

# Environmental Studies FACT SHEET



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## Should we cull the Geese?

This Factsheet:

- Discusses the case for and against culling geese
- Discusses why some geese populations are increasing but others are in decline
- Reviews recent exam questions on bird conservation and management

The Lake District Planning Authority (LDPA) planned to cull 200 Canada Geese (Fig.1) on and around Lake Windermere.

Fig. 1 Canada goose (*Branta canadensis*)



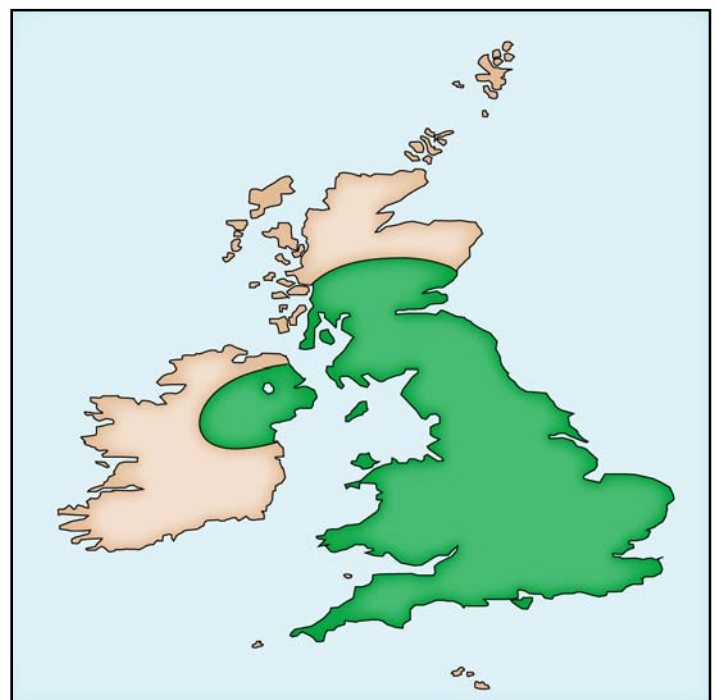
Local opinion was divided (Table 1).

Table 1 Should Canada Geese be culled?

For	Against
The geese damage crops by grazing leaves, roots and seeds and trampling	The goose population fluctuates and is in equilibrium with the amount of food available
The geese eat large amounts of grass, reducing the number of sheep that can be maintained	
The geese damage shoreline habitats such as reed beds and loss of reed beds accelerates bank erosion	Damage is negligible or can be managed
The geese displace native species such as ducks	They were introduced in the 1600s and native species co-exist with the geese
Geese faeces result in excess phosphorus entering Lake Windermere (eutrophication). Such droppings have also led to increased levels of the bacterium E.coli in the water, threatening human health. Culling would improve water quality	Large flocks of geese are a tourist attraction
The geese are an alien species with few natural predators (goslings are preyed upon by pike, otters, mink, crows, gulls and mute swans) and are listed as a "pest" species by Natural England	A cull would be cruel

Lake Windermere has a population of resident birds – as does most of Britain (Fig.2) but this increases in winter as birds from elsewhere try to avoid harsh winter conditions and in summer when additional birds arrive to take advantage of plentiful grazing. In summer 2011 over 1100 birds were counted on the lake.

Fig.2 Distribution of Canada geese



Natural England supported the cull in the Lake District and other culls of the geese on grounds of:

- preserving public health or safety
- preserving air safety
- conserving flora and fauna
- preventing the spread of disease and preventing serious damage to foodstuffs for livestock

The Windermere Geese Management Group, established in 2007 had argued that the cull was the last resort. Previous attempts to manage the goose population included:

- temporary permanent fencing to exclude the geese from main grazing areas
- mechanical scarers
- egg oiling to prevent eggs hatching

The Group argued that none of these had succeeded in reducing the damage caused by the goose population. Fencing merely concentrated the damage, egg oiling reduced birth rate but did nothing to reduce the adult population or number of migrants and the bird scarers annoyed local residents. Thus, the Group believed that the cull was the only approach left.

