WILDLIFE AND COUNTRYSIDE ACT 1981: THE MONITORING OF BRENT GOOSE LICENCES

ANNUAL REVIEW OF 2001-2002 SEASON

A REPORT TO THE WILDLIFE MANAGEMENT BRANCH
OF THE DEFRA EUROPEAN WILDLIFE DIVISION

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Summary

Each year the Wildlife Management Team monitors licences issued to shoot Brent geese as an aid to scaring, for the prevention of serious damage to agricultural crops.

Monitoring involves a site visit to all licensees who have sustained damage from Brent geese on their land. This report includes an assessment of the number of geese, the damage incurred, scaring undertaken and other mitigating factors.

Brent geese arrive in Britain from Siberia from late September onwards, leaving again around March. In England the counties most susceptible to Brent visits are on the south and east coast, with approximately half the licence holders living in Essex.

During the 2001/2 season 96 licences were issued by Defra to shoot Brent geese in order to re-enforce scaring for the purpose of preventing serious damage to crops. One licence was refused and one licensee had a second licence issued. Sixteen (17%) of licensees were not visited by Brent geese and the remaining 80 (83%) of licensees received varying numbers of geese over varying time periods. Licensees whose crops were reported damaged accounted for 53% of the licences issued. 677 Brent geese were shot under licence.

Damage to crops by the geese was very variable in 2001/2 and dependant on a number of factors including location and type of crop, weather conditions and the speed and efficiency with which the licensee was able to scare them. Overall licensee's considered the most effective scaring strategies were to shoot to kill a proportion of the birds, shooting to scare and the use of pyrotechnics. There is generally a very strong feeling amongst licensees that shooting to kill is a vital element of the scaring regime.

1.0 Introduction

1.1 The Brent goose, specifically the dark-bellied Brent goose (*Branta bernicla bernicla L.*), is a small, native species of goose over-wintering in coastal areas of Britain, most notably in the south and east of England. The natural diet of the Brent goose is the inter-tidal vegetation, particularly *Zostera sp.* found on mud-flats and adjacent saltmarshes. However, since the early 1970's increasingly large numbers of Brent geese have been feeding on winter crops, including grassland, on coastal farmland.

1.2 In 1998, over 120,000 Brent geese, approximately one third of the world population, over-wintered in Britain (Hearn, 1998). The number of geese over-wintering in Britain has fluctuated over the years although more recently it has appeared comparatively stable (Hearn, 1998). Yearly fluctuations, affected by the number of young birds present, are representative of each year's breeding success.

1.3 Brent geese have been protected in Britain since 1954 and are currently afforded legal protection at all times under the Wildlife and Countryside Act 1981. The Act allows for the issue of licences by Defra to take or kill Brent geese to prevent serious damage to crops. As a policy these licences are issued as an adjunct to scaring. The current licensing arrangement operated within the Rural Development Service (RDS) of Defra allows those farmers who had licences during the previous season to be issued with a licence after an application has been submitted. They are then visited during the licence period. Some licensees have held licences for many years.

1.4 Pre-licensing visits by a member of the RDS Wildlife Management Team are undertaken on first-time applications, but for those who have held a licence in the previous year a monitoring visit is made during the licence period to ensure compliance with the licence conditions. Licences state the maximum number of geese that may be shot, to reinforce scaring, within the duration of the licence period. Licences can be renewed if the numbers of birds allowed on the original licence have been taken and damage is still occurring. Almost all licences expire on 31st March of each year. It is a condition of the licence that a report of the number of geese shot during the licence period is returned to Defra at the end of the licence period.

1.5 Monitoring visit reports and the licence returns have been collated to form the basis of this report. The licence compliance visit comprises three parts:

a) information gathering – to ascertain the level of Brent goose damage, any regional patterns in damage/goose behaviour and mitigation measures undertaken by the licensees

b) advice on management of damage – the Wildlife Adviser may provide advice on damage mitigation and scaring methods

c) licence compliance – to ensure the licensee is acting in accordance with the terms of the licence.

