

Notice of meeting of

Decision Session - Executive Member for Leisure Culture & Social Inclusion

To: Councillor Ayre (Executive Member)

Date: Tuesday, 14 September 2010

Time: 4.15 pm

Venue: The Guildhall, York

AGENDA

Notice to Members – Calling In

Members are reminded that, should they wish to call in any item on this agenda, notice must be given to Democracy Support Group by:

10.00 am on Monday 13 September if an item is called in before a decision is taken, or

4.00pm on Thursday 16 September if an item is called in after a decision has been taken.

Items called in will be considered by the Scrutiny Management Committee.

Written representations in respect of items on this agenda should be submitted to Democratic Services by **5.00pm on Friday 10 September**.

1. Declarations of Interest

At this point, Members are asked to declare any person or prejudicial interest they may have in the business on this agenda.

- 2. Minutes** (Pages 3 - 4)
To approve and sign the minutes of the meeting held on 13 July 2010.

- 3. Public Participation - Decision Session**
At this point in the meeting, members of the public who have registered their wish to speak at the meeting can do so.

The deadline for registering is:

Monday 13 September at 5.00 pm.

Members of the public may register to speak on:-

- an item on the agenda;
- an issue within the Executive Member's remit;
- an item that has been published on the Information Log since the last session.

Information reports are listed at the end of the agenda.

- 4. Improving York's Green Spaces: Progress in 2010 and future actions** (Pages 5 - 14)
This report provides an update to the Improving York's Green Space: Response to the Open Space Sport and Recreation Study presented to the Executive Member for Leisure, Culture and Social Inclusion in December 2009.

5. Management of Geese in Rowntree Park (Pages 15 - 42)

This report responds to the decision of the Executive Member for Leisure, Culture and Social Inclusion in December 2008 for an independent study on the options for managing wild geese in Rowntree Park and other city centre locations. The purpose of this report is to:

- a) Update the Executive Member on the report by the National Bird Management Unit.
- b) Update the Executive Member on feedback on the report.
- c) Agree which of the options contained within the report should be pursued.

6. Any other business which the Chair considers urgent under the Local Government Act 1972

Information Reports

The following items have appeared on the Information Log since the last meeting. They can be viewed on the Council's website.

Lifelong Learning & Culture: 2010/11 Quarter 1 Performance Report

Democracy Officer:

Name- Judith Cumming

Telephone No. – 01904 551078

E-mail- judith.cumming@york.gov.uk

For more information about any of the following please contact the Democracy Officer responsible for servicing this meeting:

- Registering to speak
- Business of the meeting
- Any special arrangements
- Copies of reports

Contact details are set out above.

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Would you like to speak at this meeting?

If you would, you will need to:

- register by contacting the Democracy Officer (whose name and contact details can be found on the agenda for the meeting) **no later than 5.00 pm** on the last working day before the meeting;
- ensure that what you want to say speak relates to an item of business on the agenda or an issue which the committee has power to consider (speak to the Democracy Officer for advice on this);
- find out about the rules for public speaking from the Democracy Officer.

A leaflet on public participation is available on the Council's website or from Democratic Services by telephoning York (01904) 551088

Further information about what's being discussed at this meeting

All the reports which Members will be considering are available for viewing online on the Council's website. Alternatively, copies of individual reports or the full agenda are available from Democratic Services. Contact the Democracy Officer whose name and contact details are given on the agenda for the meeting. **Please note a small charge may be made for full copies of the agenda requested to cover administration costs.**

Access Arrangements

We will make every effort to make the meeting accessible to you. The meeting will usually be held in a wheelchair accessible venue with an induction hearing loop. We can provide the agenda or reports in large print, electronically (computer disk or by email), in Braille or on audio tape. Some formats will take longer than others so please give as much notice as possible (at least 48 hours for Braille or audio tape).

If you have any further access requirements such as parking close-by or a sign language interpreter then please let us know. Contact the Democracy Officer whose name and contact details are given on the order of business for the meeting.

Every effort will also be made to make information available in another language, either by providing translated information or an interpreter providing sufficient advance notice is given. Telephone York (01904) 551550 for this service.

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Holding the Executive to Account

The majority of councillors are not appointed to the Executive (40 out of 47). Any 3 non-Executive councillors can 'call-in' an item of business from a published Executive (or Executive Member Decision Session) agenda. The Executive will still discuss the 'called in' business on the published date and will set out its views for consideration by a specially convened Scrutiny Management Committee (SMC). That SMC meeting will then make its recommendations to the next scheduled Executive meeting in the following week, where a final decision on the 'called-in' business will be made.

Scrutiny Committees

The purpose of all scrutiny and ad-hoc scrutiny committees appointed by the Council is to:

- Monitor the performance and effectiveness of services;
- Review existing policies and assist in the development of new ones, as necessary; and
- Monitor best value continuous service improvement plans

Who Gets Agenda and Reports for our Meetings?

- Councillors get copies of all agenda and reports for the committees to which they are appointed by the Council;
- Relevant Council Officers get copies of relevant agenda and reports for the committees which they report to;
- Public libraries get copies of **all** public agenda/reports.

City of York Council

Committee Minutes

MEETING	DECISION SESSION - EXECUTIVE MEMBER FOR LEISURE CULTURE & SOCIAL INCLUSION
DATE	13 JULY 2010
PRESENT	COUNCILLOR AYRE (EXECUTIVE MEMBER)

1. **DECLARATIONS OF INTEREST**

At this point in the meeting Members present were invited to declare any personal or prejudicial interests they might have in the business on the agenda. None were declared.

2. **MINUTES**

RESOLVED: That the minutes of the last Decision Session – Executive Member for Leisure, Culture and Social Inclusion meeting, held on 11 May 2010 be approved and signed by the Executive Member as a correct record.

3. **PUBLIC PARTICIPATION - DECISION SESSION**

It was reported that there had been no registrations to speak at the meeting under the Council's Public Participation Scheme.

4. **FAIRNESS AND INCLUSION STRATEGY 2009 - 12 : SINGLE CORPORATE EQUALITY SCHEME (SCES) ANNUAL PROGRESS REPORT YEAR 1**

The Executive Member considered a report, which updated him on progress with the Single Corporate Equality Scheme (SCES) for the period July 2009 to June 2010.

Officers explained that the SCES was the plan of action that the council had put in place to deliver the objectives of the Fairness and Inclusion Strategy, a summary of progress made in delivering the objectives was set out in Appendix 1 of the report. It was reported that the first year of the scheme had focussed on:

- Improving customer and staff insight and engagement
- Assessing the impact of major decisions and projects on customers and staff from the equality strands
- Putting in place an inclusive workforce plan
- Briefing and training our staff and councillors about equality and human rights

- Completing single equality schemes (plans of action with targeted outcomes to benefit equality strands)
- Putting in place a community cohesion plan for the city (One City Plan)

Preparatory work had also been undertaken in areas on which completion was due to take place during 2010 -11 including:

- Mainstreaming procurement best practice
- Working with our LSP partners to finalise and start to implement the community cohesion plan
- Start to share and use equality data.

The Executive Member questioned Officers on various details of the report including:

- Council Website users who choose the translation option and
- Use of Equality Impact Assessments (EIA's) in relation to De Grey House.

Officers thanked the Executive Member for his support of the Equality Scheme.

RESOLVED: That the Executive Member notes the progress made with the Single Corporate Equality Scheme for the period July 2009 to June 2010.

REASON: To keep the Executive Member informed of progress on the scheme.

5. INFORMATION REPORT : YORK THEATRE ROYAL

The Chief Executive of the Theatre Royal updated the Executive Member of the progress and performance of the York Theatre Royal under the current Service Level Agreement, which ran until March 2012.

CLLR N AYRE, Chair

[The meeting started at 4.15 pm and finished at 5.05 pm].



