Goose Management Scrutiny Review

Review Objective 2 - To Examine Best Practice Nationally & Elsewhere

It is recognised that geese can and do cause major damage to amenity grasslands, pastures and crops through grazing and trampling. Droppings can be a health and safety risk to humans, both through ingestion but also causing slippery conditions. Ecological impact includes damage to other wildlife (such as trampling other bird nests) and destruction of waterside habitat, for example reed beds. The birds also pose an airplane collision risk in many parts of the world. In recognising the issues associated with geese, a number of recognised organisations/bodies have produced best practice guides.

In support of review objective (ii) an information pack has been assembled containing those best practice guides, together with examples of good practice in the UK, and information on arrangements within the EU.

Information Pack

Item 1 - English Heritage Landscape Advice Note on Canada Geese

Item 2 - Natural England Technical Information Note TIN009: The management of problems caused by Canada geese: a guide to best practice

Item 3 - Rural Development Service Technical Advice Note 51: The management of problems caused by Canada geese: a guide to best practice

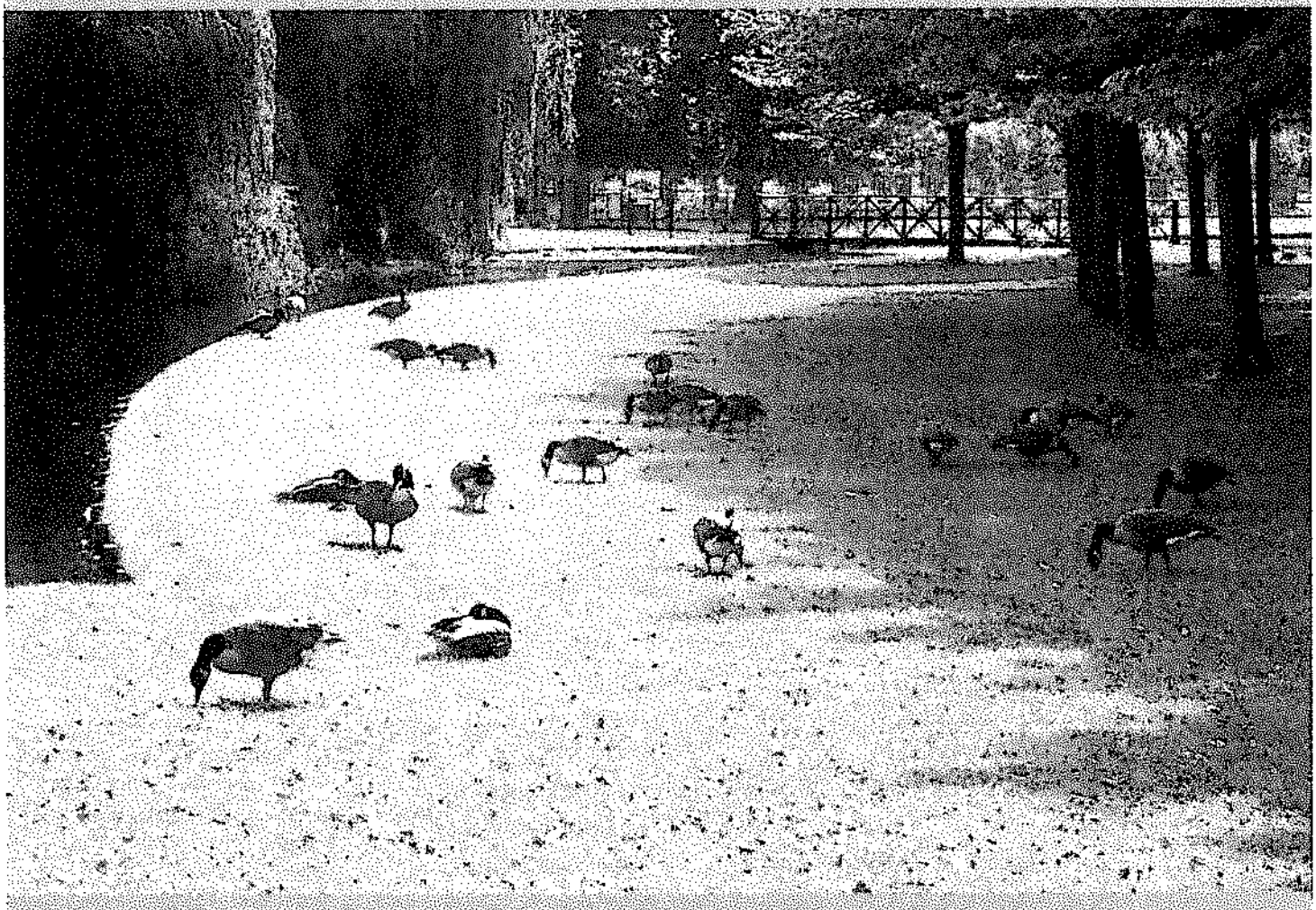
Item 4 - The Management of Problems caused by Canada Geese - A Guide to Best Practice: Produced by Dr John Allan, (Central Science Laboratory) - funded by the Dept of Environment Transport & the Regions (DETR)

Item 5 - Examples of Good Practice from South West London, the Lake District and Scotland

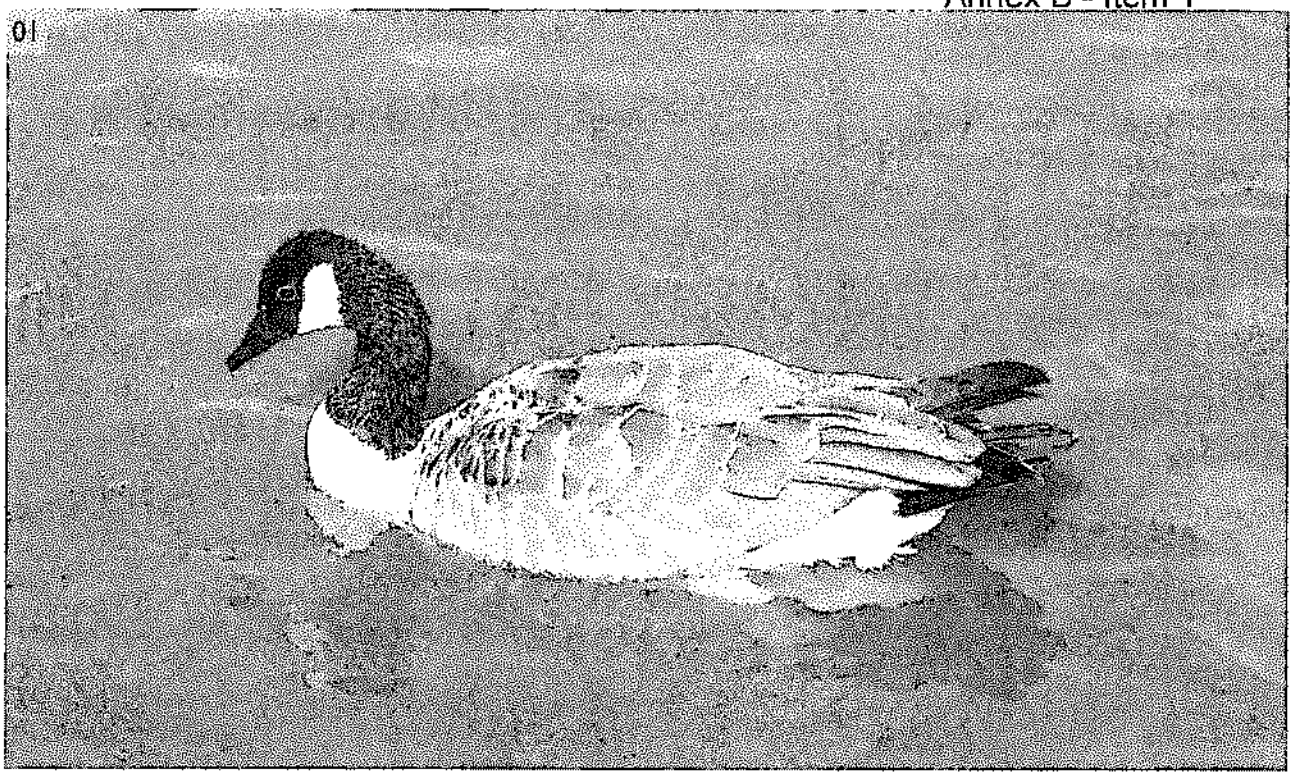
Item 6 - Information on the Arrangements for Goose Management from countries within the EU, Scandinavia, Iceland & Greenland

ENGLISH HERITAGE

Landscape Advice Note: Canada Geese



www.english-heritage.org.uk/professional/advice/advice-by-topic/parks-and-gardens/