2.0 Results

2.1 Licences issued

2.1.1 A total of 96 licences were issued during the 2001/2002 season to landowners in the following counties:

Essex	43
Suffolk	5
Norfolk	14
Lincolnshire	12
Sussex	11
Kent	4
Isle of Wight	1
Hampshire	6

2.1.2 The licences permited a maximum of 2202 Brent geese to be shot. This represents a reduction of 235 compared to the 2000/1 season. The number of geese actually shot, as recorded on the licence returns, totalled 677, more than in the previous year when the number shot was 641. Forty-three licensees shot no Brent geese during the licensing period of which 16 had no geese on their farms at all. One licence application was refused and one licensee required a second licence to be issued as the geese were still present and damaging crops beyond March 31st, the expiry date of the first licence.

2.1.3 With the exception of four licensees, all received a monitoring visit by a RDS Wildlife Adviser and all licensees have completed their licence returns. It was not possible to arrange monitoring visits during the licence period with four licensees. As it was not cost effective to visit these licensees after the licence period had expired, telephone monitoring was undertaken instead. The location of each of the licensed sites is shown in Figure 1.

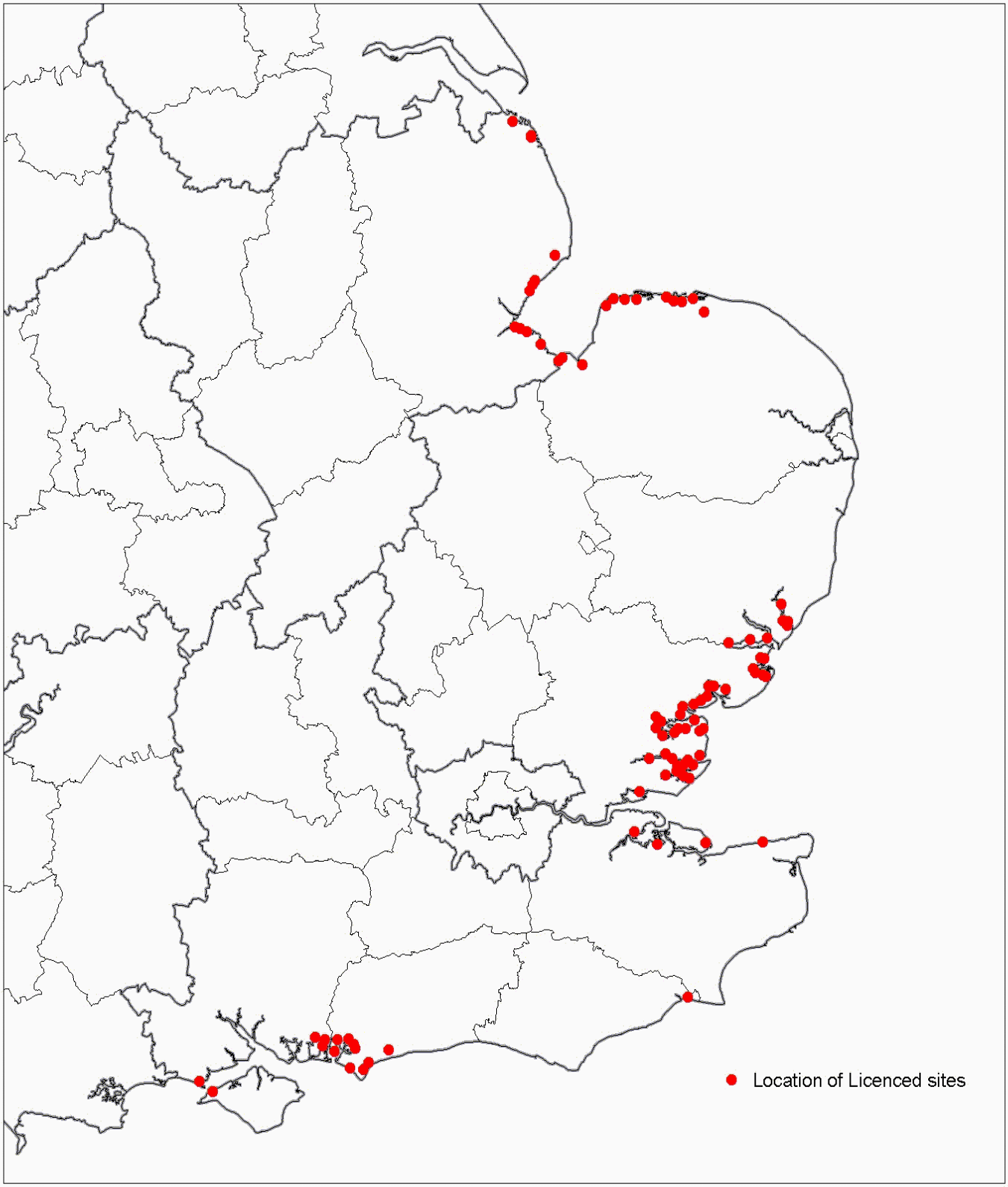
2.1.4 Brent goose numbers are recorded as part of the annual Wetland Bird Survey (WeBS). Preliminary figures for 2000/1 show that numbers of Brent geese peaked in January at 91,400 (pers. comm. P Cranwick, Slimbridge, 2002). Build-up in numbers was comparatively slow and could be weather related. Productivity for 2000/1 has been published at around 1% compared with provisional results for 2001/2 which suggest 8% (pers. comm. P Cranwick, Slimbridge, 2002). Currently, no figures are available for total population counts for 2001/2.