Meeting of the Executive Member for Leisure,
Culture and Social Inclusion

14 September 2010

Report of the Assistant Director (Lifelong Learning and Culture)

Improving York's Green Spaces: Progress in 2010 and future actions

Summary

1. This report provides an update to the Improving York's Green Space: Response to the Open Space Sport and Recreation Study presented to the Executive Member for Leisure, Culture and Social Inclusion in December 2009.
2. The Executive Member is asked to:
 - a) Note the past and current actions
 - b) Agree the future actions as set out in the report

Background

3. The Policy Planning Guidance Note 17 (PPG17) – Open Space Sport and Recreation Study (The Study) was commissioned as part of the Council's Local Development Framework evidence gathering exercise. Over an eighteen-month period open space consultants, PMP, surveyed and assessed open space across the city with the outcome presented to the Local Development Framework (LDF) working group in December 2008. The results of the Study inform both Core Strategy and Allocations development plan documents.
4. Land was then categorised according to the primary purpose of the site in line with the nationally agreed typologies of a) city parks, b) local parks, c) natural and semi natural greenspace, d) amenity green space, e) provision for children, f) provision for young people, g) outdoor sports facilities and h) allotments. This audit is stored on the Council's electronic mapping system, and linked Access database and can be updated annually.
5. The final exercise was the production of local provision standards (quantity, quality and accessibility) for each type of open space. These were set in accordance with local needs of people living, working and visiting the City of York which was established through a series of consultations, including household surveys, workshops and stakeholder meetings.

6. Plans detailing open space provision in December 2008 will be on display at the meeting. A copy of the report can be found at:

http://www.york.gov.uk/environment/Planning/Local_development_framework/LDF_Evidence_base

7. The following sections provide an update on the work undertaken to meet the agreed actions and projects since December, and sets out a future work programme.

Parks and Gardens

8. The key issues for parks and gardens identified in the study are *“Just over 50% of residents perceived the quantity of local parks to be insufficient. The quality of parks is perceived to have improved over recent years, reinforced the by the achievement of several green flag awards across the City. Residents highlighted that improvements to the ancillary provision within parks would further enhance their quality. Maintaining and enhancing the quality of the parks was of greater importance than increasing the overall quantity of facilities”*. City Parks include both the major venues like Rowntree Park and the Homestead and small sites like Glen Gardens. The local quantity standard was set at the existing level of provision so there are no issues of over or undersupply. Quality issues were raised, with St George’s Field (Tower Gardens) and Hull Road Park being specifically mentioned as needing improvement.

9. Recent and current actions:

- In July four of the Council’s parks and gardens now have green flag awards – Rowntree Park, West Bank Park, Glen Gardens and Clarence Gardens. Clarence Gardens achieving the standards for the first time in 2010.
- The toilets at West Bank Park were refurbished in the spring.
- The pavilion in Hull Road Park has been improved with better storage and staff welfare facilities, and the children’s playground has been improved with new equipment.
- The pavilion in Clarence Gardens has been painted, and a start made on repainting the perimeter railings and re-landscaping the area where Haxby Road meets Wiggington Road
- At Scarcroft Green Bowling facility work has started with the Bowls Association and the York Probation Trust. This work could provide the basis for a Green Flag application in 2012 for Scarcroft Green and surrounding area
- The exterior of Rowntree Park lodge is due to be repainted and new windows installed

10. Future actions:

- St George’s Field was identified as a low quality local park in need of improvement. A site development plan will be drawn up over the autumn

that will identify investment priorities and actions to introduce more colour and vitality to the site including the removal of unnecessary vegetation.

- Submit a pre-application enquiry form to the Heritage Lottery Fund “Parks for People” programme for possible funding for the Ark in the Park project in association with the Friends of Rowntree Park.
- Enter Hull Road Park for a Green Flag award in 2012 (further time is need to get the site up to standard). Work in preparation includes painting the beck side railings, reviewing the need for the bowling greens and redevelopment of the old ranger base.
- Enter Scarcroft Green and surrounding area for a Green Flag application in 2012.

Natural and semi natural open space

11. These locations include the strays, riverbanks and nature reserves, key issues for natural and semi natural open space identified in the study are “There are variations in the perceptions of the quantity of natural and semi natural open space across the City. The quality of natural sites is important to residents and the wider benefits of these sites were recognised. Natural sites were perceived to have a particularly important role in enhancing biodiversity and developing habitats”. Applying the local quantity standards to existing provision shows that there is sufficient provision, efforts are therefore being concentrated in raising the quality of existing sites.
12. Recent and current actions:
 - The Council’s Countryside Officer submitted three bids to Natural England for Environmental Stewardship in July. The bids cover a) Walmgate Stray, b) Bootham Stray and Clifton Backies, and c) Hob Moor and a small section of the Knavesmire. The outcome of which is expected to be known by the end of the year. The scheme commits the Council to managing the land in set ways in return for grant aid which is to be used to improve the sites for nature, educational and recreational
 - A new grazier has taken on the Council’s grazing rights, which has resulted in improved stock levels and restoration work being undertaken at Monk Stray.
 - The Friends of St Nicholas Fields have been awarded a Green Pennant ward for the management of open space. The award is part of the national Green Flag scheme and is open community groups. This the first such award in York.
13. Future actions:
 - As yet the service is not fully represented within the Wild Flowering of York Project (a community partnership to improve and expand the range of wild flower sites in York). This will be followed up over the winter.

Amenity greenspace

14. Amenity spaces are informal, often smaller sites used by local people e.g. Acomb Green, Clifton Green, Poppleton Village Green. Key issues are –

“Amenity green spaces were perceived to be particularly important for the qualities that they bring to the landscape and character of the local area. The quality of provision was perceived to be as important as the quantity and there is a greater variation in the current quality of these open spaces than in any other type”. Applying the local quantity standards to existing provision shows a citywide sufficiency of provision; however, this masks a shortfall in the amount of amenity greenspace in specific areas including Heworth Without, Huntington and Acomb.

15. Recent and current actions:

- The Friends of Acomb Green have been supported to hold their first summer event and working with the Parks and Open Spaces staff, are drawing up a development plan for the site.
- Rawcliffe County Park was awarded a Green Flag for the second consecutive year.

16. Future actions:

- At Rawcliffe Country Park an introductory off road / mountain bike track could be built with £12k funding subject to approval from the Big Lottery Fund. In addition a fitness trail could be built possibly in partnership with sport and fitness users of the site.
- The Council has been invited to nominate sites for The Queen Elizabeth II Fields Challenge, which will give communities an opportunity to vote for playing fields in their area and be permanently protected as a tribute to the Queens Diamond Jubilee in 2010. Melrosegate Playing Field is suggested as a site, which could be put forward for consideration. See <http://www.qe2fields.com/QueenelizabethIIcharityfieldschallenge.aspx>

Children and young people

17. Children’s facilities are defined as the “traditional playgrounds”; young peoples facilities include skateboard sites and older age group playgrounds. Key issue the study highlighted are- *“The quantity of provision for children and young people was the overriding theme of the consultation with the majority of residents highlighting that the quantity of provision is poor. Several issues regarding the quality of existing provision also emerged. The majority of comments focused around the need for provision to be more challenging and innovative”.* Applying the local quantity standards to existing provision shows a shortfall of children’s playgrounds and young person facilities. Specific areas with no provision for children include Skelton, middle Strensall, south Haxby / Wigginton, Monk Stray, Woodthorpe and Dringhouses, Bishopthorpe, Naburn and Elvington. Young peoples facilities are in particularly short supply with only 5 sites in the city.

18. Recent and current actions:

- 11 play areas were built, expanded or refurbished under the 2009/10 programme including Elvington, Naburn, Bishopthorpe, Skelton, Huntington, Barfield Road, Viking Road, Chesney’s Field, Ashton Avenue, Sowerby Road and Balfour Street

- 1 play area has been expanded under the 2010/11 programme at Copmanthorpe. The remainder of the scheme is subject to a review by the Department for Education
- The Rawcliffe climbing boulder was officially opened in 11th June adding a new dimension to what is on offer in the City.
- The possibility of offering a dedicated maintenance and inspection service was tested out with local Councils, with several parish councils expressing interest in the idea.
- The knowledge of teenager facilities in the City has increased through the work of Leisure and Culture Overview and Scrutiny Committee's review of Casual play opportunities.
- An audit of future investment needs for the Council's playgrounds is being compiled detailing both opportunities for expansion and an estimated life expectation of the current equipment.