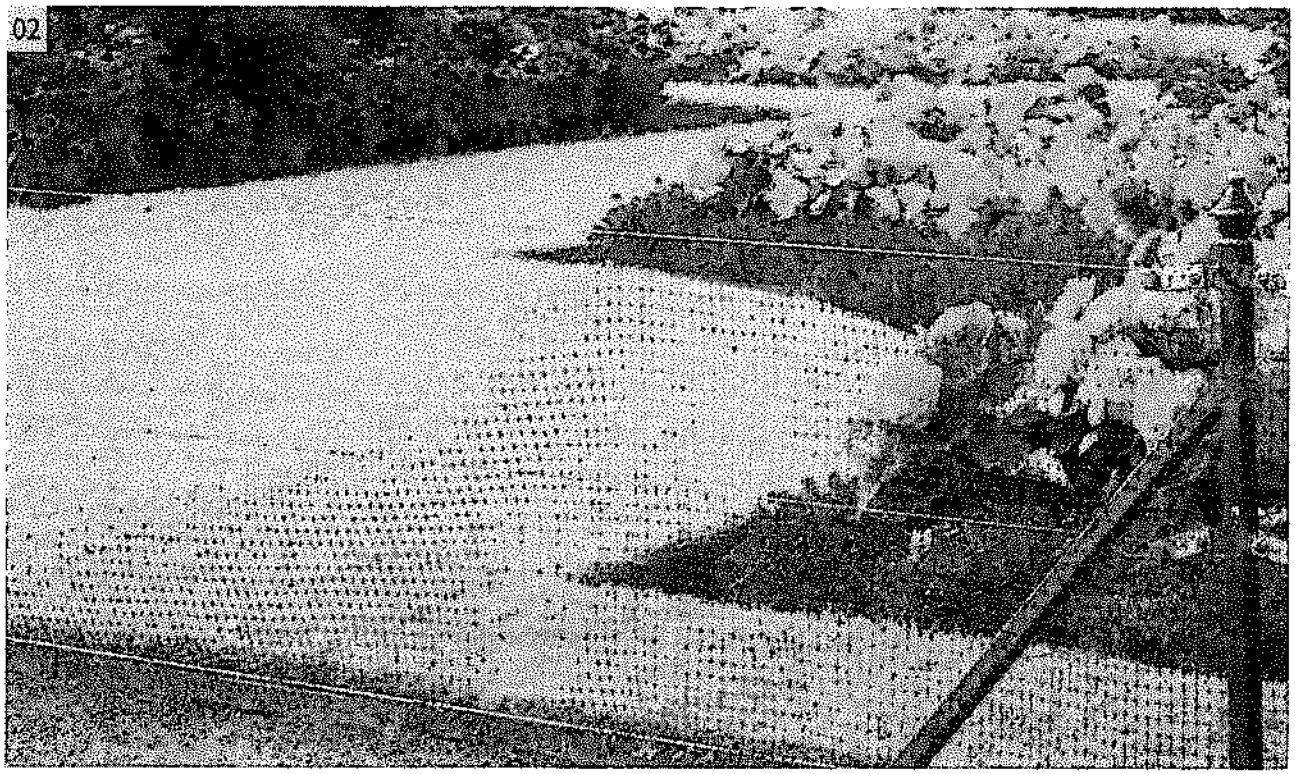


IMAGE 1 COVER
In large numbers, Canada geese can damage vegetation in and out of the water and create a large amount of mess © Alan Cathersides

IMAGE 01
A Canada goose on water © Alan Cathersides

IMAGE 02
Important vegetation may require specific protection from being eaten or trampled by Canada geese © Alan Cathersides

in place but preventing them from hatching means adults continues to protect them. Removal of eggs simply induces the female to lay more.

- Culling

Culling also requires a licence if it is to be done during the close season (1 February to 31 August, or 21 February to 31 August below high water mark). Outside the close season Canada geese can be shot by an authorised person, provided that other regulations concerning firearms safety, capture methods and so forth are adhered to. However this has practical difficulties on many sites. It may be more practical to round up geese during the moult, when they are unable to fly, however culling of geese is a very emotive issue.

LICENSING OF CONTROL OPERATIONS

All wild birds, including Canada geese, are protected under Section 1 of the Wildlife & Countryside Act, 1981. It is an offence to take, damage or destroy their nests or eggs without a licence, and it is also an offence to release them into the wild.

Licences for culling in the close season, egg-pricking or translocation of Canada geese can be issued for a number of reasons:

- To prevent serious damage or disease
- To conserve and protect wild birds
- To conserve flora and fauna
- To preserve public health or safety
- To prevent serious damage to livestock, crops, forestry or fisheries
- For the purposes of air safety

Licences are not issued solely to prevent damage to property.

OTHER BENEFITS OF CONTROL MEASURES

Parks in south-west London developed an integrated management strategy, involving both site-based and population-based control of geese as well as a range of other management techniques, to control populations and it resulted in a number of beneficial side-effects.

The measures taken to reduce numbers of geese were very effective and other waterfowl benefitted greatly from the changes. More species began to regularly use the ponds, and many species also increased in numbers. This is probably partly because the goose population before control measures began had been extremely high.

The reduction in geese numbers also assisted with attempts to improve water quality, mainly through a reduction of nitrate and phosphorus deposited as droppings in the ponds and lakes. The water bodies now support more invertebrate species and are better able to support aquatic plants, and this will gradually further improve the water quality and dissolved oxygen levels.

FURTHER INFORMATION

Andrews, J and Rebane, M 1994 *Farming & Wildlife: A Practical Management Handbook.* RSPB

British Association for Shooting and Conservation, 2011 *Canada Geese: A Guide to Legal Control Methods.* British Association for Shooting and Conservation www.naturalengland.org.uk/Images/canadageese_tcm6-4547.pdf

Natural England, 2011 *Control of Canada geese: round-up and cull during the moult (flightless period),* 3 edn. Natural England publications.naturalengland.org.uk/publication/30011?category=41001

Natural England, 2011 *The Management of Problems Caused by Canada Geese: A Guide to Best Practice,* 4 edn. Natural England publications.naturalengland.org.uk/publication/15010?category=41001

Natural England, 2011 *Use of liquid parafin BP to prevent eggs of certain birds from hatching,* 2 edn. Natural England publications.naturalengland.org.uk/publication/19009?category=41001

Underhill, M 1997 *London Lakes Rehabilitation Project Overview: Phase 3 - Waterfowl Monitoring and Management.* Wandsworth Borough Council

Wilkinson, M et al. 1998 *London Lakes Project: an overview of works and results of the project.* Wandsworth Borough Council

Natural England Technical Information Note TIN009

The management of problems caused by Canada geese: a guide to best practice

The Canada goose population in southern Britain numbers over 80,000 birds and is still increasing. However, in recent years the overall rate of growth has slowed and in some areas numbers have stabilised or declined. The geese live in local populations, usually of up to a few hundred birds, which remain around one or two water bodies that offer suitable habitats for breeding, roosting etc. Because the geese have relatively few predators, and can produce four or five young per year, numbers at particular sites can grow very rapidly and significant problems may occur.

Any management techniques used to control the problems caused by Canada geese must be legal and should take account of the fact that Canada geese are a popular species with many members of the public.

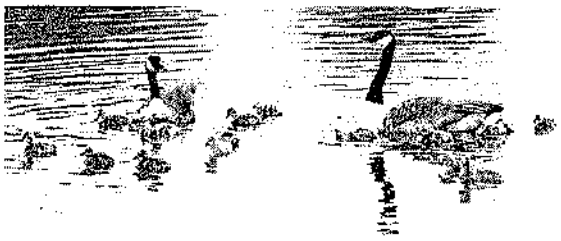
This guidance note aims to provide land managers with the information that they need to manage difficulties caused by Canada geese in a way that is effective, legal and sensitive to public opinion.

The protected status of wild Canada geese

The Canada goose, like all wild birds in Britain, is protected under the EC Wild Birds Directive implemented in Great Britain through the Wildlife and Countryside Act 1981 as amended1. This Act makes it an offence to capture, kill or injure Canada geese, or to damage or take their nests or eggs. There are exceptions, the most important of which relate to the open season and to actions licensed under Section 16 of the Act.

Open season

Canada geese can be legally shot by authorised persons (that is, persons acting with the authority of the landowners, occupiers and the owners of the shooting rights to the land involved) or trapped by approved methods during the open season (between 1 September and 31 January, or 20 February inclusive on the foreshore) except on Sundays. Care must be taken to ensure that other regulations concerning firearms safety, capture methods etc are adhered to.



Licensed action

Defra issues a series of general licences under section 16 of the Wildlife and Countryside Act 1981. These allow Canada geese to be killed or taken, and their eggs and nests to be taken, damaged or destroyed for the following purposes (the reference number of the relevant licence is given in brackets):

- preserving public health or safety (GL07);
- preserving air safety (GL06);
- conserving flora and fauna (GL08); and

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ENGLAND

Canada geese tend to moult on larger sites with easy access between open water and suitable feeding areas of short grass.

Dispersal
The geese normally remain close to the site where they hatched, and once young birds mature they may wait several years for a breeding territory to become available.

Large flocks of non-breeding adults may thus build up at certain sites.

Some Canada geese remain faithful to their home area for life, even if apparently suitable water bodies with no Canada geese present are available nearby. Others may be resident at many sites, with certain sites used just for breeding, moulting or wintering.

Small numbers abandon their home area either to join other groups or to establish new colonies.

Wintering
Unlike their North American ancestors, Canada geese in Britain are mostly non-migratory, moving only short distances between breeding and wintering sites within their local area.

Birds may fly out from the water bodies where they roost to regular winter feeding sites such as waterside grazing pasture, amenity grassland, etc. They may also move around their home range taking advantage of feeding opportunities such as sprouting winter cereals or root crops as they become available

Causes of mortality
Adult Canada geese have few natural predators in Britain, and most of the known causes of recorded mortality are associated with man's activities. Annual mortality is estimated at between 10% and 20% of the whole population. Juvenile birds have the same level of mortality as adults once they reach their first moult.

The causes of death are:

- 67% shooting
- 4% hitting power lines
- 6% predation
- 23% unknown.

There is little evidence that natural factors (such as limited food availability), which could become more severe as numbers of birds increase, act to control Canada goose numbers.