2.1.5 It is believed that the number of Brent geese visiting England has fallen since 1998, but has since stabilised at less than 100,000 and this is reflected in the numbers seen on farmland. Last season's (2000/1) reduction in farmland Brent goose numbers was primarily attributed to the very wet autumn and winter that prevented crops from either being drilled or resulted in crops failing. This season (2001/2) has not been as wet but numbers still appear low.

2.1.6 As usual there was considerable variation in the date geese arrived on particular farms. Brent geese were first seen on farmland as early as the end of September although most arrived during November and December. Some farms did not see Brent geese on the crops until February. Only one farm, in Norfolk, required a second licence because of persistent crop damage caused by Brent geese in April.

2.1.7 The date when Brent geese first visit a particular area of farmland depends on a variety of factors including the date of arrival in England, food availability on the inter-tidal area, weather conditions and the level of disturbance on both saltmarsh and farmland. In Norfolk and Essex the geese arrived in September. By October/November they had arrived in all the counties licenced and Brent geese continued to arrive in some of these counties during December to early February. Figure 2 gives the monthly distribution of dates of arrival of Brent geese on farms as reported by licensees.

Figure 1. Distribution of Licencees during 2001 - 2002 season



DEFRA Licence No: GD272361

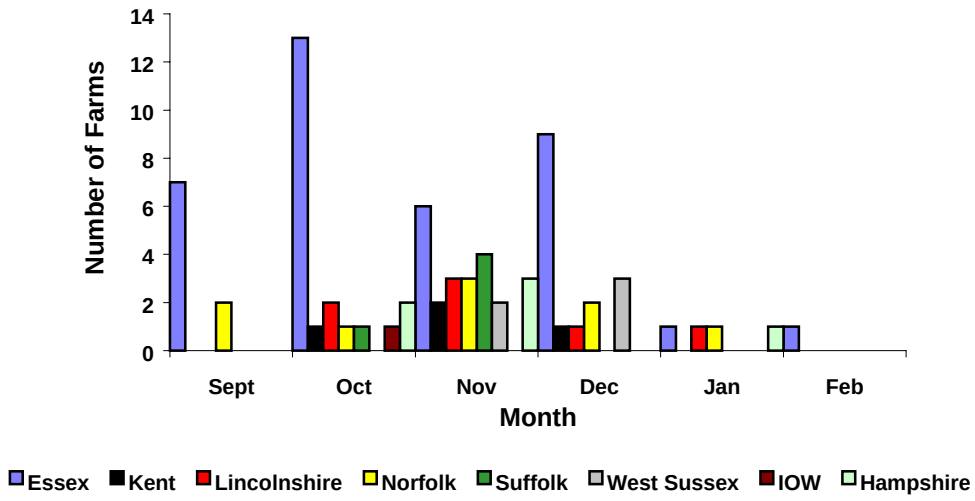


Figure 2 Month of Brent Goose Arrival on Farmland

2.2 Crop damage

2.2.1 Brent geese are coastal birds, roosting at sea and rarely venturing more than 1-km inland to feed. Agricultural crops at greatest risk from Brent goose grazing are usually those closest to an estuary or the sea. Licensees, whose crops were reported damaged accounted for 52% of the licences issued, the remainder reported no damage. The majority of the damaged crops were immediately adjacent, or very close, to the sea.