However, 2600 people signed a petition against the cull. Faced with a well-organised anti-cull campaign the LDPA scrapped the cull although a future cull has not been ruled out.....

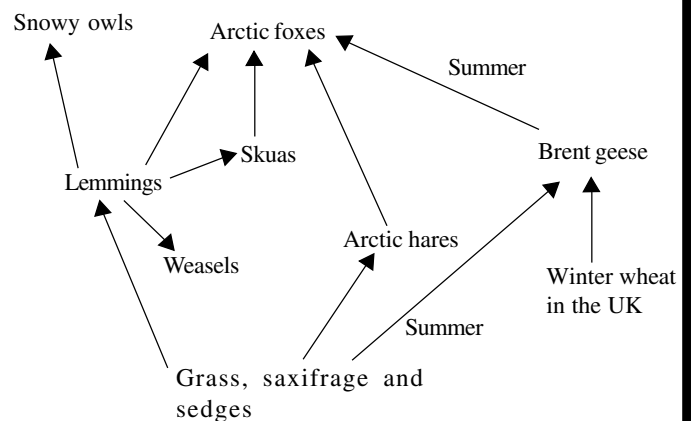
In the past the birds spent almost all winterfeeding on the inter-tidal mudflats and salt marshes. However as their winter populations increased, competition for food increased (intra-specific competition). Large numbers of the geese now spend almost all winter-feeding on inland pastures and arable fields growing winter wheat. Crop losses have increased hugely.

There are several possible strategies for managing this problem:

- Cull the geese
- Provide alternative feeding areas – refuges to attract the birds away from the cereal crops
- Pay compensation to the farmers – the amount paid would involve a complex cost-benefit analysis

**Typical Exam Question**

The diagram shows part of a food web in the arctic ecosystem. Brent geese migrate to the UK in large numbers in winter. Farmers have complained that the geese cause significant damage to grasslands and cereals such as winter wheat through feeding and trampling. Some farmers want the geese to be culled annually to reduce their economic impact.



- (a) Outline the possible impacts on this food web if the Brent geese were culled in the UK (3)
- (b) Birds that migrate long distances are particularly vulnerable to population decline. Explain why (2)

(a) Less food for foxes/ fox population falls;  
 Fox predation on lemmings/skuas/hares increases;  
 Lemmings/hares face less competition for food/grasses etc;  
 Owl/weasel population may increase;  
 Lemming/hare population may increase depending on how lemming population changes;  
 (b) Natural hazards e.g. predators/storms;  
 Human hazards e.g. wind turbines;  
 Lack of food/water;  
 Hunting;  
 Rising temperatures/climate change leads to too early or too late migration;

Markscheme

**Cumbria Bio Security Plan**

The Cumbria Bio Security Plan was developed to try to detect, control and/or eradicate invasive non-native species – those species that have been transported outside of their natural range and that can damage the environment, environmental services, the economy, people’s health and the way we live.

Canada Geese are just one of the species listed in the Plan which also includes American Mink and the plants Himalayan Balsam, Japanese Knotweed, Giant Hogweed and New Zealand pygmy weed.

Six species of geese that spend winter in Britain in large numbers: The populations of all these species have increased dramatically in recent decades. This is a conservation success but has also increased the damage done to farmer’s crops.

In the case of the dark-bellied Brent goose (Fig.3), it isn’t only that numbers have increased – the birds have changed their feeding behaviour.