Low annual mortality, high reproductive rates and the availability of suitable habitat gives the population scope to increase in the absence of management measures.

Problems caused by Canada geese

Grazing and trampling
Canada geese are herbivores, grazing on both land and water plants. Damage to amenity grassland in public parks, where the geese may occupy regular feeding and roosting sites all year round, can be severe.

Unsightly and unhygienic areas of mud and droppings which are expensive to re-seed frequently occur. The geese may trample as well as graze pasture and crops.

Fouling with droppings
Because of their inefficient digestive system and the low nutrient value of plant material, Canada geese may need to eat large quantities of vegetation.

When grazing they may produce droppings at a rate of one every six minutes. The droppings contain bacteria that may be harmful if faecal matter is inadvertently swallowed and they also make grassed areas unattractive and paths slippery.

If the droppings are passed into water bodies they may cause increased nutrient loadings leading to possible toxic algal blooms and low oxygen levels in the water.

Damage to wildlife habitat
Canada geese can damage the habitat of other wildlife, for example by grazing or trampling nesting sites of other bird species.

Destruction of waterside habitat, such as reed beds, by Canada geese can be a significant

occurring, the type of control needed to reduce the damage to acceptable levels, the biology and distribution of the birds involved and the cost of management relative to the seriousness of the problem. A series of examples are given in the 'Examples of possible Integrated Management Strategies for problems caused by Canada Geese' section of this leaflet.

The techniques available fall into two broad categories; the control of behaviour, by scaring or excluding the birds from the site in question, and the control of numbers, by manipulating the breeding rate or rate of mortality of adult birds. Some of these techniques, especially those involving the manipulation of bird numbers, are permitted by a general licence, and hence can only be carried out for certain purposes. It should be remembered that complete elimination of Canada geese may not be feasible, so consideration should be given to whether the presence of these geese can be tolerated on parts of the site. Where an action is only permitted by a general licence, this is indicated below.

Behaviour modification (scaring, exclusion, repellent chemicals)

Visual scarers

Ground based scarers. Most visual scarers rely on a wild animal's natural fear of the unfamiliar. Scarecrows of various designs, flags and flapping tapes have all been employed to deter geese from areas such as sprouting crops.

However, even migratory goose species learn to ignore these deterrents and Canada geese, which often live close to man, are used to man-made items. Scarecrows, whether human or animal effigies, windmills, rotating mirrors etc, should be placed in the centre of the area where problems are occurring and should be moved every 2 or 3 days to maximise their effect.

Flags or flutter tape should be attached to upright poles at regular intervals across the affected area. In general, the closer the spacing of the flags the greater the deterrent effect is likely to be.

Visual scarers may be effective for short term deterrence of Canada geese from sensitive areas, especially if alternative sites are available nearby.

Kites and balloons. Other visual scaring techniques include kites and balloons, often painted with large eyes or made in the shape of predatory birds. A threat from above may be more intimidating for birds which naturally fear being attacked by birds of prey, and a single balloon may deter birds from a larger area than a ground based scarer.

The devices should be set to fly above the problem area during normal wind conditions. They may need to be re-set if wind direction changes and may not fly well in heavy rain or very strong winds. As with ground based scarers, birds will eventually learn to ignore them and they are best used as short term deterrents when alternative sites are available for the birds to move to.

Kites and balloons are covered by specific aviation legislation. If you wish to use either of these methods as visual scarers you are advised to consult with the Civil Aviation Authority as certain restrictions may be applicable. Their address is given at the end of this leaflet.

Problems with visual scarers. Although effective in the short term, visual scarers have some drawbacks, particularly in situations such as public parks. The scarers may be unattractive and interfere with recreational use of areas and could be subject to theft. They also require maintenance and some need to be moved on a regular basis to maximise their effect. Visual scarers are particularly appropriate for use to protect agricultural crops where the geese need to be excluded for a limited period of time such as during sowing or harvesting.

Acoustic scarers

Acoustic scarers, from the commonly used gas cannon through recorded bird calls to complex solar powered artificial sound generators, are all marketed as being effective in deterring Canada geese.

Habitat management

It may be possible to permanently alter an area where Canada geese are causing problems to make the site permanently unattractive to them. Whilst the features that make a water suitable for Canada geese are not fully understood, enough is known about the biology of the birds to allow a number of suggestions for habitat modifications to be made.

Landscaping: bank steepening and island removal

As with fencing (see below), making it more difficult for Canada geese to walk out of water bodies onto feeding areas by steepening banks may encourage the birds to move elsewhere.

Avoiding shallow marginal areas which support water plants will also restrict the food supply for the geese, but this may adversely affect other waterfowl and/or damage the rest of the aquatic habitat. Safety concerns arising from deep water and steep banks in public areas would also need to be considered.

Because Canada geese prefer to breed on islands, the complete removal of an island could be considered if fencing proved ineffective in discouraging the birds. Low lying islands could be effectively removed by raising water levels in some circumstances. As with all other exclusion or habitat modification techniques, the effect on other wildlife would need to be considered before embarking on such a project.

Barrier planting, marginal vegetation, trees

Establishing areas of dense vegetation along the shores of water bodies (possibly concealing a cheaper fence structure) or breaking up large grass areas with planting which restricts the bird's view of the water (and hence reduces its feeling of safety) have all proved effective in certain circumstances.

If Canada geese do fly out to feed in small areas flanked by hedges and trees, they prefer a shallow climb out angle to aid their escape. Thus, the taller the surrounding vegetation relative to the size of the field or other grazed area the less likely the geese are to use it.

Reducing available foraging areas adjacent to water bodies by changing ground cover

It may be possible to reduce or eliminate Canada goose damage to amenity areas by changing the ground cover planting to species that are not palatable to the geese. Ground cover plants with tough leaves, such as ivy, and many shrub species are not readily eaten by Canada geese and planting the fringes of lakes with a combination of barrier planting and unpalatable ground cover may reduce the feeding opportunities to the point where the geese move elsewhere. Also, allowing short grass to grow long/or mowing alternative feeding areas can also be successful in moving geese within a site and may even reduce geese numbers. However, it should be noted that a change in planting may also affect other waterfowl.

Exclusion

Where scaring of Canada geese is not desirable, it may be possible to exclude the birds from sensitive areas by physically preventing them from gaining access. As with scaring techniques, exclusion is likely to be most effective if alternative sites are available for the birds to move to. However these techniques may create some difficulties as they affect other waterfowl species as well as Canada geese. The erection of fences along a lakeside may also have implications for public safety if someone were to fall into the water and be unable to get out easily.

Fencing

Perhaps the most obvious way to exclude Canada geese is to fence sensitive areas to prevent them gaining access. Despite the fact that the geese can fly, even low fences of between 30 cm to 1 m high can be effective in excluding them from some areas as they prefer to walk to their feeding and roosting sites if possible, often landing and taking off from water.

Thus, fencing the edge of a lake may be sufficient to cause the geese to move elsewhere if they are unable to walk easily out of the water. Canada geese dislike enclosed areas where they cannot easily escape from predators.

Shooting (under specific licences) has been shown to be effective in scaring Brent Geese, and a sustained programme of shooting during the open season and under a general licence during the close season is likely to be effective against Canada geese.

It should be noted that the sale of dead Canada geese is prohibited under the Wildlife and Countryside Act 1981, therefore arrangements for disposal must be made if birds are shot in large numbers. Carcasses should not be left in places which will be visible to the public. However providing they are not sold, they may be eaten.

Any shooting must be in compliance with the Firearms Act 1968 (as amended).

Egg control (under a general licence)

Treating the eggs of Canada geese to prevent hatching is one of the most commonly used population control techniques during the close season. It is easily carried out and requires effort annually over a limited period. It is also generally regarded by the public as an acceptable means of population control.

Eggs could be removed from nests once the clutch is complete (acting under a general licence), but there is a possibility that the bird will simply lay a second clutch. To avoid this, eggs may be treated to prevent hatching or replaced with dummy eggs so that the goose incubates the eggs as normal and then abandons the clutch when they fail to hatch. There are a variety of treatment methods that are permitted under the general licences:

Egg oiling. Eggs may be coated with mineral oil by rolling them in a small quantity of the oil carried in a polythene bag. The mineral oil sold as liquid paraffin (BP) in chemists is harmless to the birds - note this is not paraffin fuel as used in stoves etc. The oil blocks the pores in the eggshell and starves the embryo of oxygen. This technique is easy to carry out, 100% effective in preventing hatching and does not adversely affect the sitting bird.

Egg pricking. This involves piercing the egg with a pin or small nail and moving this rapidly around inside the egg to kill the embryo before returning the egg to the nest. Egg pricking must be done carefully as if the bird detects that the eggs are damaged she may desert the nest and lay another clutch.

Boiling. Eggs may be boiled to kill the embryo and returned to the nest. Providing that the treatment is applied early in the incubation cycle, ideally immediately after the clutch is complete, all of these techniques are humane and effective in preventing additional young birds being recruited to the population.

However, because of the low mortality rate of the adults, it may need 80% of all of the eggs on a site to be treated for a number of years before egg control alone will begin to show a reduction in population size. If nests are hard to find or manpower resources limited, egg control alone is likely only to hold the problem at its present level rather than to reduce it significantly.

Round-up and cull of adults during the moult (under a general licence)

The quickest way to achieve a large scale reduction in the number of Canada geese at a site is by the culling of fully grown birds. The effect is immediate and, if the birds can be captured during the moult, most, or all, of a population can be removed. The principal disadvantage of this technique is that it often meets with a strong adverse reaction from the public. The techniques also require some specialist knowledge and considerable manpower if a large scale cull is to be carried out effectively and humanely.