19. Future actions:

- To offer local councils an option to buy into a play ground inspection service instead of receiving double taxation payments
- Further development of the "Playbuilder" sites subject to the revised grant allocation being available.

Allotments

20. Key issues from the study are - "Analysis of demand for allotments highlights that some sites are nearing capacity and that there are waiting lists at some existing facilities. The quality of allotments is also varying". Applying the local quantity standards to existing provision shows there is a shortfall of about 1 hectare. Specific areas with no provision include Skelton, south Strensall, south Haxby / Wigginton, Clifton Moor, Westfield, Woodthorpe and Dringhouses, Wheldrake and Elvington.

21. Recent and current actions:

- The new drainage at Howe Hill allotments has allowed disused ground to be brought back into cultivation, providing plots for 18 new tenants.
- Speedier action on unused plots and division of plots as they come vacant, has considerably reduced the long waiting lists for Low Moor and Hempland allotments. 20 additional tenants have been accommodated on small starter plots.
- New raised beds for gardeners with disabilities have been installed at Glen allotments, funded by the Heworth ward committee.
- The general standard of gardening on council allotments sites continues to improve, illustrated by Low Moor Community Kids Allotment Yorkshire in Bloom entry; and, the Council's Allotment Garden Competition.
- The Council's allotments information leaflet has been updated to include 20 parish and independent sites.

- A bid to the Big Lottery Reaching Communities fund for community-based restoration of Bootham Stray allotments has been accepted for further consideration. The allotment association committee and Council officers are preparing a full bid for this £50,000 project jointly.
- A new 20 plot private allotment site is opening in Bishopthorpe in January 2011 and is being promoted through the Council's allotments web page
- Three sites are under consideration for possible new allotments in areas of high demand.

22. Future actions:

- Continue to investigate possible new sites in urban and rural areas.
- Continue to support initiatives by allotment tenants for grant funding and site improvements.
- Investigate possibilities for accessible allotment gardening on more sites.

Outdoor sports facilities

23. Facilities include grass and synthetic pitches, tennis courts and bowling greens. Key issues are *“There is high demand for outdoor sports facilities across York and the existing facilities are perceived to be of varying quality. An increase in the level of provision will be required over the LDF period to 2029 to facilitate higher levels of participation in sports. There is potential for this to be delivered to an extent through community use at school sites”*. Applying the local quantity standards to existing provision shows a shortfall of nearly 16 hectares, this is equivalent to about 8 full size football pitches. Specific areas of the city have specific shortfalls for example there is a shortfall of pitches in Fulford and Dringhouses.

24. Recent and current actions:

- The findings of the study are totally consistent with the research carried out by Active York, the city's sport and active leisure partnership in 2005 and updated in 2010. Since 2005 the Council and other Active York partners have been working with community clubs, schools and developers to make a start on addressing the qualitative and quantitative shortfalls. It is also recognised that if the challenging targets for increasing participation in sport and physical activity are to be met then the city must offer high quality facilities for these new participants.
- The Football facilities project officer appointed in May 2009 is currently working on 16 facility projects, which will provide new pitches, improved pitches and/ or new or enhanced changing and ancillary facilities across the city.
- The football facilities project officer has established and worked with a steering group of local league officials, the county FA and school sport representatives to develop a football facilities development plan. This is due to be published later this month and sets out the priority football projects in the city.

- The football facilities project officer has worked with “Play Football” at Clifton Moor to ensure that they fulfil their planning obligations and provide grass pitches for community use. This has seen the creation of one senior and three mini pitches. These pitches are now the subject of a partnership agreement between the commercial sector, the Council and one senior and one junior community football clubs.
- During 2009/10 the Council negotiated community access to an additional 3 school sites through the development and adoption of community use agreements. These include the development of shared sports facilities on one site, which will provide for both community and school sport.
- Tennis courts and a fitness trail (funded by Hull Road Ward Committee) have been opened in Hull Road Park.
- As part of the LDF land allocations process Active York consulted community clubs about their aspirations for additional pitches and facilities. A number of clubs and sites have been requested for additional sporting open space. The need for additional sports space has been identified in the core strategy documents and will continue to be included in planning documents.

25. Future actions:

- Update and publish a 2010 edition of Active York’s playing pitch strategy document setting out priority projects. Share this document with community groups and governing bodies of the relevant sports to encourage engagement in delivering these projects.
- Continue to seek opportunities for new sports facilities, for shared use of sites and for integrating informal sporting opportunities into other community settings, such as mapped running routes etc.
- Encourage schools to offer community access to their sports facilities and where possible to assist with facility improvements in return for guaranteed community access.
- Seek external funding to support our sports facility and pitch projects to enable the city to make the best use of the resources available to us.

Cross Cutting issues

26. The Council continues to obtain Section 106 contributions from new housing developments and these are used to improve capacity, access and standards of open space across all 8 categories. Depending on the locality of the development the money is either spent by the Council or passed on to third parties who manage open space including parish and town councils, voluntary sports clubs and community groups. Section 106 moneys have been transferred to Parish and Town Councils to improve their green spaces including Haxby, Elvington, Skelton, Clifton Without, Dunnington, Wigginton, Osbaldwick, Stockton on the Forest Copmanthorpe, Knapton, Strensall and Heslington.
27. The City has again entered the Yorkshire in Bloom Award, with the results due on 14th September. The judges visited the city in spring and again in mid-

summer, combining the scores from the two visits to give the overall standard. The spring and summer routes extend from Bishopthorpe through to Haxby and include voluntary and community activity, meeting children and young people, as well as visiting religious, residential, commercial, transport, shopping, council and higher education sites. As part of the Committees work programme membership of the York in Bloom committee has been expanded, the number of flora displays has been increased in the city centre and support has been given to community groups entering Yorkshire in Bloom.

Consultation

28. Considerable consultation was undertaken to produce the Study. Site-specific improvements are in most cases undertaken in consultation with local users, friend groups or associations, or sporting organisations as appropriate.

Options

29. The options available for the Executive Member are:
- Option 1: Agree the future actions suggested above in Paragraphs 10, 13, 16, 20, 23, and 26.
- Option 2: Suggest further and/or alternative actions for investigation.

Analysis

30. Option 1 offers the means of continuing to respond to the challenges raised by the Study. Many improvements rely on funding becoming available and therefore a degree of flexibility is required as to which project can move forward at any given time; however the Executive Member may be able to be able to suggest further areas for consideration.

Corporate Priorities

31. The actions and initiatives set out in the report relate to several of the Council's corporate priorities including:
- Sustainable City:* We will improve the quality of the local environment and the condition of York's public spaces.
- Inclusive City:* We will improve opportunities for third sector involvement in the shaping, influencing and delivery of services through consultation and partnership working to deliver open space improvements
- City of Culture:* By providing safe, well maintained and fit for purpose venues capable of holding city wide and local events
- Healthy City:* By providing safe, well maintained and fit for purpose venues which support the Just 30 campaign

Implications

32. **Financial** – There are no specific financial implications of the report's recommendations. Where any individual project has financial implications it will be approved through the scheme of delegation and monitored by appropriate budget managers.

33. **Legal and Property** - Where specific projects have property implications e.g. lease or lettings Legal Services will be involved in any arrangements
34. There are no Human Resources, Equalities, Crime and Disorder, Information Technology or Property Implications arising from this report.

Risk Management

35. Failure to continue invest in existing and new open space will mean that the ambitions of the Local Development Framework will not be met.

Recommendations

36. The Executive Member is asked to:
- Note the work currently being undertaken
 - Agree the proposed actions summarised in paragraph 29
 - Suggest any additional projects and priorities for investigation

Reason: To develop sufficient high quality open space that meets the needs of the City's residents and visitors.

