. It is not impossible that the White-fronted geese and Bean geese from the Lower Rhine area visit areas in, for example, Hungary at certain periods in the year. It is also possible that the increase in the number of White-fronted geese in the Netherlands is related to the decrease in the number of White-fronted geese on the Hungarian pusztas. If we want to have more information, the network of enumerators will have to be enlarged internationally. Perhaps technical tools, such as radar, may also supply

and individual information. Moreover, by radar nocturnal flights can be detected, which may supply information useful to both the management of parks and the safety of air traffic crossing a flight of geese.

FIGURE 1. Annual  
(x 10<sup>3</sup>)

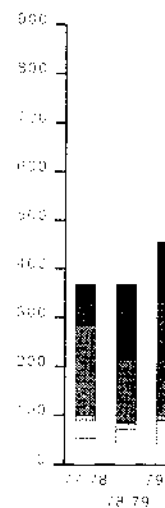


FIGURE 1. Annual peak counts of geese in the Netherlands  
(x 1000; the figures for 88/89 are provisional).

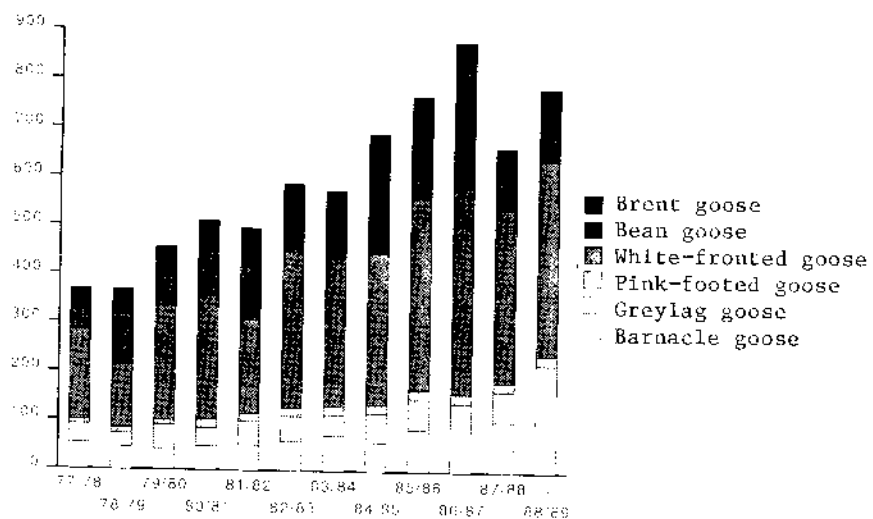


FIGURE 3. Annual peak counts of White-fronted geese in the Netherlands (x 1000; the figures for 88/89 are provisional).

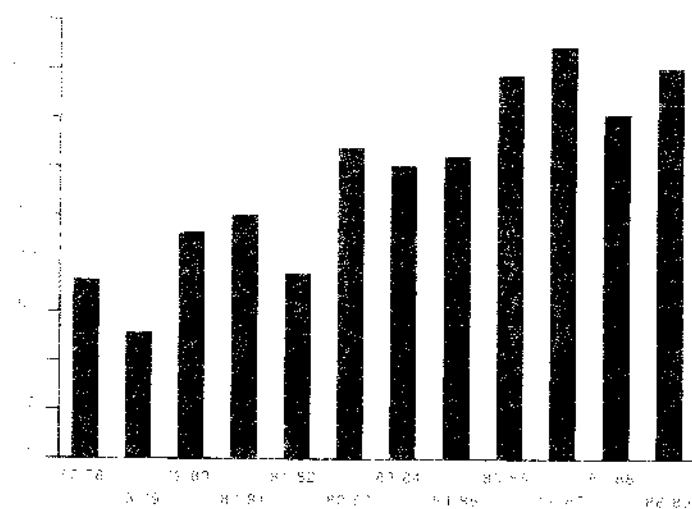


FIGURE 3. Annual peak counts of White-fronted geese in the Netherlands (x 1000; the figures for 88/89 are provisional).

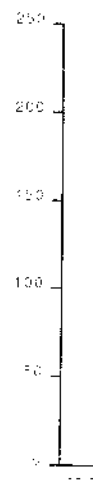
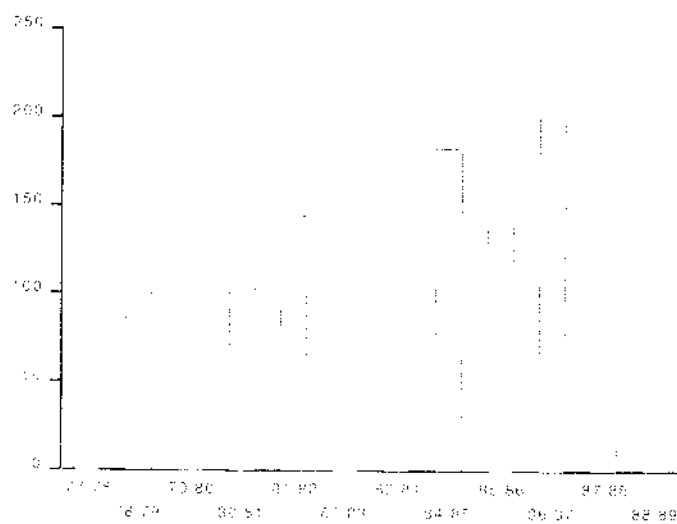


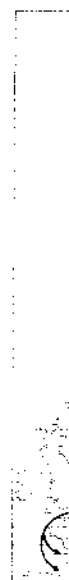


FIGURE 3. Annual peak counts of Bean geese in the Netherlands  
(x 1000; the figures for 88/89 are provisional).