The most common way of removing birds is by capture during the moult. Canada geese moult all of their flight feathers simultaneously, and, for a period of four to six weeks around the end of June and beginning of July, are unable to fly.

The birds form moulting flocks, remaining on the water for most of the time to reduce the risk of predation during this vulnerable period. A number of small boats or canoes can be used to herd the birds towards the bank where a funnel shaped enclosure made of chicken wire supported by fencing stakes is erected. The funnel leads into a catching pen with a

Suggested IMS. The lake shore and island should be fenced to prevent the birds walking out to feed. If other waterfowl are present, a small gap, of about 8 cm, at the bottom of the fence will allow them to move in and out of the water whilst restricting the movement of the geese.

Consideration should be given to establishing bankside vegetation that is resistant to damage by the geese (the presence of the fence will aid establishment or reinstatement of damaged areas).

Flutter tape or other scarers may be deployed to keep the geese off badly damaged areas. In order to prevent further population increase, the eggs of any birds that breed on the island (despite the fencing) should be treated under the relevant general licence (for the purpose of preserving public health and safety) if droppings in public areas pose a hazard to the general public using the park.

These techniques should be monitored for at least two years in order to assess their effectiveness. If problems persist, a cull of birds may be necessary, with sufficient birds being captured during the moult to reduce the population to the desired level, followed by ongoing egg control to keep the population under control.

Example 2

A keepered country estate with a large lake which is used as a fishery and a waterfowl shoot in winter. A summer population of 200 Canada geese with 40 breeding pairs along the lake shore. Non-breeding birds moult at a large reservoir nearby and additional birds from other breeding sites frequent the water in winter, swelling the population to 400 birds. The geese are damaging grazing pasture and destroying bankside vegetation which is used as nesting habitat by other waterfowl. Canada goose droppings are thought to be polluting the water.

Suggested IMS. Increasing the in-season shooting pressure on the geese may be sufficient to encourage the wintering population to move to the other waters nearby.

The estate could consider organised goose shoots which may help to bring in income. Visual or acoustic scarers should be deployed to protect grazing pasture from damage during the summer months. Out of season shooting to augment this scaring could be carried out under the general licence for the purpose of preventing damage to the grazing pasture and possibly the fishery.

The summering population could be further managed by fencing the lake edge and planting unpalatable barrier vegetation (which would double as nesting cover for other waterfowl species). If this was insufficient to reduce numbers of breeding birds, the landowner could (under a relevant general licence) treat eggs to prevent hatching.

Culling is unlikely to be immediately effective in this case unless the exercise can be carried out both on the estate lake and the nearby reservoir. A cull on the estate lake would simply make breeding territories available to non-breeding birds which would rapidly move in, necessitating repeat culls over a number of years.

Example 3

A farm adjacent to a large reservoir, part of which is a designated nature reserve. A resident population of 600 Canada geese with 30 breeding pairs occupy the reservoir all year round. The birds fly out from the reservoir to feed, damaging newly sprouted winter cereals and other crops.

Suggested IMS. In these circumstances, the attitude of the reservoir managers and others with interests in managing the nature reserve (eg local wildlife trusts etc) are crucial. If the owners of the reservoir are opposed to any control action designed to reduce the population, then the farmer is limited to shooting in season and under a general licence (to prevent damage to crops), scaring, or changing his cropping patterns to minimise damage.

Considerable effort and expense may be required to sustain the scaring effort needed over the period necessary to protect his crop.

Project: Control Measures and Study of Related Canada Goose Problems.

Wandsworth Borough Council (undated*) London Lakes Project Overview Document.* Obtainable from Wandsworth BC price £15

National Farmers Union: *Leaflet; code of practice on bird scaring*

This leaflet was produced by Natural England and the Central Science Laboratory, now known as the Food and Environmental Research Agency (FERA).

Photograph courtesy of Anthony O'Connor, Natural England.

Footnote : Amended in England and Wales through the Countryside and Rights of Way Act 2000, the Wildlife and Countryside (England and Wales) (Amendment) Regulations 2004, and in Scotland through the Nature Conservation (Scotland) Act 2004.

Annex B - Item 3

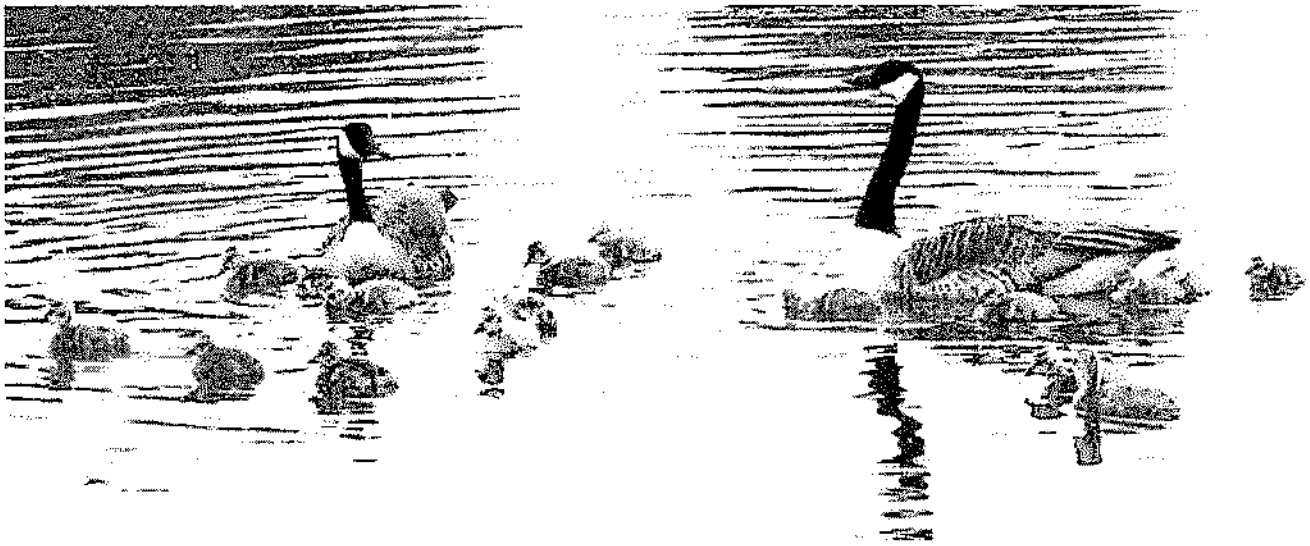
Rural Development Service Technical Advice Note 51

The management of problems caused by Canada geese: a guide to best practice

The Canada goose population in southern Britain numbers over 80,000 birds and is still increasing. However, in recent years the overall rate of growth has slowed and in some areas numbers have stabilised or declined. The geese live in local populations, usually of up to a few hundred birds, which remain around one or two water bodies that offer suitable habitats for breeding, roosting etc. Because the geese have relatively few predators, and can produce four or five young per year, numbers at particular sites can grow very rapidly and significant problems may occur.

Any management techniques used to control the problems caused by Canada geese must be legal and should take account of the fact that Canada geese are a popular species with many members of the general public.

This guidance note aims to provide land managers with the information that they need to manage difficulties caused by Canada geese in a way that is effective, legal and sensitive to public opinion.



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Rural Development Service

- During the moult both adult and juvenile birds must feed from the water or walk to find food.
- The amount of suitable food available at a site during the moult period may be important in governing the number of birds that it can support.
- Some birds, which have either not attempted to breed or which have failed to raise a brood, undertake longer journeys to find the best sites to moult.
- Canada geese tend to moult on larger sites with easy access between open water and suitable feeding areas of short grass.

Dispersal

- The geese normally remain close to the site where they hatched, and once young birds mature they may wait several years for a breeding territory to become available.
- Large flocks of non-breeding adults may thus build up at certain sites.
- Some Canada geese remain faithful to their home area for life, even if apparently suitable water bodies with no Canada geese present are available nearby. Others may be resident at many sites, with certain sites used just for breeding, moulting or wintering.
- Small numbers abandon their home area either to join other groups or to establish new colonies.

Wintering

- Unlike their North American ancestors, Canada geese in Britain are mostly non-migratory, moving only short distances between breeding and wintering sites within their local area.
- Birds may fly out from the water bodies where they roost to regular winter feeding sites such as waterside grazing pasture, amenity grassland, etc. They may also move around their home range taking advantage of feeding opportunities such as sprouting winter cereals or root crops as they become available

Causes of mortality

- Adult Canada geese have few natural predators in Britain, and most of the known causes of recorded mortality are associated with man's activities. Annual mortality is estimated at between 10 and 20% of the whole population. Juvenile birds have the same level of mortality as adults once they reach their first moult.
- The causes of death are:
  - 67% shooting
  - 4% hitting power lines
  - 6% predation
  - 23% unknown.
- There is little evidence that natural factors (such as limited food availability), which could become more severe as numbers of birds increase, act to control Canada goose numbers.
- Low annual mortality, high reproductive rates and the availability of suitable habitat gives the population scope to increase in the absence of management measures.

Problems Caused by Canada Geese

Grazing and trampling

- Canada geese are herbivores, grazing on both land and water plants.
- Damage to amenity grassland in public parks, where the geese may occupy regular feeding and roosting sites all year round, can be severe.
- Unsightly and unhygienic areas of mud and droppings which are expensive to re-seed frequently occur.
- The geese may trample as well as graze pasture and crops.