Contact Details

Author:		Chief Officer Responsible for the report:		
Dave Meigh Head of Parks and Open Spaces Communities and Neighbourhoods Tel No. 01904 553386		Charlie Croft Assistant Director (Lifelong Learning and Culture)		
		Report Approved	✓	Date 02.09.10
Specialist Implications Officer(s): N/A				
Wards Affected:				All ✓
For further information please contact the author of the report				

Background Papers:

The Open Space Sport and Recreation Study can be found at:

http://www.york.gov.uk/environment/Planning/Local_development_framework/LDF_Evidence_base

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Meeting of the Executive Member for Leisure,
Culture and Social Inclusion

14 September 2010

Report of the Assistant Director (Lifelong Learning and Culture)

Management of Geese in Rowntree Park

Summary

1. This report responds to the decision of the Executive Member for Leisure, Culture and Social Inclusion in December 2008 for an independent study on the options for managing wild geese in Rowntree Park and other city centre locations. The purpose of this report is to:
 - a) Update the Executive Member on the report by the National Bird Management Unit.
 - b) Update the Executive Member on feedback on the report.
 - c) Agree which of the options contained within the report should be pursued.

Background

2. The presence of large numbers of wild geese in Rowntree Park and other city centre locations in York creates a number of operational and safety problems. These include large amounts of droppings in paved areas, parks and gardens, making these sites unwelcoming and usable, damage to vegetation through grazing, and intimidation of children and animals.
3. Complaints are regularly received each year about geese especially about the amount of faeces on the grassed area within the park. This makes the main lawn unusable for picnics and games, and lakeside paths slippery and unattractive. This is a long standing problem with the issue first being considered by the Leisure Services Committee in October 1996. Letters regularly appear in The Press (most recently on 11th August 2010). The Green Flag judges often comment on the problems caused by geese as one of the few negative aspects of the park.
4. During this time the Council has obtained annual licences to treat the eggs of birds that nest at Council owned sites. This is carried out by dipping the eggs in paraffin in accordance with the nationally approved practice set by Natural England. This is useful in helping to keep the population from expanding but does not remove the underlying problem. Details of the number of eggs treated each year are provided as Annex 1.
5. Other measures introduced in Rowntree Park in 2001:
 - fencing of the islands: despite this geese still nested there

- periodic sweeping of the footpath, either manually or by a small mechanical road sweeper
- educating people not to feed the geese through on site signage

6. The Council also explored other potential measures over the years including:

- fencing of nest sites
- fencing of lakeside edges
- visual and acoustic scares
- dead decoys
- sheep dogs
- chemical repellents
- relocation
- lion dung
- increased sweeping
- increased shrub and tree planting

Based on experiences elsewhere in York, the impact the change would have on the historic landscape, lack of suitable safety information or cost, none of the above were considered viable.

7. In December 2008 The Friends of Rowntree Park, through the Meeting of the Executive Member for Leisure and Culture, and Social Inclusion, and Advisory Panel, sought a review of the Council's goose management regime. This was agreed by the Executive Member and a project brief was developed with the Friends.
8. In September 2009 the National Bird Management Unit at the Food and Environment Research Agency (FERA) were commissioned to undertake a review of possible goose management options available to the Council. The review was designed to draw upon on best and current practice and include specific reference to Rowntree Park where there are both resident and transitory Canada and Greylag geese populations. Options would be both short and long term, and if appropriate, the site would be used as a test for new or emerging management techniques.
9. The report "*A review on management options for resolving conflicts with urban geese*" was received in February and is available to view or download from the Council's web site:
http://www.york.gov.uk/environment/Parks_and_open_spaces/Wildlife/geese/
It is also attached as Annex 2.
10. Micklegate Ward Committee has also taken a keen interest in the issue. During 2009 it voted funds for the improved management of geese in Rowntree Park and asked to be kept informed of progress on the report. Money from the Ward Committee has been used to fund the most recent signage.

The Review Report

11. The authors of the report state that current management techniques fall into two categories:
 - a) behaviour modification - by scaring (acoustic and visual stimuli), use of chemical or natural replants, physical exclusion or habitat management; and
 - b) population management control - by preventing eggs hatching, shooting in or out of season, culling during moult, culling with other capture techniques and / or by relocation.

Both of these measures can be supported by an education programme informing the public that geese are known carriers of various diseases, and that feeding bread can cause malnutrition and encourage aggressive behaviour.
12. The report concludes that the *“in urban environments current best practice emphasis the use of integrated management strategies that combine techniques and the use of repellents and population control to reduce damage to sensitive sites. No single technique is likely to remove the overall issue”*. A summary of the options available to the council are:
 - 1) Habitat management
 - a) Identification of all breeding sites.
 - b) Installation of goose proof fencing to all breeding sites where possible.
 - c) An education programme to prevent birds being fed by the public.
 - d) A refresh of signage.
 - e) The prevention of access to grass areas via fencing or planting.
 - f) Application of deterrent spray to grass under a trial licence.
 - g) Sowing of special grass seeds if available.
 - 2) Egg management
 - a) Continue ongoing egg oiling programme, under licence for Greylag geese.
 - b) Work with other landowners to include more nest sites within the treatment area.
 - 3) Deterrence or removal
 - a) Deterrence during the day by trained dogs.
 - b) Testing the use of distress calls.
 - c) Testing the use of falconry.
 - d) Culling in urban area during moult (licence required)
 - e) Shooting in surrounding farmland during autumn (either in season or under licence).
13. Although not covered in the report there is the further option to intensify the cleaning regime in the park, specifically the grassed areas. This would require the purchase of specialist equipment and employment of additional staff at an

estimated cost of £15k. If this option is selected further detailed costs will be obtained to inform a growth request in the 2011/12 budget.

Consultation

14. The availability of the report has been widely circulated through Micklegate Ward newsletter. In May the Friends of Rowntree Park provided a briefing at Micklegate Ward Committee. The July edition of the ward newsletter publicised the availability of the report and parks staff attended the meeting to discuss the contents of the report and seek views on which of the options available.
15. When complaints have been received by the service, the complainants have been referred to the report and asked comment on which option(s) they would prefer to resolve the situation.
16. A consultation opportunity was planned for the Park Birthday party on 11th July. Unfortunately the event had to be cancelled.
17. The most commonly selected options are:
 - A cull during the moult (this is when the birds renew their feathers)
 - Continue the egg oiling programme
 - Shooting in the countryside
 - Testing of deterrent non lethal deterrent methods such as dogs or falconry
18. The Friends of Rowntree Park have formally responded to the report in August and their view is set out below:

"The Friends of Rowntree Park are concerned about the nuisance caused by the goose droppings and about the impact that large numbers of geese have on the environment in the Park and vicinity. We know that many other visitors to the Park are also concerned, as it is the most frequently-heard negative comment about the Park. We realise that the problems caused by the Canada geese are a city-wide and country-wide issue. We know that other authorities have found ways to reduce the nuisance caused by geese in public areas and we understand that managing geese in public parks is best tackled by using a combination of techniques.

The Friends have considered the Goose Management report prepared by Baxter and Hart. For the purposes of the Friends, and in the interests of the city as a whole, we feel it is essential to find measures which will reduce geese reproduction rates locally, in a humane fashion. We therefore support the idea of identifying as many breeding sites as possible, on council land and elsewhere, and increasing the number of eggs treated in the oiling programme. More publicity about the oiling programme would increase awareness of this humane way of restricting population growth and potentially encourage land-owners to come forward with information about nesting sites on their land.

Public education is a critical factor, as many locals and visitors feed the geese, along with the other wildfowl. We think that there should be an education campaign which stresses the health risks for wildfowl which are overly-dependent on bread, along with information on the negative environmental

impacts. We would support the council in such a campaign, and have already been seeking arenas and methods to disseminate the relevant information. Some new signs have been put up in the Park, but these are quite small, and situated too discretely; we would recommend information painted directly onto the lakeside paths.