2.2.2 Winter wheat was the most frequently damaged crop. However, the level of damage probably reflects the frequency with which this crop is grown rather than Brent goose preference for this cereal. Other crops damaged by Brent geese included oil seed rape, winter barley and grass.

2.2.3 The majority of licensee's stress that it is not the crop that attracts the geese as much as field location. Therefore, if a farm operates a rotational cropping pattern and grows a crop less attractive to Brent geese, such as sugar beet in a prime goose location, while the more sensitive crops are located inland, or in fields with poor flight paths, they can expect a reduction in goose visits during that season and consequently less crop damage.

2.2.4 Grazing is the type of damage most frequently reported by licensees. Paddling, the damage caused by geese trampling wet ground giving rise to muddy areas where crops can fail, may occur with grazing under certain ground conditions. Paddling was less serious during the 2001/2 season than in the previous year as the winter was drier. Two of the licensee's reported fouling with faeces as their only damage. The

types of damage incurred are represented graphically in Figure 3. Licensees were also asked about other non-Brent goose damage, including that caused by slugs, rabbits and flooding.

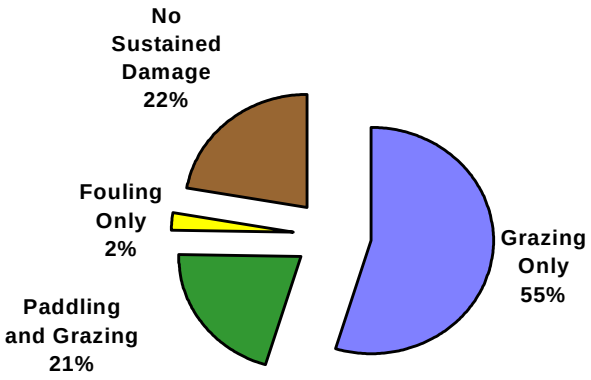


Figure 3 Crop Damage by Type as Perceived by the Licensees

2.2.5 The extent of perceived grazing damage ranged from none to over 100 hectares (Figure 4). Less than 50 hectares damage was most common and this tended to represent up to 20% of the licensee's susceptible crop (Figure 5), however, the majority of licensee's reported between 1 and 10 hectares of damage.