Fouling with droppings

- Because of their inefficient digestive system and the low nutrient value of plant material, Canada geese may need to eat large quantities of vegetation.
- When grazing they may produce droppings at a rate of one every 6 minutes.
- The droppings contain bacteria that may be harmful if faecal matter is inadvertently swallowed and they also make grassed areas unattractive and paths slippery.
- If the droppings are passed into water bodies they may cause increased nutrient loadings leading to possible toxic algal blooms and low oxygen levels in the water.

Damage to wildlife habitat

- Canada geese can damage the habitat of other wildlife, for example by grazing or trampling nesting sites of other bird species.
- Destruction of waterside habitat, such as reed beds, by Canada geese can be a significant problem, leading to erosion of river banks in some cases.

Excluding other wildlife

- There is little hard evidence that Canada geese cause significant problems by competing directly with other wildlife.

and flapping tapes have all been employed to deter geese from areas such as sprouting crops. However, even migratory goose species learn to ignore these deterrents and Canada geese, which often live close to man, are used to man-made items. Scarecrows, whether human or animal effigies, windmills, rotating mirrors etc., should be placed in the centre of the area where problems are occurring and should be moved every 2 or 3 days to maximise their effect. Flags or flutter tape should be attached to upright poles at regular intervals across the affected area. In general, the closer the spacing of the flags the greater the deterrent effect is likely to be. Visual scarers may be effective for short term deterrence of Canada geese from sensitive areas, especially if alternative sites are available nearby.

Kites and balloons

Other visual scaring techniques include kites and balloons, often painted with large eyes or made in the shape of predatory birds. A threat from above may be more intimidating for birds which naturally fear being attacked by birds of prey, and a single balloon may deter birds from a larger area than a ground based scarer. The devices should be set to fly above the problem area during normal wind conditions. They may need to be re-set if wind direction changes and may not fly well in heavy rain or very strong winds. As with ground based scarers, birds will eventually learn to ignore them and they are best used as short term deterrents when alternative sites are available for the birds to move to.

Kites and balloons are covered by specific aviation legislation. If you wish to use either of these methods as visual scarers you are advised to consult with the Civil Aviation Authority as certain restrictions may be applicable. Their address is given at the end of this leaflet.

Problems with visual scarers

Although effective in the short term, visual scarers have some drawbacks, particularly in situations such as public parks. The scarers may be unattractive and interfere with recreational use of areas and could be subject to theft. They also require maintenance and some need to be moved on a regular basis to maximise their effect. Visual scarers are particularly appropriate for use to protect agricultural crops where the geese need to be excluded for a limited period of time such as during sowing or harvesting.

Acoustic scarers

Acoustic scarers, from the commonly used gas cannon through recorded bird calls to complex solar powered artificial sound generators, are all marketed as being effective in deterring Canada geese. Most will deter the birds from relatively small areas provided that there are alternative areas for them to use for roosting or feeding nearby. Like visual scarers, the birds will eventually learn that they offer no threat, although their effectiveness can be prolonged by moving the scarers every two or three days. Acoustic scarers are often hidden (by deploying them at the edge of a field or behind hay bales or other screens) so that the birds cannot see where the sound is coming from. This is thought to prolong the time before the birds realise that the sound represents no threat, but there is little scientific evidence to support this assertion. It is advised that you consult your Local Authority if you choose to use acoustic scarers because of their powers under the Environment Protection Act 1990 Part III in respect of noise nuisance which embraces the use of gas bangers and electronic sound generating scaring devices.

Problems with acoustic scarers

As with visual scarers, acoustic scarers may be unsuitable for use in areas frequented by the public due to the sudden loud noises involved, and the relatively expensive equipment may be subject to theft or vandalism. These systems are more likely to be of use to protect agricultural crops or to deter birds from islands or similar remote areas.

Combined visual/acoustic

Some scaring systems combine visual and acoustic stimuli in order to enhance the deterrent effect. Such systems vary from gas cannons which shoot a projectile up a pole when the cannon goes off (in order to simulate a shot bird falling to the ground) to an inflatable rubber man which emerges from a box accompanied by a loud klaxon. The combination of visual and acoustic stimuli may lengthen the time before the birds habituate to the scarers, and they will benefit from being moved every 2 or 3 days. All of these systems have the same drawbacks as visual or acoustic scarers alone and are suitable for use in similar situations.

Human operated bird control

For many bird species the most effective bird scarer is a human being, armed either with a harmless scaring device such as a flag or firework, or with a shotgun. Where Canada geese are regularly shot, the simple presence of a human may be sufficient to deter birds from an area. In most situations, however, Canada geese show little fear of man, particularly where they are used to being fed by the public. Even if the geese can be trained to fear humans, the deterrent will only

even low fences of between 0.3 - 1m high can be effective in excluding them from some areas as they prefer to walk to their feeding and roosting sites if possible, often landing and taking off from water. Thus, fencing the edge of a lake may be sufficient to cause the geese to move elsewhere if they are unable to walk easily out of the water. Canada geese dislike enclosed areas where they cannot easily escape from predators. Barriers that divide an area into smaller units may therefore help to discourage the birds from using the site concerned.

Fences have also been successfully used to exclude Canada geese from breeding and roosting sites, especially where alternative sites were available nearby. Fencing the perimeter of park lakes is not necessarily an expensive option because a simple post and chicken wire fence will suffice if properly erected, but a more decorative and permanent structure may involve a significant cost. Fencing may be a particularly effective option at sites used by moulting Canada geese because if they are prevented from walking out of the water whilst they cannot fly they will not be able to access the protected areas. Care should be taken, however, to ensure that moulting birds and newly hatch young have access to sufficient suitable grazing areas so they do not starve. A gap at the bottom of the fence of about 8cm will allow smaller waterfowl access to the land. However, any fencing will also deter other geese and mute swans.

Changing cropping patterns

Where agricultural damage is occurring, it may be possible to change the crops being grown to those less susceptible to damage by Canada geese, or to move to crops which are most vulnerable when the geese are elsewhere. This would obviously require a balance to be struck between the economics of moving to a different crop compared to the cost of either tolerating or controlling the damage being suffered.

Population management

In situations where serious problems are being encountered and where habitat management, scaring or exclusion techniques are inappropriate or have been tried and have failed, it may be necessary to reduce the scale of the problem by reducing the size of the goose population at a particular site. There are a number of techniques that can be used for population management. A range of techniques are permitted under general licence. Trapping and shooting are also permitted during the open season. No method prohibited under section 5 Wildlife of the Countryside Act 1981 may be used.

Relocation

Section 14 of the Wildlife and Countryside Act 1981 prohibits the release of Canada geese into the wild without a licence. This offence carries a penalty of a custodial sentence and/or a fine.

The initial response to the first problems caused by Canada geese in the 1950's and 60's was to capture the birds during the flightless period of the moult and to move them to other waters where there were no Canada geese at the time. Many of the relocated birds simply returned to their original home, whilst those that did remain on the new site began to reproduce rapidly in the new habitat and problems soon began to occur at the new sites as well. It is thought that these translocations played a significant part in the sudden rapid expansion of the Canada goose population which is continuing today. Because further translocations are likely to accelerate the geographic spread of the species, and may also speed up population growth in newly colonised areas, it is unlikely that licences will be granted to relocate Canada geese in the foreseeable future.

For advice on licensing the release of Canada geese contact the Non-native Regulation Team (see "Further Information" for details).

Shooting (during open season or under a general licence)

Canada geese may be legally shot during the open season (1st September to 31st January, or 20th February inclusive on the foreshore), or under a general licence, by authorised persons (see 'The Protected Status of Wild Canada Geese' section of this leaflet). Intensive shooting to reduce population size has additional drawbacks in that it can disturb other waterfowl, and may not be possible in public parks etc. for safety and public relations reasons.

Shooting (under specific licences) has been shown to be effective in scaring Brent Geese, and a sustained programme of shooting during the open season and under a general licence during the close season is likely to be effective against Canada geese.

It should be noted that the sale of dead Canada geese is prohibited under the Wildlife and Countryside Act 1981, therefore arrangements for disposal must be made if birds are shot in large numbers. Carcasses should not be left in places which will be visible to the public. However providing they are not sold, they may be eaten.

Any shooting must be in compliance with the Firearms Act 1968 (as amended).

brought under control. It should also be borne in mind that control of adults in urban areas may attract an adverse public reaction, especially in public areas such as parks.

The issue of disposal of carcasses must also be considered, particularly for large numbers of carcasses. Incineration or burial may be considered but there are restrictions and limitations on the use of either method. Three suitable methods may be:

- incineration;
- sending to a rendering plant; or
- landfill

However, you should consult your local authority in the first instance about suitable methods for your particular situation.

Examples of possible Integrated Management Strategies for problems caused by Canada Geese

The choice of which techniques to use in an IMS will depend on a number of factors specific to the site in question; these include the biology and movement patterns of the birds involved, the severity of the problem, the timescale in which the problem needs to be resolved, possible adverse public reaction, cost and manpower constraints, and whether the purpose of control falls under a relevant general licence. Examples of IMS that might be developed for typical situations are set out below. If in doubt, the landowner or manager should take expert advice on the development of an IMS suitable for his or her particular circumstances.

Example 1

A public park with an ornamental lake and lawns. A resident and growing population of 200 Canada geese with 15 pairs breeding on an island on the lake. Birds range widely over the park, damaging lawns and bankside vegetation and leaving large quantities of droppings which are fouling grassed areas and paths. If the fouling is considered to pose a risk to human health and safety, action against Canada geese and their nests and eggs could be taken all year round under the relevant general licence.