Temporary fencing around the main field could be used for a few weeks in preparation for major events, such as the Birthday Party and the Cycling weekend, but the Friends understand that this would be expensive to erect and maintain, and impractical long term. The Very Young Friends have previously lobbied for a fence and gate around one of the areas enclosed by beech hedging, to ensure at least one area is free of droppings and thus can be safely used by the under-fives. Research into the original designs and early photos of the Park may reveal areas where low-level hedges or similar could be reinstated, providing zones where geese would feel uncomfortable. Given the recent major investment in the Park's restoration, new hedging or planting is unlikely to be appropriate in the more formal areas of the Park, but the Friends are currently working with the Park Ranger to research methods of reed-bed creation, in the more informal, southern end of the lake, and this sort of zone may also be effective in deterring geese.

We would like to see trials of some of the other more unusual methods, such as dogs, falconry, lasers and distress calls, perhaps in the lead-up to the peak periods of goose occupation. These would also need good public information. We feel we don't have enough information to form an opinion on the use of bad-tasting chemicals or grass, and would be concerned about the potential effects on other wildlife".

Options

19. The options are as set out in paragraph 12 and 13 above.

Analysis

20. In light of the identified options and the views expressed in the consultation the best available options would be:
 - a) A combination of current control methods - increasing the number of sites where egg treatment takes place, a refresh and expansion of the signage as part of an education programme. This could start immediately.
 - b) Trialling a non lethal deterrent system such lasers, falconry or trained dogs. This could take place over the next twelve months depending on the availability of the suitable contractor or equipment.
 - c) Install gates to complete the enclosure of the two small formal garden areas within the park. This could start immediately.
 - d) Seeking a licence to cull the geese and/or seek cooperation from surrounding farmers to shoot geese which visit their land. A licence would be needed for a cull during the moult period and there is no guarantee that any geese which are shot on surrounding farm land frequent the park.
 - e) Buying specialist equipment and employing more staff to clean grass areas of the park. This would need additional financial resources.

21. The following option is not considered viable:
- a) To fence the park lake: This is not considered viable because evidence from previous fencing in the park and elsewhere indicates that the geese will simply fly over the fence to reach a safe feeding ground. By erecting a fence it acts to keep other users – or disturbance out adding to the appeal of the feeding area.

Corporate Objectives

22. The scheme contributes to *Inclusive City* – by involving local residents and communities in the management of their spaces.

Implications

23. **Financial:** If any of options a), b), c) and d) are selected costs can be met from within the existing parks and open space budgets. If the deterrent trails are successful a growth bid would be needed for 2012/13 to implement that option on a permanent basis. If option e) is selected the estimated £15k p.a. cost would need to be confirmed and bid for as part of the 2011/12 budget process.
24. **Legal:** Where licences are required they will be obtained from Natural England in accordance the Wildlife and Countryside Act 1981 (as amended).
25. There are no Highways, Human Resources, Equalities, Crime and Disorder, Information Technology or Property Implications arising from this report.

Risk Management

26. The main risk to the council is that the approved measures do not reduce the goose fouling problem and the reputation risk to the council that this presents.

Recommendations

27. The Executive Member is asked to:
- Agree which option or options set out in paragraph 20 should be implemented.
- Reason: To improve the condition of Rowntree Park for users.

Contact Details

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Charlie Croft
Assistant Director (Lifelong Learning &
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**Report
Approved**



Date 02.09.10

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Wards Affected: Micklegate

All

For further information please contact the author of the report

Background Papers:

Project file held by David Meigh Head of Parks and Open Spaces

Annex 1 - 2000 to 2010 egg treatment results

Annex 2 Report - "A review on management options for resolving conflicts with urban geese"

2000 to 2010 egg treatment results

Year	Greylag	Canada	Total
2000		26	26
2001			88
2002	18	47	65
2003			0
2004	15	79	94
2005	49	134	183
2006	54	61	115
2007	37	171	208
2008	30	164	194
2009	29	195	224
2010	23	107	130

Notes

2001 - data not recorded by species

2003 - licence application missed due to change in process

2005 - numbers increased due to the inclusion of more nesting sites.

A review on management options for resolving conflicts with urban geese

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Bird Management Unit

A Review of Management Options for Resolving Conflicts with Urban Geese.

15/02/2010

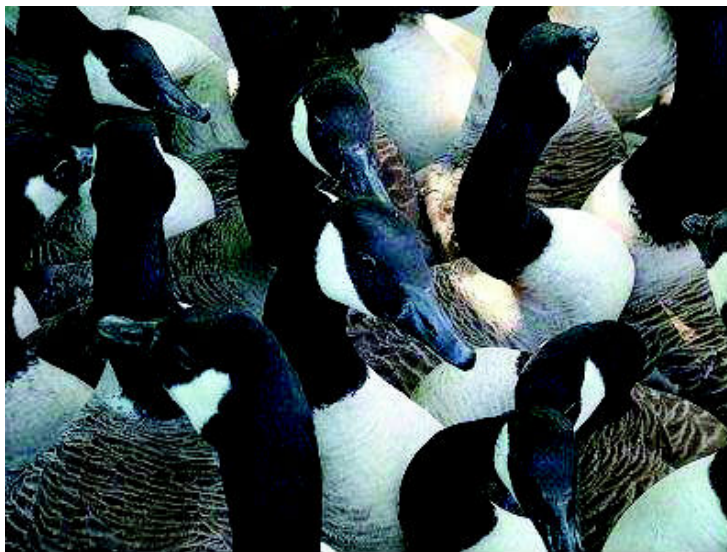
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1 Background

1.1 Population sizes

Canada Geese (*Branta canadensis*), and Greylag Geese (*Anser anser*), have established large feral breeding populations throughout England over recent decades. Canada Geese are widespread in England and have an expanding range in Wales and Scotland (Gibbons et al. 1993). They are now classified as 'abundant' with a peak population size now estimated at c.127,000 in the UK (Austin et al. 2007). The population of feral Greylag Geese is estimated at somewhere in the region of 20,000 birds (Fenland Wildfowlers Association data) and is growing at a rate of over ten percent a year (British Library data). This is hugely increased by the arrival of 'wild' Greylag Geese from Icelandic and other Arctic environments each winter. However, both species do, however, tend to remain within a given area once settled.

The main issue regarding managing populations of these species is their current success rate and the associated regular increases in annual population size. Canada Geese in the United Kingdom, for example, are descended from birds originally introduced from North America in 1665 (Allan *et al* 1995). Their numbers only began to increase rapidly, after a relocation scheme implemented by the Wildfowl Trust and Wildfowler's Association between 1953 and 1957 (Ogilvie 1978) was initiated. The population in Great Britain rocketed from around 2,000 individuals to reach over 64,000 by 1991 (Rehfish *et al* 2002). Increases of around 8% per year have subsequently occurred. Whilst the feral Greylag population is estimated at a much lower level than Canada Geese, their population is increasing at around 10% per year. Any management activity to resolve local conflicts therefore needs to consider the underlying drivers affecting these increases. Both Greylag and Canada Geese are hereby referred to as Feral Geese for the purposes of this document.