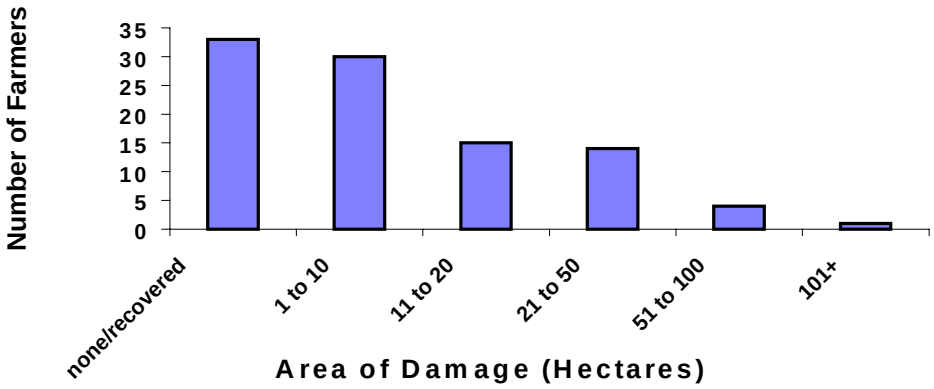


Figure 4 Perceived Damage to Crops

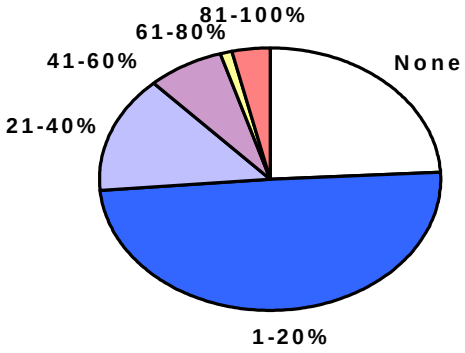


Figure 5 Percentage of Farmers with Damage to Susceptable Crops

2.2.6 Although Brent geese can graze over large areas of crops during the winter months this does not necessarily equate to loss of yield at harvest. Financial losses estimated by the licensees, at 2001's prices, were between £0 and over £4000. However, these figures do not always take into account the costs associated with the addition of extra fertiliser applied to the grazed areas or problems associated with harvesting crops that ripen unevenly. Nor do these losses include the costs associated with scaring. Licensees anticipated yield lost is shown in Figure 6.

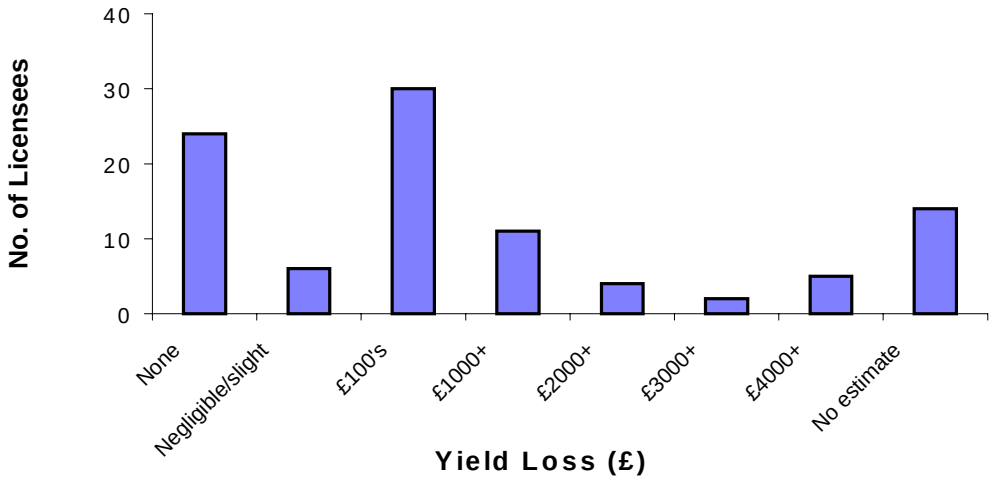


Figure 6 Licensee's Anticipated Yield Loss

2.2.7 Licensees were asked to estimate, on a scale of 1-10, the seriousness of the Brent goose damage this season and to compare it with last season, 2000/1. A score of 0 represents no damage whereas 10 represents a severe damage problem.

2.2.8 Over the last 5 seasons the average value for the licensee's perceived damage caused by Brent geese has remained remarkably similar, the figures are given below.

1997/8	3.1	
1998/9	2.5	
1999/2000	3.5	(n=115)
2000/1	3.7	(n=86)
2001/2	3.3	(n=96)

2.2.9 When licensees were asked whether they considered the damage worse or better than last season most said it was worse. A number of farmers had been unable to drill arable crops during the 2000/1 season due to the weather and without a crop no damage was sustained. However, the figures above reflect the opposite, showing last season slightly worse than the current season. This probably reflects the subjectivity of the data and the larger sample size than in the previous year.

2.2.10 The majority of licensees commented on the low numbers of Brent geese that they have seen on their crops in recent years, although there are still some farms that are constantly susceptible to high numbers of geese. Generally, the damage seen by Wildlife Advisers was low and most crops would be expected to recover to a large extent. However, there is difficulty in assessing accurately, early in the season, the extent of permanent damage to crops grazed by Brent geese. Often the crop can be encouraged to grow away again with the addition of more fertiliser, however, this does not necessarily result in undamaged ear formation and it is often not until harvest that a more accurate assessment of yield loss can be made.

2.3 Scaring methods

2.3.1 Licensees use a range of techniques to scare Brent geese. The techniques include: pyrotechnics (rockets and rope bangers), gas and electronic bird scarers; shooting to scare; human disturbance with/without dogs; chasing with tractor and/or ATV and flags, kites or scarecrows. A number of licensees use gas bird scarers (bangers) because they have them already for scaring other species, such as woodpigeons. However, the geese quickly become habituated to this method of scaring, especially if the banger is left in one location for more than afew days. Rope bangers appear similar in their level of effectiveness.