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FIGURE 5. Breeding areas, migration route and wintering grounds of Brent geese, migrating and wintering in the Netherlands (after Wetlands en watervogels, 1989).

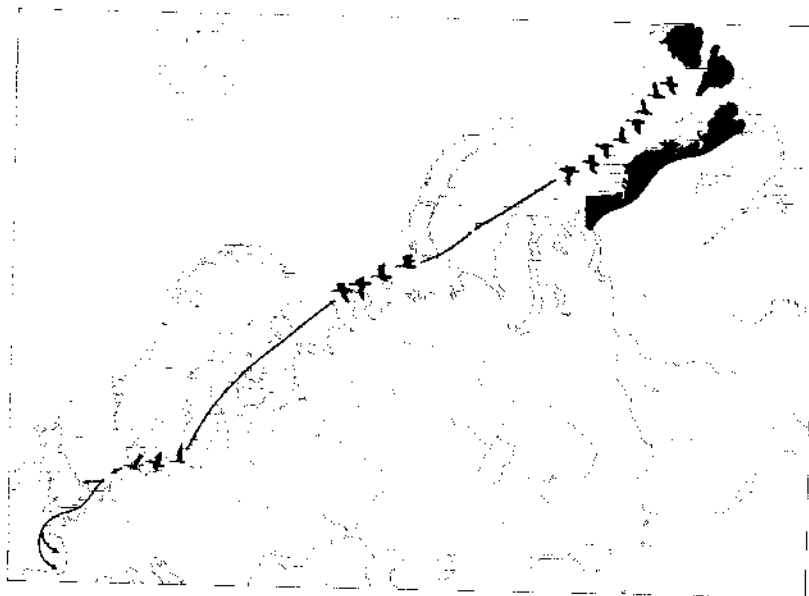


FIGURE 7. Amounts paid by the Game Fund to compensate game damage (in \$F100).

FIGURE 7.

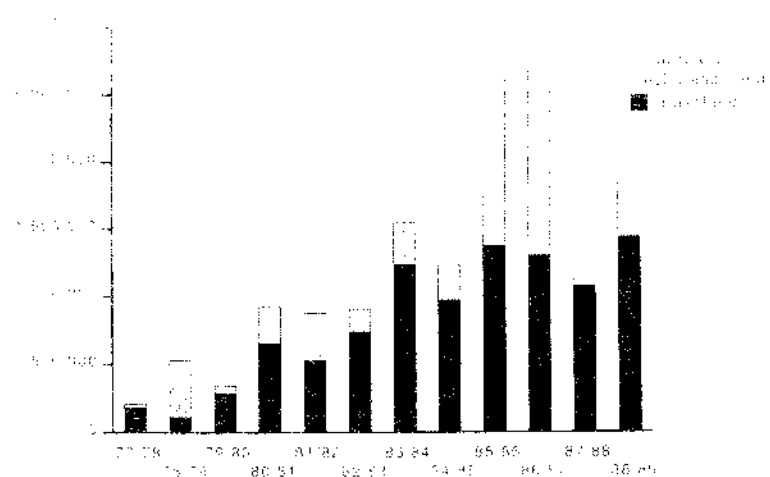
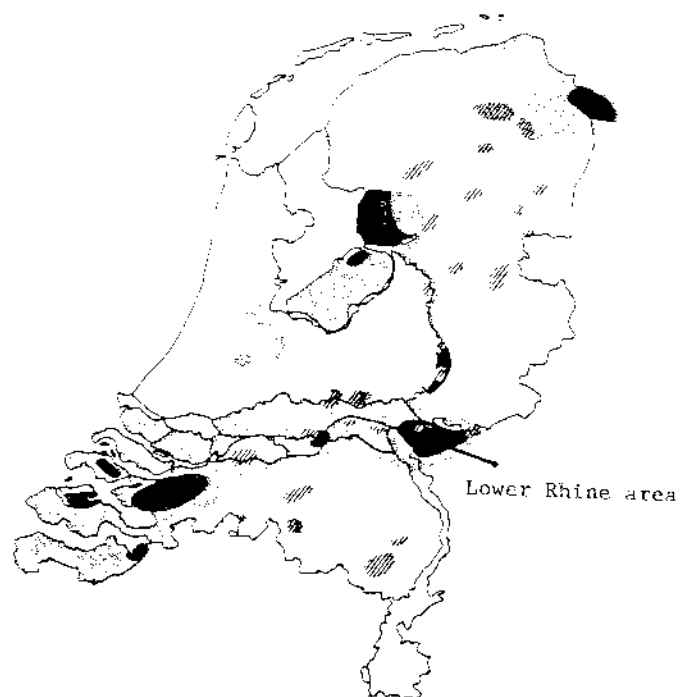


FIGURE 7. Staging areas of Bean geese in the Netherlands. Main concentrations areas are given in black (after De Levende Natuur, 1987/5).



10042 v. Staging areas on geese in the Lower Rhine area. Very important  
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