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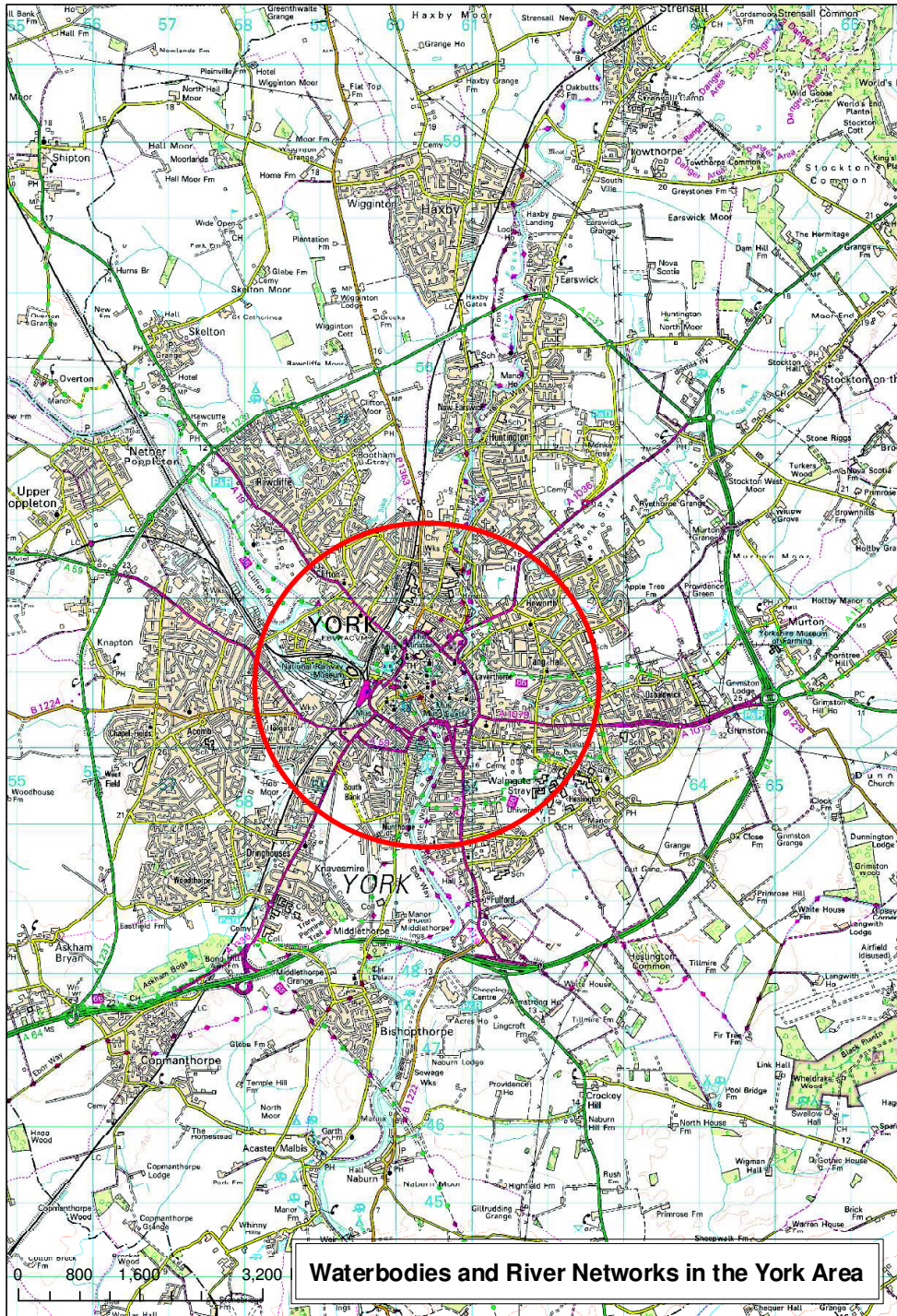
Feral Geese in Europe have adopted a residential strategy and do not undergo long distance migrations (Cooleman 2005). Many birds now stay on or around the same water body throughout the year venturing only as far as necessary to find food, safety and breeding sites. The UK is not alone; Canada Geese in the USA have adopted similar behaviours, remaining at more southerly latitudes throughout the year, possibly attracted to urban areas by the increasing amount of suitable habitat such as city parks, rivers and lakes. With ample forage available (from grass, bread provision, waterweeds etc.), safety from predators (variable size lakes, ponds and rivers etc.) and large open spaces or islands that offer security or breeding sites, the survival rates of young geese generally higher than those of 'wild' geese. The increase in populations is therefore being driven by high levels of breeding success (recruitment), rather than immigration from the wild population. Any efforts to control local populations, therefore, do require long-term pressure to ensure they are not offset by immigration from other populations in the near vicinity.

In York, central population levels of both species vary significantly during the year. A census undertaken when adults were present with Goslings (late May 2009), revealed 187 adults and 40 juvenile Canada Geese and 290 adults and 92 Juvenile Greylag geese. i.e. a summer population of 609 feral geese (+16 hybrids). Key sites at this time of year were on the Ouse and Foss and the University for Greylag geese and the same, plus Rowntree Park, for Canada Geese. Given the corridors that the rivers provide, it is not surprising that movements and linkages between sites occur throughout the area. This census did not venture outside the central region approximately demarked on the following map.



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Figure 1. Census coverage for Greylag and Canada Geese in York, May 2009.





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1.2 Concerns caused by increasing local populations

Natural and feral populations of geese across Europe and North America conflict with human and environmental interests in a wide variety of fields. Agricultural crop predation, amenity grassland damage, golf course deterioration, water pollution (Allan et al. 1995, Rusch et al. 1998) and risks to flight safety (Baxter & Robinson 2007) are all key problems caused by these species. Fouling of pasture can deter sheep and cattle from grazing, with damage levels directly correlated to the number of geese present (Spurr and Coleman 2005).

1.3 Disease transmission

Of perhaps the greatest concern is the potential for feral geese to act as vectors of avian borne disease (individuals that can carry disease within intestines or droppings for example, and transmit it to other species or locations). They may therefore be able to indirectly transmit disease to humans via land or water contamination. Water body eutrophication (where droppings result in a lack of oxygen or blooms of algae due to the extra nutrients being deposited in the water) can be a significant issue when large numbers of geese, sustained by open areas of grassland, roost on small water bodies. Although faecal matter (droppings) tends to sink to the bottom and remain within the sediment (Unckless & Makarewicz, 2007), it can lead to pollution with outbreaks of avian botulism or salmonella after periods of drought or when sediment is disturbed. Such events are not uncommon, an example being a small lake in north west London in 2008 having over 40 out of 80 geese and 15 Swans dying (Little Britain Lake, Uxbridge). Avian and human pathogens have been isolated from goose faeces including avian flu virus, Salmonella and E.coli (Allan et al.1995, Bonner 2004, Kuiken et al. 2006, Feare et al. 1999). They have the potential therefore to indirectly affect people (Bonner 2004) and other waterbirds (Blair et al. 2000).

Some studies suggest the risk of disease transfer to people may be over played. Geese are not, for example, important vectors of cryptosporidium (Kassa et al. 2004) and the risk from contact with their faeces probably varies according to season and area (Converse *et al.* 2003). Notwithstanding this, the distribution of Canada Geese is widespread, and their behaviour has enabled them to thrive in urban settings. They therefore pose a greater potential risk to human health than other waterfowl (Feare 1999). When congregations of birds remain in the same areas for long periods they can emaciate grass, nutrify soils (through excessive faecal deposits), and make public areas unusable for picnics, resting or general park activities. Such situations are common in the York Park environments in areas close to waterways.



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2 Potential Management Options

Management options currently available fall into two categories:

- 1). **Behavioural modification** by scaring, use of chemical or natural repellents, physical exclusion and habitat management.
- 2). **Population management control** by preventing eggs from hatching, shooting in or out of season, culling at moult, culling with other capture techniques and/or by relocation.

2.1 Behavioural modification

2.1.1 *Acoustic stimuli*

The gas cannon is the most commonly used acoustic scaring device. Whilst this can be effective in some environments, it is unlikely to be suitable for urban parkland and will not be suitable for specific targeting of one species. It is well known that acoustic scarers also need to be moved regularly and be deployed for long periods if they are to remain effective. This, however, has the potential to result in habituation (where birds begin to learn that a deterrent does not constitute a threat) hence they need to be used alongside other measures to maintain their effectiveness (ADAS 1987). Urban geese, which are not hunted and are used to a wide variety of man made noises may, therefore, quickly habituate. Deterrence via acoustic reports (loud bangs) would therefore require the use of reinforcement shooting so could only reasonably be deployed to prevent feeding in crop fields away from the public environment.