Suggested IMS:

The lake shore and island should be fenced to prevent the birds walking out to feed. If other waterfowl are present, a small gap, of about 8 cm, at the bottom of the fence will allow them to move in and out of the water whilst restricting the movement of the geese. Consideration should be given to establishing bankside vegetation that is resistant to damage by the geese (the presence of the fence will aid establishment or reinstatement of damaged areas). Flutter tape or other scarers may be deployed to keep the geese off badly damaged areas. In order to prevent further population increase, the eggs of any birds that breed on the island (despite the fencing) should be treated under the relevant general licence (for the purpose of preserving public health and safety) if droppings in public areas pose a hazard to the general public using the park. These techniques should be monitored for at least two years in order to assess their effectiveness. If problems persist, a cull of birds may be necessary, with sufficient birds being captured during the moult to reduce the population to the desired level, followed by ongoing egg control to keep the population under control.

Example 2

A keepered country estate with a large lake which is used as a fishery and a waterfowl shoot in winter. A summer population of 200 Canada geese with 40 breeding pairs along the lake shore. Non-breeding birds moult at a large reservoir nearby and additional birds from other breeding sites frequent the water in winter, swelling the population to 400 birds. The geese are damaging grazing pasture and destroying bankside vegetation which is used as nesting habitat by other waterfowl. Canada goose droppings are thought to be polluting the water.

Suggested IMS:

Increasing the in-season shooting pressure on the geese may be sufficient to encourage the wintering population to move to the other waters nearby. The estate could consider organised goose shoots which may help to bring in income. Visual or acoustic scarers should be deployed to protect grazing pasture from damage during the summer months. Out of season shooting to augment this scaring could be carried out under the general licence for the purpose of preventing damage to the grazing pasture and possibly the fishery. The summering population could be further managed by fencing the lake edge and planting unpalatable barrier vegetation (which would double as nesting cover for other waterfowl species). If this was insufficient to reduce numbers of breeding birds, the landowner could (under a relevant general licence) treat eggs to prevent hatching. Culling is unlikely to be immediately effective in this case unless the exercise can be carried out both on the estate lake and the nearby reservoir. A cull on the estate lake would simply make breeding territories available to non-breeding birds which would rapidly move in, necessitating repeat culls over a number of years.

- Department of the Environment Transport and the Regions (1998) **Population Dynamics of Canada Geese in Great Britain and Implications for Future Management**. Report by Wildfowl and Wetlands Trust and British Trust for Ornithology.
- Department of the Environment Transport and the Regions (1998) **Canada Goose Research Project: Control Measures and Study of Related Canada Goose Problems.**
- Wandsworth Borough Council (undated) **London Lakes Project Overview Document**. Obtainable from Wandsworth BC price £15
- National Farmers Union: **Leaflet; code of practice on bird scaring**

This leaflet was produced by the Defra Rural Development Service (RDS) and the Central Science Laboratory (CSL).

Photograph courtesy of Anthony O'Connor, Defra RDS.

A full list of Rural Development Service publications can be viewed and downloaded from http://www.defra.gov.uk/corporate/rds/publications/default.htm.

Footnote[1]: Amended in England and Wales through the Countryside and Rights of Way Act 2000, the Wildlife and Countryside (England and Wales) (Amendment) Regulations 2004, and in Scotland through the Nature Conservation (Scotland) Act 2004.

The Management of Problems caused by Canada Geese - A Guide to Best Practice

Author: ***Dr John Allan,*** *Central Science Laboratory*

The production of this paper was funded by the Department of Environment Transport and the Regions. It forms the basis of national guidelines for the management of Canada Geese which are due to be published shortly after this conference. I am most grateful to the DETR for permission to reproduce this paper in the conference proceedings.

Introduction

The Canada Goose population in Britain numbers over 63,000 birds and is still increasing. The geese live in local populations, usually of up to a few hundred birds, which remain around one or two water bodies that offer suitable habitats for breeding, roosting etc. Because the geese have relatively few predators, and can produce four or five young per year, numbers at particular sites can grow very rapidly and significant problems may occur.

Any management techniques used to control the problems caused by Canada Geese must be legal (Canada Geese are protected under both British and European legislation) and should take account of the fact that Canada Geese are a popular species with many members of the general public.

This paper aims to provide land managers with the information that they need to manage difficulties caused by Canada Geese in a way that is effective, legal and sensitive to public opinion.

The Biology and Behaviour of Canada Geese

In order to develop an effective management strategy for any nuisance wildlife, it is necessary to understand enough about the biology of the species and the local population involved to be able to predict the outcome of whichever management techniques are chosen. This section gives a brief point by point overview of the biology of Canada Geese in Britain insofar as it affects the management of the species.

1.1 Breeding

A single clutch of around 6 eggs is laid in early April each year.

Incubation, solely by the female, takes 28-30 days.

1.4 Wintering

Unlike their North American ancestors, Canada Geese in Britain are mostly non-migratory, moving only short distances between breeding and wintering sites within their local area.

Birds may fly out from the water bodies where they roost to regular winter feeding sites such as waterside grazing pasture, amenity grassland etc. They may also move around their home range taking advantage of feeding opportunities such as sprouting winter cereals or root crops as they become available.

1.5 Causes of mortality

Adult Canada Geese have few natural predators in Britain, and most of the known causes of recorded mortality are associated with man's activities. Annual mortality is estimated at between 10 and 20% of the whole population. Juvenile birds have the same level of mortality as adults once they reach their first moult.

The causes of death are:

- 67.2% shooting
- 4.3% hit power lines
- 5.5% redation
- 23% unknown.

There is little evidence that natural factors, which become more severe as numbers of birds increase, such as limited food availability, act to control Canada Goose numbers.

Low annual mortality and high reproductive rates give the national population the scope to increase in size for the foreseeable future.

2. Problems Caused By Canada Geese

2.1 Grazing and trampling

Canada Geese are vegetarians, grazing on both land and water plants.

Damage to amenity grassland in public parks, where the geese may occupy regular feeding and roosting sites all year round can be severe.

Unsightly and un-hygenic areas of mud and droppings which are expensive to reinstate frequently occur.

The geese may trample as well as graze pasture and crops.

Planning applications involving the creation of water bodies suitable for Canada Geese close to aerodromes may be refused on the grounds of flight safety.

3. Management Techniques

3.1 The protected status of Canada Geese.

The Canada Goose, like all other birds in Britain, is protected under the EC Wild Birds Directive implemented in the United Kingdom through the Wildlife and Countryside Act (1981). This makes it an offence to capture, kill or injure Canada Geese, to damage their nests or eggs, or to disturb them on a breeding site. Any control technique which involves breaking the protected status of the Geese requires a licence from the appropriate government authority (see appendix 1).

Canada Geese can be legally shot by authorised persons or trapped by approved methods in the open season (between September 1st and January 31st, or February 20th on the foreshore). The use of shooting or trapping by approved methods to control Canada Geese during the open season does not, therefore, require a licence, but care should be taken to ensure that other regulations concerning firearms safety, capture methods etc. are adhered to. If in doubt, advice can be sought from the organisations listed in appendix 1.

3.2 Integrated Management Strategies (IMS) For Canada Geese

Experience has shown that it is unlikely that a single management technique will be fully effective in controlling a problem caused by Canada Geese. For example:

- Fencing an area to keep birds off will simply cause them to move to an alternative site close by and continue to cause damage.
- Preventing reproduction by treating eggs to stop hatching will not reduce the population of adults (and hence the levels of damage or nuisance) for many years.
- Culling the adult population at a site may simply allow non breeding adults from nearby waters to move in to vacated breeding territories.

In those cases where effective management of the problem has been achieved, Integrated Management Strategies (IMS) which combine a suite of techniques have invariably been employed. One of the most effective Canada Goose management programmes to date involved the development of an IMS that combined reduction of adult numbers, reproductive control and fencing to exclude birds in an IMS carried out by Wandsworth Borough Council as part of a larger programme to improve the quality of its urban park lakes.

general, the closer the spacing of the flags the greater the deterrent effect is likely to be. Visual scarers may be effective for short term deterrence of Canada Geese from sensitive areas, especially if alternative sites are available nearby.

Kites and balloons

Other visual scaring techniques include kites and balloons, often painted with large eyes or made in the shape of predatory birds. A threat from above may be more intimidating for birds which may naturally be attacked by birds of prey, and a single balloon may deter birds from a larger area than a ground based scarer. The devices should be set to fly above the problem area during normal wind conditions. They may need to be re-set if wind direction changes and may not fly well in heavy rain or very strong winds. As with ground based scarers, birds will eventually learn to ignore them and they are best used as short term deterrents when alternative sites are available for the birds to move to.

Problems with visual scarers

Although effective in the short term, visual scarers have some drawbacks, particularly in situations such as public parks. The scarers may be unattractive and interfere with recreational use of areas and could be subject to theft. They also require maintenance and some need to be moved on a regular basis to maximise their effect. Visual scarers are particularly appropriate for use to protect agricultural crops where the geese need to be excluded for a limited period of time such as during sowing or prior to harvest.

b) Acoustic

Acoustic scarers, from the commonly used gas cannon through recorded bird calls to complex solar powered artificial sound generators, are all marketed as being effective in deterring Canada Geese. Most will deter the birds from relatively small areas providing that there are alternative areas for them to use for roosting or feeding nearby. Like visual scarers, the birds will eventually learn that they offer no threat, although their effectiveness can be prolonged by moving the scarers every two or three days. Acoustic scarers are often hidden (by deploying them at the edge of a field or behind hay bales or other screens) so that the birds cannot see where the sound is coming from. This is thought to prolong the time before the birds realise that the sound represents no threat, but there is little scientific evidence to support this assertion.