2.3.2 Using the information provided by licensees it appears that the most effective scaring methods were ones with a greater element of surprise or randomness, for example pyrotechnics, electronic scarers with random timing devices, and random driving at the geese with an ATV. Initially, shooting over the heads of the geese with a shotgun can be effective but the geese soon associate a person with the scaring and move sufficiently far away to be out of range while still able to graze the crop. Some licensees, where the topography of the farmland resulted in their considering it safe, used high velocity rifles to scare the geese. These have the scaring advantage of increased range over shotguns, but with inherently greater health and safety risk.

2.3.3 Where manpower was available to concentrate scaring at the time when the geese first arrived this proved most effective. It prevented geese developing a routine and where they were scared off a property shortly after arrival they sometimes did not return during the season.

2.3.4 Not unexpectedly, all licensees stated the need to shoot to kill to reinforce scaring and this was often given a maximum value of 10 in the effectiveness rating. Other scaring mechanisms with scores between 6-9 included chasing the geese with ATV's and pyrotechnics such as rockets. Shooting to scare, using a shot gun, lost its effectiveness with time and did not move the geese very far – just out of range of the shot gun.

2.3.5 Human disturbance varied in its effectiveness, with scores from 7 to 4, probably depending on the frequency of the disturbance and whether dogs were present or not and the enthusiasm of the dog to chase the geese. Dogs as a scaring method were generally given a score of 4 or less.

2.3.6 Least effective of the scaring mechanisms, generally with scores of less than five were gas bangers, rope bangers and kites. The geese soon became habituated the first two, due to the regular patterns of explosions and the kites were dependent on wind and lack of vandalism.

2.3.7 The intensity of scaring needed to move the geese off fields tended to vary with the location of the farm, the availability of other food sources in the area and therefore its attractiveness to Brent geese. Where large flocks of geese occurred they were often more insensitive to scaring, rarely moving far in response to scaring methods and returning shortly after scaring ceased. In other instances, where mechanical methods of scaring were used, such as gas bangers, the geese quickly become habituated to the scaring device and ceased to take much notice of it. Some licensee's reported geese so habituated to gas bangers that they grazed to within a few meters of them.

2.3.8 Licensees with the most effective scaring regime tended to be those that undertook one or a combination of the following:

- put considerable effort into scaring when the birds first arrived;
- varied the location of their scaring devices, or
- scared only when numbers of Brent geese became intolerable and then had the resources to scare intensively until the geese moved on.

2.3.9 In one area of Norfolk a group of licensee's co-ordinated their scaring by employing a member of staff between them to keep the geese of their land. This proved effective but resulted in increased numbers of geese on their neighbour's land.

2.3.10 Other commonly used methods of scaring included the use of dogs to chase the geese and the use of kites, however the latter is only effective when there is sufficient wind. One enterprising farmer attached kites to large multi-coloured drums that were moved about by the kite while it was airborne, and the combination of kite and moving obstacle on the ground kept the geese off the crops.

2.3.11 The costs of scaring are illustrated in Figure 7. For the majority of licensees costs were considered to be £100's. However, those with large susceptible areas of crops had greater costs, especially if there was a need to employ a member of staff specifically for scaring, or relied on using large quantities of shotgun cartridges in shooting to scare.