Others devices available produce loud shrieks or broadcast pre-recorded distress calls, infrasound or ultrasound. Geese do not hear ultrasound, and the few infrasound trials undertaken suggest they will not respond to this (Fidgen, unpubl 2005). Many species habituate less quickly to scaring devices that incorporate their own species' distress calls. Distress calls of gulls, crows and wading birds are used extensively to deter these species from airfields. The success of the method is, however, very dependant on how it is applied. Recent research successfully reduced crop damage by Canada Geese only when calls were used 'on-demand' (Whitford 2008). This basically meant that instead of using an automated method that set off deterrence calls every 10, 20 or 30 minutes (routinely), the method was only implemented whenever birds arrived at the site. A study by Mott and Timbrook (1988) was also successful for short periods (2-3 weeks), although the birds rapidly returned once scaring had stopped. A report commissioned by the acoustic control manufacturer "Goose Buster", suggested habituation to distress and alarm activity within 5-7 days, but longer success of 3-5 weeks when birds had a choice (i.e. Moving geese to another adjacent area) (Streng & Whitford 2001). Such activities were, however, deployed against migrant, rather than feral geese. Another study failed to scare any geese (Aguilera *et al.* 1991) and the method may be least effective against established resident and/or urban populations. The responsiveness of Canada Geese to distress calls (c.f. alarm calls) has not been tested in scientific trials although an independent user (Horton, pers comm.), suggests it can be effective in a parkland environment at moving birds to the nearest alternative safe environment. As with any other acoustic deterrents, their use may be inappropriate in areas where people find the noise levels offensive (Allan *et al.* 1995).



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2.1.2 Visual stimuli

Visual scaring devices come in a variety of forms, from scarecrows, to plastic strips attached to poles, kites, balloons, imitation figurines of birds of prey, birds of prey themselves and even inflatable human figures that rise from a box in the ground carrying an imitation gun (Scareyman). Just like acoustic devices they only remain effective for as long as the birds natural neophobia (fear of the new) persists. An eventual habituation to these devices is usual and urban geese may be far less easy to scare than other more timid species (Allan *et al.* 1995).

The use of birds of prey is, as far as we are aware, untried against urban geese. Whilst this method can have excellent results and clear large areas of target birds such as gulls and corvids from landfill sites (Baxter 2005), its success is often reliant on deployment of birds that actually hunt the prey species. Flights of falcons, when flown to a lure to “simulate” a hunting bird, are unlikely to impact on feral goose populations. Habituation by gulls took around five weeks in the urban environment when intensive non-hunting falconry was implemented in Dumfries in 2009 (Baxter, in press). Large falcons e.g. Gyr x Saker hybrids, or trained Eagle species may create fear in urban geese but their deployment would need significant, research, skill and investment and may prove difficult to implement in the urban environment.

Dogs (generally trained Border Collies), are frequently being used at airbases and in public spaces in the USA (e.g. www.wildgoosechasers.com). There is little to suggest they would not be effective but the length of time needed to implement deterrence is not clear. Rowntree Park, for example, could be patrolled by a Border Collie on a daily basis, weekly basis, mornings, afternoons etc. Birds may disperse across the Ouse or further a field hence monitoring would be needed to evaluate whether dispersal was successful on a site by site basis or across a wider area. It is possible that, for example, deployment in key areas for alternate one-week periods (e.g. in April to reduce breeding use and June to prevent birds staying to moult), could be beneficial. This would need to be monitored and tested to determine the frequency and effort needed to maintain effect. It would appear that a full time programme is used in Stratford to achieve this aim (Feld 2005).

Laser bird deterrents have been in use for several decades and represent a possible option for dispersing feral geese. An evaluation of lasers to disperse American crows from a series of roost sites (Gorenzel 2002), suggested that single deterrence efforts each night were effective at dispersing birds but did not result in them staying away for the whole night. Deterrence against gulls at a UK winter roost took this methodology forward and implemented dispersal every 30 minutes throughout consecutive nights for as long as necessary. Full deterrence of the gull roost was achieved (Baxter 2007iii). Whilst not reported within this paper, a flock of around 80 feral geese were also dispersed to adjacent fields although small numbers of Mute Swans did not respond. Similarly, diving ducks and grebes responded by diving but dabbling ducks flew away. The predator response was therefore initiated by affected species. A similar trial of lasers was undertaken, against feral Canada Geese, at a small lake in London. About 120 birds were dispersed with a 90 second sweep of the site on one night, with zero birds returning to that roost after 3 nights of deterrence. This was a post-moult roost site used as a base to forage from (Baxter, pers obs). Lasers therefore have the potential to disturb and disperse birds (at night only), and may prove a useful tool within an overall integrated strategy.



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2.1.3 *Lethal control as deterrent reinforcement*

Shooting, although usually regarded as a means of population control and discussed later, can be used to reinforce most other non-lethal scaring effort. The action of shooting combines visual and acoustic stimuli and can be used to reinforce methods by the occasional killing of a bird. Increased shooting pressure appears to improve the responsiveness to other scaring methods but is unlikely to be practicable in urban areas for safety and public perception reasons. It is nevertheless highly beneficial when confirming response rates of birds to other methods.

2.1.4 *Repellents*

Few chemicals that successfully deter, rather than poison, birds have been identified. Diazinon, an organophosphorous insecticide, has been effective in preventing damage by Canada Geese to golf courses but proved fatal to other wildfowl. Such chemicals are not approved for use in the UK. Naturally occurring plant products or their derivatives may provide a solution but again have issues in terms of UK regulation. Research in America and the UK, for example, suggests that Methyl Anthranilate (MA) and Cinnanamide can be effective in preventing many birds feeding on treated foods (Cummings et al. 1991, Crocker and Reid 1993). During commercial product testing in the USA, products such as “Rejex-IT” and “Goose chase”, which have MA as their active ingredient, are reportedly effective at reducing foraging activity on grass. MA is a derivative of grape juice, is widely used in the USA, and creates a bitter taste on the grass. It is viewed as harmless in the USA but is not licenced for use in the UK as it has the potential to cause harm to the birds. MA is extremely cheap to purchase and could possibly be used under a trial licence from the HSE in this country (manufacturers details from <http://www.bird-x.com/goose-chase-p-8.html>). Cinnanamide (taken as an extract from cinnamon), has been tested in cage-trials in the UK under licence but there is unlikely to be a sufficient market for the product to warrant further development.

More recent work has investigated the affect that endophytes have on the palatability of grasses and how incorporating them in some swards improves their repellence to herbivores such as geese (Cheplick and Faeth 2009). Endophytes are bacterium or fungi that live within a host plant for at least part of their life cycle. All plants have them, and their relationship with their host appears to be symbiotic. Many important forage and amenity grasses have fungal endophytes and their presence can improve the swards resistance to stresses such as drought and grazing. Particular strains, however, have now been developed in New Zealand that have an endophyte within them which massively increases the unpalatability of grass which results in digestive malaise (stomach upset) in geese. The manufacturer is currently seeking opportunities to trial its success in grassland environments against species such as geese. The issues at the moment involve whether or not large enough quantities of grass seed can be provided to cover sensible size areas (rather than, for example, 10m x 10m sample plots).

2.1.5 *Physical exclusion and habitat modification*

Geese can be excluded from sites through the use of fencing, wires or tape. These methods can be used effectively to restrict access to ponds, ditches and even cereal fields (Rochard and Irving 1987, Summers and Hillman 1990) but will only work under certain circumstances. Adult geese, for example, can fly for all except the moult period (c. mid-June to mid-July). Any mesh fence designed to prevent breeding



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on a site is therefore reliant on the adults realising that nesting on a proofed island will result in their chicks being unable to escape. Traditional mesh designs with a gap at the bottom allow geese to exit after hatching whereupon they do not need to return to the island. Breeding control netting therefore needs to be at least 90cm high and fitted without gaps at the bottom.

Deterrence fencing has been used against other species (e.g. Lapwings) on airfields by spacing 1m rolls of orange plastic mesh fencing at 20-50m intervals across grassed areas so birds do not have a suitable view of the surrounding area (Deacon 2003). This results in the security offered by large open space security being removed and birds becoming more easily 'spooked'. The method is untried against geese but could create a useful barrier for short periods prior to, for example, events or picnic periods. It could create a relatively unsightly and unaesthetic result for the public, however.