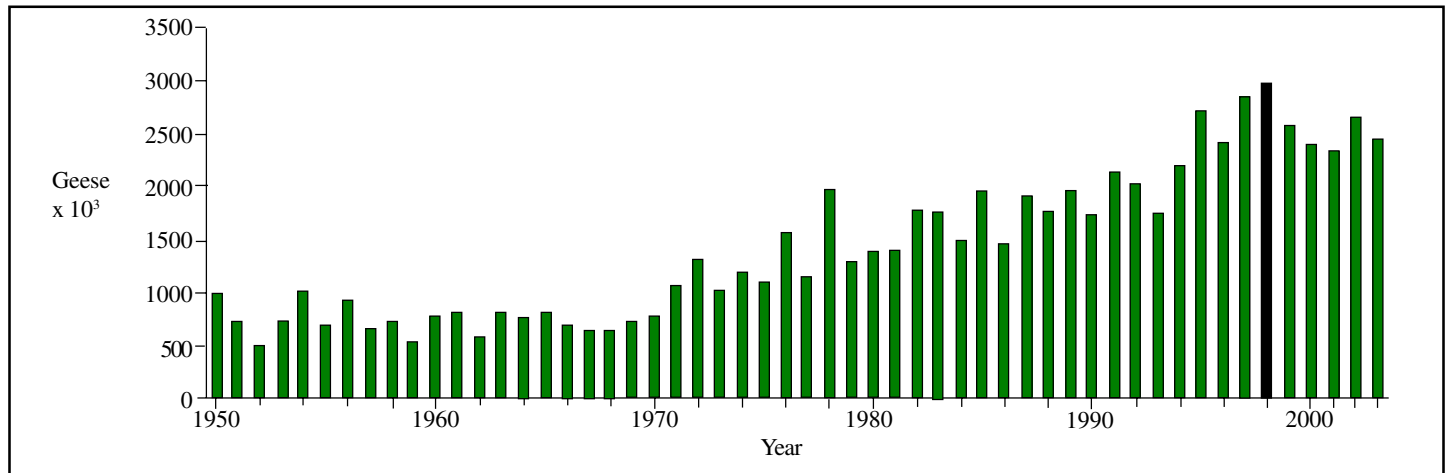
**Fig. 3 Brent goose**



**Hudson Bay geese populations**

The population of many species of Arctic breeding geese have increased substantially over the last 40 years (Fig. 3)

**Fig.3 Population of lesser snow geese**



There appear to be two major reasons for this increase:

- Subsidies to cereal farmers have increased significantly and yields have increased similarly, providing more winter food for the birds
- Many wetland refuges have been established where hunting is not permitted, so hunting mortality has not kept pace with population growth

Scientists are now investigating the harmful impacts of this population increase. Increased and sustained grazing in coastal areas of the Hudson Bay Lowland has killed reeds, grassland and willows and has resulted in huge areas of exposed sediment and peat (Fig.4). What has been good for the geese has not been so good for habitats and many other species around Hudson Bay!

**Fig. 4 Exposed sediments Hudson Bay Lowlands**



**Practice Question**

The Lesser White-fronted goose is an endangered species. It migrates from the arctic tundra to as far south as Greece. Climate change appears to be confusing the birds – they either stay in Europe, where they are prone to hunters, or they stay in the arctic and die in the cold.

Scientists are planning a coordinated effort, involving several countries along the migration route, to try to conserve the species and increase its population.

- Suggest two techniques that the scientists could use in this conservation plan (2)
- An energy company planned to build a giant windfarm across an area known to be part of the migration route of the goose. The company was required to carry out an Environmental Impact Assessment (EIA).
  - What is the purpose of the Environmental Impact Analysis? (2)

The energy company recorded the density of birds seen flying in the area to predict the number of bird deaths. Bird surveys were conducted from 10.00am to 11.00am on six different days in winter. The surveys recorded a total of 62 different bird species. The Lesser White-fronted goose was not detected during any of the surveys.

- Comment on the adequacy of the surveys for measuring the impact of the windfarm on birds, including the the Lesser White-fronted goose (2).

- area is on known migration route of the geese;
- time of day/ seasons of year tested too narrow;
- limited sampling time;
- (ii) inadequate;
- named effects e.g. death of birds/landscape/noise;
- give monetary value to benefits/harmful effects;
- plants;
- (b) (i) predict effect of the windfarm on bird species/geese/other animals/artificial feeding;
- removal of predators;
- increase protected areas;
- wildlife corridors;
- (a) captive breeding/reintroduction;
- (a) translocation (the transfer of some birds to a new habitat);

**Markscheme**

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