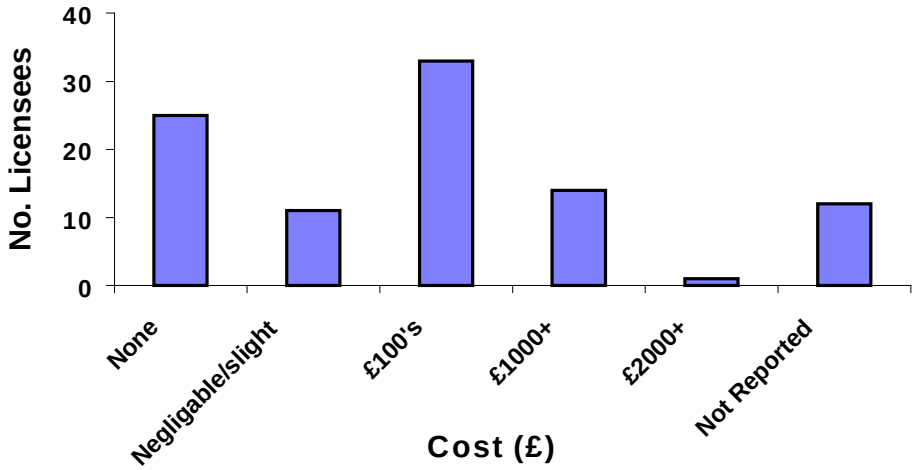


Figure 7 Financial Costs of Scaring

2.4 ESA Initiative

2.4.1 Under the Essex Coast Environmentally Sensitive Area Initiative farmers are offered a Wildfowl Pasture Supplement. This requires farmers to provide safe, undisturbed grazing for a range of species that prefer particular conditions. To qualify for the supplement a short lush sward must be produced and maintained to attract Brent geese as well as other birds. A payment of £50 per hectare is then made to the farmer; currently some 350 hectares is in this agreement (pers. comm. A Bullivant, 2002). Some licence holders in Essex complained that these areas attracted geese but when the grass was exhausted the geese then moved on to adjacent cropped areas of land. Others stated that they felt that the areas receiving this supplement were not managed sufficiently to maintain the geese and therefore were not as effective as they might be in retaining and harbouring geese.

3.0 Discussion

3.1 The numbers of licences issued to kill Brent geese to reinforce scaring has declined slightly over the last three years (115 in 1999/2000 compared with 96 in 2001/2). However, the reduction in numbers of licences has not been reflected in the numbers of Brent geese shot which showed a minor increased from 641 in 2000/2001 to 677 in 2001/2002. The increase in birds shot is due to an increase in vulnerable crops compared with last year when poor weather prevented some cereals being sown.

3.2 The majority of licensees tolerate some geese on their land and only use their licence as a last resort, shooting to kill when levels of damage are perceived to result in a potential loss of yield. Some licensee's expressed concern that they may loose their licences because they have not had the need to use them in the last two years or so due to the lack of geese. They regard the licence as a safety net in the event that there is a sudden influx of Brent geese on their land and the damage that could be incurred in the time taken to receive a licence could be considerable.

3.3 The most effective scaring methods appear to be those that concentrate effort on arrival of the geese, preventing them from establishing a routine. In addition scaring that involved mechanisms or methods that were not routine, and therefore not predictable, had less chance of losing effectiveness due to habituation to the technique by the geese.

3.4 Most licensees appreciate that it is field location rather than the type of crop grown that influences susceptibility to goose grazing. However, growing crops less favoured by geese in these vulnerable fields can help reduce damage and RDS Advisers recommend this, or crop rotation, as a method of damage limitation.

3.5 The presence and extent of agricultural damage caused by Brent geese overwintering in England remains similar to previous years. The current licensing system, including monitoring of licensees, is still necessary to ensure the licensing system works effectively.

Bibliography

Bullivant, A. (editor) (2002) *Essex coast - environmentally sensitive newsletter*. Defra.

Cantwell, P.J. (2001) *Brent geese licence monitoring 2000/1.* Defra Report

Cantwell, P.J. (2000) *Brent geese licence monitoring 1999/2000.* FRCA Report to MAFF

Cantwell, P.J. (1999) *Brent geese licence monitoring 1998/9.* FRCA Report to MAFF

Cranswick, P. (2002) The Wildfowl and Wetlands Trust pers.comm.

Hearn, R. D. (1998) *An assessment of breeding successin the dark-bellied Brent goose, Branta b. berniclain the UK 1997.* Wildfowl and Wetlands Trust Paper.

Johnson, I. (1998) *Brent geese and agriculture – monitoring of licences 1997/1998.* FRCA Report to MAFF.

RSPB et al. (1996) *Birds of conservation concern in the United Kingdom, Channel Islands, and the Isle of Man.* RSPB, Bedfordshire.