Problems with acoustic scarers

gaining access. As with scaring techniques, exclusion is likely to be most effective if alternative sites are available for the birds to move to. These techniques may create some difficulties as they affect other waterfowl species as well as Canada Geese. The erection of fences along a lakeside may also have implications for public safety if someone were to fall into the water and be unable to get out easily.

Fencing

Perhaps the most obvious way to exclude Canada Geese is to fence sensitive areas to prevent them gaining access. Despite the fact that the geese can fly, even low fences of around 1m high can be effective in excluding them from some areas as they prefer to walk to their feeding and roosting sites if possible, often landing and taking off from water. Thus, fencing the edge of a lake may be sufficient to cause the geese to move elsewhere if they are unable to walk easily out of the water. Canada Geese dislike enclosed areas where they cannot easily escape from predators. Barriers that divide fields into smaller units may therefore help to discourage the birds from using the site concerned.

Fences have also been successfully used to exclude Canada Geese from breeding and roosting sites, especially where alternative sites were available nearby. Fencing the perimeter of park lakes is not necessarily an expensive option because a simple post and chicken wire fence will suffice if properly erected, but a more decorative and permanent structure may involve a significant cost. Fencing may be a particularly effective option at sites used by moulting Canada Geese because if they are prevented from walking out of the water whilst they cannot fly they will not be able to access the feeding areas nearby. Care should be taken, however, to ensure that if moulting adults or newly hatched young are found at a fenced site, they do not starve through lack of access to grazing areas.

Barrier planting, marginal vegetation, trees

An alternative to fencing lake edges, or placing barrier fencing around grazed areas, is to modify the vegetation in the areas suffering damage by Canada Geese. Establishing areas of dense vegetation along the shores of water bodies (possibly concealing a cheaper fence structure) or breaking up large grass areas with planting which restricts the bird's view of the water (and hence reduces its feeling of safety) have all proved effective in certain circumstances. If Canada Geese do move out to feed in small areas flanked by hedges and trees, they prefer a shallow climb out angle to aid their escape. Thus, the taller the surrounding vegetation relative to the size of the field or other grazed area the less likely the geese are to use it.

Chemical repellents

to move to crops which are most vulnerable when the geese are elsewhere. This would obviously require a balance to be struck between the economics of moving to a different crop compared to the cost of either tolerating or controlling the damage being suffered. Further advice can be obtained from the local office of the Farming and Rural Conservation Agency.

3.4.2 Population management

In situations where serious problems are being encountered and where habitat management, scaring or exclusion techniques are inappropriate or have been tried and have failed, it may be necessary to reduce the scale of the problem by reducing the size of the goose population at a particular site. There are a number of techniques that can be used for population management but all require a licence from the appropriate authority, except for shooting in season.

Relocation

The initial response to the first problems caused by Canada Geese in the 1950's and 60's was to capture the birds during the flightless period of the moult and to move them to other waters where there were no Canada Geese at the time. Many of the relocated birds simply returned to their original home, whilst those that did remain on the new site began to reproduce rapidly in the new habitat and problems soon began to occur at these sites as well. It is thought that these reintroductions played a significant part in the sudden rapid expansion of the Canada Goose population which is continuing today. Because further relocations are likely to speed the geographic spread of the species, and may also speed up population growth in newly colonised areas, it is unlikely that licences will be granted to relocate Canada Geese in the foreseeable future. It is illegal, under schedule 9 of the Wildlife and countryside Act 1981, to release Canada Geese into the wild without a licence.

Shooting in season

Canada geese may be legally shot during the open season (1st. September to 31st. January, or 20th. February on the foreshore) by authorised persons (i.e. persons acting with the authority of the landowners and the owners of the shooting rights to the land involved). Because they are frequently quite tame, Canada Geese are not regarded as a very 'sporting shot' by many wildfowlers and the numbers shot each year are relatively small. If the hunting pressure on Canada Geese were to be increased they may become more wary and hence offer a greater challenge to the hunter. However, it is unlikely that winter shooting alone could reduce a large population of, for example, 500 birds by a significant amount in a single season as the increasing wariness of the birds would make the shooting of large numbers in a single session

and, if the birds can be captured during the moult, most, or all, of a population can be removed. The principal disadvantage of this technique is that it often meets with a strong adverse reaction from the public. The techniques require some specialist knowledge to be used effectively and considerable manpower is needed if a large scale cull is to be carried out effectively and humanely.

The most common way of removing birds is by capture during the moult. Canada Geese moult all of their flight feathers simultaneously, and, for a period of four to six weeks around the beginning of July, are unable to fly. The birds form moulting flocks, remaining on the water for most of the time to reduce the risk of predation during this vulnerable period. A number of small boats or canoes can be used to herd the birds towards the bank where a funnel shaped enclosure made of chicken wire supported by fencing stakes is erected. The funnel leads into a catching pen with a removable door. The birds are forced up onto the bank and into the mouth of the funnel. The catching party then drive the birds into the funnel and, eventually, into the pen and the door is closed. This technique requires some experience if it is to be carried out successfully, and expert advice should be sought. Smaller numbers of birds may be captured using nets or similar devices, providing any method used does not contravene Section 5 of the Wildlife and Countryside Act 1981, again expert assistance should be employed.

Once captured, it is necessary to humanely despatch the birds. A number of techniques are allowed by law, but it is best to seek professional advice if a large number of birds need to be despatched. Employing a veterinary surgeon to despatch the birds by lethal injection or to oversee the whole operation may be advisable to allay the concerns of the general public.

Before embarking on the large scale destruction of geese it is important to be sure that the birds that you are removing are actually the ones that are causing the problem. For example, birds causing agricultural damage at a wintering site may moult at a site a considerable distance away. It should also be noted that at long established breeding sites there may be a surplus of birds waiting to occupy breeding territories, but which moult elsewhere. Thus, a cull of breeding birds may simply create vacant territories for other birds to move into and repeat culls may be necessary for a number of years before the problem is finally brought under control.

3.5 Examples Of Possible Integrated Management Strategies For Problems Caused By Canada Geese

The choice of which techniques to use in an IMS will depend on a number of factors specific to the site in question; these include the biology and movement patterns of the birds involved, the severity of the problem, the

Increasing the in-season shooting pressure on the geese may be sufficient to encourage the wintering population to move to the other waters nearby. The estate could consider organised goose shoots which may help to bring in income. This would need to be balanced against the disturbance caused to more 'desirable' waterfowl species. Visual or acoustic scarers should be deployed to protect grazing pasture from damage during the summer months and a licence to allow out of season shooting to augment this scaring could be applied for from the local Ministry of Agriculture Fisheries and Food office on the grounds that the birds are damaging grazing pasture, wildlife habitat and possibly fisheries. The summering population could be further managed by fencing the lake edge and planting unpalatable barrier vegetation (which would double as nesting cover for other waterfowl species). If this was insufficient to reduce numbers of breeding birds the landowner could apply for a licence from MAFF to treat eggs to prevent hatching. Culling is unlikely to be immediately effective in this case unless the exercise can be carried out both on the estate lake and the nearby reservoir. A cull on the estate lake would simply make breeding territories available to non breeding birds which would rapidly move in, necessitating repeat culls over a number of years.

Example 3.

A farm adjacent to a large reservoir, part of which is a designated nature reserve. A resident population of 600 Canada Geese with 30 breeding pairs occupy the reservoir all year round. The birds fly out from the reservoir to feed, damaging newly sprouted winter cereals and other crops.

Suggested IMS:

The farmer has relatively few options other than shooting in season, scaring (possibly with out of season shooting in support) or changing his cropping patterns to minimise damage. In these circumstances, the attitude of the reservoir managers and others with interests in managing the nature reserve (e.g. local naturalists trusts etc.) are crucial. If the owners of the reservoir are opposed to any control action designed to reduce the population, then the farmer is limited to the techniques described above and may need to go to considerable effort and expense to sustain the scaring effort needed over the period necessary to protect his crop. Acoustic and visual scarers should be deployed and moved at regular intervals to maximise their effect. Regular shooting during the open season may encourage the birds to feed elsewhere, especially if there are alternative feeding sites nearby. Population management, either in the form of egg control or culling of adult birds would only be possible with the co-operation of the owners of the reservoir.

5 Further Reading

ADAS 1987: **Bird Scaring - Leaflet P9003** MAFF Publications

Tollgate House
Houlton St.
Bristol
BS2 9DJ

Tel: 0117 9878903

In Scotland:

Scottish Office, Agriculture, Environment & Fisheries Department (SOAFED)
Pentland House
47 Robb's Loan
Edinburgh
EH14 1TY

Tel: 0131 2446548

In Wales:

Welsh Office
Cathays Park
Cardiff
CF1 3NQ
Tel: 01222 825203

Applicants should expect to complete a pro forma application form or send a letter detailing the type of damage being suffered and what measures have already been tried to control the problem. For applications to MAFF, a site visit by a MAFF representative may also be required to assess the nature and severity of the difficulties being encountered. Licences are normally restricted to killing a small number of birds to aid scaring or for treating a limited number of eggs to prevent hatching. Licences for larger scale culls of birds are issued only in exceptional cases and after very serious consideration. All applicants are encouraged to use the licensing scheme as part of a wider management plan to control the number of geese present.

CONTACT DETAILS

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Sand Hutton
YORK YO4 1LZ

Examples of Good Practice in the UK

Goose Management in South West London

Wandsworth Borough Council (WBC) was awarded funding by the European Commission to restore (improve the water quality, landscaping and decrease bankside erosion) three urban park lakes in Wandsworth (Battersea Park Lake, King George's Park Lake and Tooting Common Lake): The London Lakes Project. The project was divided into six distinct Phases with phase 3 focussing on Waterbird Monitoring and Management. Earlier studies of the use of the sites by waterfowl confirmed the council's view that Canada Geese potentially contributed to the problem of eutrophication by depositing relative large amounts of phosphorous rich faeces into the lakes. The same studies indicated that Canada Geese spend more time on the lake banks and on the amenity grassland beside the lake, relative to other native wildfowl species, thereby contributing to the problem of bankside erosion. Similarly, other feral and exotic wildfowl, in particular domestic X Greylag Geese and Muscovy, were seen to be in conflict with the projects objectives. These domestic crosses were largely sedentary at Battersea Park and so, although not as numerous as Canada Geese, the grazing and trampling pressure exerted on the banks was continuous throughout the year. In order to meet the water quality and landscaping objectives of the project it was considered necessary by the project partners to reduce the number of Canada Geese and other feral and exotic waterfowl using Battersea Park Lake.

WBC developed an integrated management strategy for their parks. Their strategy involved both site-based and population-based control measures (see paragraphs ?-?), as well as a range of other management techniques which resulted in a number of beneficial side-effects.

The measures taken to reduce the number of geese were very effective and other waterfowl benefitted greatly from the changes. More species began to regularly use the ponds, and many species also increased in numbers. This is probably partly because the goose population before control measures began had been extremely high.

The reduction in geese numbers also assisted with improving the water quality. Those water bodies now support more invertebrate species and are better able to support aquatic plants, which over time will further improve the water quality and dissolved oxygen levels.

Goose Management in the Lake District

Management of Canada Geese has been carried out on Windermere in some form or other for nearly 20 years. In 2007 a group of science and conservation organisations and major landowners from around the lake

and a national co-ordinating body, the National Goose Management Review Group (NGMRG) has been in place since May 2000 to implement the national policy framework and to advise Scottish Ministers on goose management in Scotland.

The NGMRG is guided in its deliberations by three fundamental objectives which are at the heart of the national policy framework. These core objectives are to:

- Meet the UK's nature conservation obligations for geese, within the context of wider biodiversity objectives
- Minimise economic losses experienced by farmers and crofters as a result of the presence of geese
- Maximise the value for money of public expenditure

In general terms, the national policy framework has delivered what it set out to do, and perhaps more. Its approach to national and local partnership, the integration of the needs of conservation and agriculture, an evidence base of sound science and the growing recognition of the wider public benefits all contribute to the delivery of the objectives and are all direct consequences of the policy framework.

There are seven Local Goose Management Groups (LGMG) set up across Scotland. Each has adopted the national objectives agreed as a result of the previous NGMRG Review in 2005; together with a number of locally defined objectives designed to address the impact of geese in their locality. Further information on those seven Local Goose Management Schemes is available at: http://www.gov.scot/Publications/2011/02/03083950/20

As part of its function the NGMRG is required to conduct a multi-disciplinary review of the national policy framework every five years, and to report its findings to ministers. The last review was conducted in 2010 and the review findings were published in February 2011 – see 2010 Review of Goose Management Policy in Scotland .

The Scottish Government response to the 2010 review is also available at: http://www.gov.scot/Publications/2011/02/17112253/2

International Practice

As part of the 2010 review, the NGMRG considered arrangements for goose management in the EU, Scandinavia, Iceland and Greenland – see **Annex ?**

- *Aggression* - During the breeding season, geese may become more aggressive towards people, dogs and other waterfowl. Dogs may provoke a particularly fierce response from geese during the breeding season.

Management Options

Research on the control of Canada geese has identified a range of techniques. The research, which included one site with over 300 geese present in summer, suggests that control techniques used in isolation are unlikely to be effective. Control measures will only work if an integrated programme of management techniques is carried out.

In many cases, management options will necessarily be restricted by the need to preserve historic features, planting layouts and so forth. Not all management options will be appropriate for all sites.

All potential control methods are aimed at reducing the numbers of geese, rather than completely excluding geese from a site, as this is usually impossible to achieve. Most control methods may be less effective if the population is relatively small. Control measures can be divided into site-based and population-based techniques.

Site-based Management Measures
These do not require a licence and include:

- *Exclusion from islands* - Fencing islands in ponds and lakes used for breeding can discourage geese from nesting on the islands. A 1m chicken wire fence with a 10cm gap between the ground and the bottom of the fence will allow other waterfowl to use the island. This technique is most likely to be successful if islands are well vegetated as this discourages geese from flying over the fence.

- *Access to grazing areas* - Fencing around the margins of a water body can discourage geese from feeding in areas beyond. In this way they can be directed away from sensitive grazing areas. Replanting grassland areas with shrubs decreases the food supply. Fencing these areas will be needed to ensure plants establish without grazing or trampling pressure.

- *Reduce visibility of water bodies* - Geese prefer to graze close to a water body which provides them with a safe retreat. By obscuring the views between feeding and grazing areas, geese will be discouraged from using them, however, this may be difficult to achieve in historic landscapes.

- *Controlling public access* - Fencing of water bodies can also be used to influence visitors, by restricting opportunities for feeding geese.

All wild birds, including Canada geese, are protected under Section 1 of the Wildlife & Countryside Act, 1981. It is an offence to take, damage or destroy their nests or eggs without a licence, and it is also an offence to release them into the wild.

Licences for culling in the close season, egg-pricking or translocation of Canada geese can be issued for a number of reasons:

- To prevent serious damage or disease
- To conserve and protect wild birds
- To conserve flora and fauna
- To preserve public health or safety
- To prevent serious damage to livestock, crops, forestry or fisheries
- For the purposes of air safety

Licences are not issued solely to prevent damage to property.

Other Benefits of Control Measures

Arrangements for Goose Management for Countries within the EU, Scandinavia, Iceland & Greenland

In the 2010 review, contacts for countries within the EU, Greenland and Iceland were provided through the editor in Chief of the Goose Bulletin published by the International Goose Specialist Group. If no responses were obtained from the nominated persons, then additional requests for contacts were made through the country representatives of Birdlife International.

Representatives were asked to provide information on their country's goose policy framework, the species which cause conflicts, the goose management options, funding arrangements and expenditure, and hunting regulations. Additional supporting information was taken where necessary from web pages of the Federation of Associations for Hunting and Conservation of the EU (www.face-europe.org) but this was only possible for countries that had submitted hunting guidance in English.

Responses were received from:

- Iceland (Icelandic Institute of Natural History & Environmental Agency of Iceland);
- Flanders, Belgium (Research Institute for Nature and Forest);
- Greenland (Greenland Government);
- Germany (Kreis Wesel Biology Station);
- England (Natural England);
- Italy (Trieste University);
- France (Ministry of Environment);
- Bulgaria (Bulgarian Society for the Protection of Birds);
- Estonia (Institute of Agricultural and Environmental Sciences and Environment Ministry);
- Denmark (National Environmental Research Institute);
- Netherlands (SOVON);
- Sweden (Swedish University of Agricultural Sciences);
- Norway (Institute for Nature Research (NINA) and Norwegian Directorate for Nature Management).

Italy	No	Yes (Province)	3,000 E (Province of Goriza only 2008, 2009)
England	No	No	2,600,000 (based on mean of 10 years)
Belgium	No	Yes (regions)	?

Goose Management Options (for goose species considered to cause damage)

Country	**Payment schemes (rate)**	**Non lethal scaring**		**Lethal scaring/hunting**		**Network of specific goose reserves (excluding SPAs etc)**	**Other**
		Use of	**Funding provided**	**'Quarry species'**	**Out of season licences**		
Sweden	Compensation (assessment of damage carried out by inspectors employed by county administration boards)	Yes	Yes	Yes	Yes	No	Sacrificial crops
Norway	Compensation: (i) crop type (pasture *versus* cereals) and; (ii) goose densities (based on independent counts made)	Yes	Equipment only	Yes	Yes	No	-
Iceland	-	No	No	Yes	Yes	No	-
Bulgaria	Agri-environment scheme (per ha) Compensation (per ha)	No (Illegal)	No	Yes		No	-
Denmark	No	Yes	Equipment only	Yes	Yes	No	Bait fields with grain
France	No	-	-	Yes	No	No	-
Germany	Compensation (assessment of damage by an independent	Yes		Yes	Yes	No	-

Italy	Compensation (Assessment of damage, which is carried out by the farmers and information is submitted to the Provincial administration). The amount is 'financial aid' and does not meet the full cost of losses incurred	No	No	No	No	No	-
England	Agri-environment schemes (per ha)	Yes	No	Yes	Yes	No	Addition to general open licence
Belgium	Compensation (assessment of damage by an independent appraiser from the Nature Conservancy Department. Damage is determined by estimating actual damage by calculating the difference in yield between grazed and ungrazed areas of the field)	Yes	No	Yes	Yes	No	Nest destruction

Hunting Arrangements for Goose Species

Country	**Bag limit for 'quarry goose species'**	**Bag reporting scheme for 'quarry goose species'**	**Sale of goose carcasses permitted**	**Hunting licence renewal**	**Hunting Proficiency exam**	**Regional variation in protected status of species**
Sweden	No	Voluntary	Yes	Annual	Yes	Yes