In some cases habitat modification can be used to make places less attractive to geese. Geese typically choose to feed close to water, in places that are open and provide easy predator detection as well as flight escape routes (Conover and Kania 1991). Separating grassed areas from water bodies with a stand of trees that would need geese to have to fly out at an angle greater than 13° may be sufficient to prevent their access. Replanting areas with unpalatable swards and modifying cropping patterns so that fodder is not available close to water bodies may also help reduce damage by geese (Allan *et al.* 1995). It has been suggested that strips of longer grass can provide effective barriers to goose grazing. Strips of grass over 6" (150mm) in height around 10m or so wide surrounding waterbodies could be trialled. Our interpretation is that even if geese do not feed on this grass, they are likely to create trampleways through it, or fly over it and it is unlikely, however, to be effective.

Restricting access and habitat modification can be effective in the right circumstances, but can also affect other species, reduce public access or impact on recreational and landscape quality in public areas. Mesh fence netting to prevent breeding on islands is generally the most practicable solution presented for the majority of sites which use it.

2.1.6 Education

As a key driver of urban population control is the availability of food resources from the public, opportunities to minimise or ban the feeding of urban geese can be highly beneficial. The population of Canada Geese on a section of the river Thames that runs through central London halves in winter. The primary driver of this is a lack of publicly provisioned food and a lack of grass growth in winter.

Given that geese are known carriers of Avian Botulism, Salmonella, E.coli and Avian Flu, for example, and that there is potential risk of disease transmission via faeces present on grass (e.g. small children picnicking and retrieving dropped food), education to reduce feeding may be prudent. Similarly, the usual food source provided is bread and this is at risk of causing malnutrition to birds and a wing deformation known as "angel wing" (Manitoba, 2009).

Signage confirming geese / rats / pigeons carry diseases could be beneficial. Geese can also become aggressive when defending young. Educating the public about these problems may help to reduce the likelihood of them providing additional food.



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3 Population management control

3.1.1 Population Control and the Law

All birds are protected under the Wildlife and Countryside Act (WACA) 1981 as amended. However, exemptions are available that allow control of some species for Public Health and Public Safety and Air Safety.

Canada Geese (*Branta canadensis*) can be controlled at any time to preserve public health or public safety under a general licence; this permits the use of both egg control (via oiling or pricking) and lethal control (using permitted methods) of adults. It is expected that all non-lethal methods of deterring populations have been tried and can be shown to be ineffective. Licences are available on-line from Natural England.

Greylag Geese (*Anser anser*) are not covered under the general licence and therefore specific licences would need to be obtained to allow egg or adult control techniques to be used legally. All non-lethal methods used for controlling populations need to be listed within the licence application to confirm lethal control is a necessary measure. Licences can be obtained through Natural England. Greylag geese can, however, be shot under the WACA (1981) Schedule 1 Part 2, during an open season, which runs from 1st September until 31st January, with landowners permission.

3.1.2 Controlling reproduction

A key driver behind preventing population increases locally is to prevent internal recruitment (breeding) from occurring. This can be achieved humanely by preventing either the adults breeding (through deterrence) or their eggs hatching. Various options are available. Chemosterilants for Canada Geese are not available although surgical sterilisation of males would be effective but is extremely difficult to achieve across all individuals and incurs the expense of veterinary deployment. Nesting adults sit closely on their nests and can be easily shot at close range whilst defending their eggs. However, other, often more publicly acceptable methods include egg destruction, removal or treatment to prevent hatching.

Treatment usually entails pricking the eggs, boiling the eggs, replacing the eggs with dummies, or coating them in paraffin oil (Allan *et al.* 1995). Treated eggs are left in the nest to allow the female to continue incubating them as normal. Doing so is more effective at controlling reproduction than destroying clutches or removing them. This merely results in the females relaying (Baker *et al.* 1993).

Canada Geese are long-lived birds and have especially low mortality at urban sites (12-16 year life spans are not unusual). It may therefore take many years of concerted effort before a programme of reproductive control begins to reduce an *in situ* population size. Furthermore, if a few clutches are missed and allowed to fledge the limited recruitment can be sufficient to replenish the normal annual losses of adults. A concerted effort is therefore required to ensure 100% of eggs are oiled in at least 95% of nests. Non-feral goose populations that do not have immigration issues can be held static by collecting 72% of eggs each year (Barnard 1991). Over 50% reductions in Canada Geese populations (4000 birds at 58 sites across a 100 sq km area), have been achieved using integrated programmes of annual egg oiling at all sites and adult moult culls at upto 15 key sites (Baxter *pers. obs.*).



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3.1.3 *Shooting, culling and trapping*

Populations of wild geese in the USA have been shown to withstand heavy shooting pressure. Annual harvests of up to 40% appear to have no impact on overall numbers (Shaeffer *et al.* 1987). Similarly, in both Finland and New Zealand winter shooting alone and extensions in the shooting season, respectively, caused no reduction in the population size (Vikberg and Moilanen 1985, Imber and Williams 1968).

Furthermore, in many urban scenarios shooting may be impossible due to reasons of safety considerations and public perception.

Other methods of culling geese are possible. Large numbers can be caught during their annual moult. At this time the geese are flightless for around 3-4 weeks (Cramp and Simmons 1977) and can rounded up or corralled into enclosures that can be set up on appropriate waterfronts. Once caught, geese can then be despatched humanely using cervical dislocation, lethal injection or shooting (note that some methods may require the presence of a veterinary officer and a specific licence even for Canada Geese). This form of cull is advantageous in so far as it causes an immediate reduction in numbers, decline in damage and removes a large proportion of adults from an area.

Fera has undertaken a number of such culls under licence in the UK with high success. Nevertheless, repeat operations over 2-5 year periods may be required if mop up breeding control is not continued in future years. Surplus non-breeding birds may also choose to moult elsewhere and can then repopulate an area the following year if not deterred. When these birds return to their natal sites (where they hatched) they typically fill in the gaps made in populations by any moult-cull.

Trapping can be used to catch small numbers of geese. This, however, often requires a period of baiting as well as acclimatisation to the traps presence and, therefore may not be discreet enough in public areas (P. Irving *pers comm.*). The use of bait treated with stupeficient may also be feasible but runs the risk of affecting non-target species and would require a trial licence to use in the UK.

3.1.4 *Relocation*

Relocation has been used very successfully in America to reduce resident Canada Geese populations. The relocated birds have been used to boost hunted populations or form new colonies (Conover 1993, Cooper 1986). However, mass relocation is an expensive operation and given the current problems here in the UK as well as the rest of Europe, many landowners are unlikely to want them and the UK government is unlikely to licence such activity. Further redistribution is also likely to encourage their geographical spread and so should be discounted as a control option (Allan *et al.* 1995).

3.1.5 *Integrated strategies*

It is rare that a single strategy can be effective at all sites, all of the time. Integrating options therefore represents the most effective way of approaching wildlife management problems. Several examples exist whereby resources have been targeted at each area where problems have been occurring in order to facilitate an overall reduction. Battersea Park in the mid 1990's (Underhill 1996), represents such a case. A suite of measures were used as part of an integrated management strategy (IMS) to reduce the attraction of the area by fencing, food reduction, education and



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lethal control. Any birds that continued to attempt to breed following the fencing operation had their eggs oiled or pricked, after which 154 out of 262 adults present were culled. Numbers fell to 63 the following year (down from the 108 remaining in 1994). The overall sub-population (including nearby areas) only declined by a total of 66 birds. This indicated either local recruitment, dispersal or immigration had occurred. Despite this, the park itself showed a significant decline in numbers and had the programme been continued or expanded across the area, may have resulted in long term or wider area declines. Independent monitoring in 2007, however, showed greater numbers were present than in 1994 (Baxter, 2007i).

A recommendation from this research was that the process should be implemented across a wider range of sites to include all birds within local sub-populations (birds that move around but remain within a given area). This has been done in west London since 2000 and has covered egg oiling at 58 sites over 100 sq km area alongside moult culls that have removed over 1500 adults at 15 key sites (Baxter 2009). This strategy has resulted in a population of 3750 birds that was expanding at 12% a year in the year 2000, being reduced to less than 2000 birds by 2008. Sites at which culls have been undertaken have declined by around 67% with some now abandoned altogether. Without additional work to remove or prevent birds being able to utilise attractive habitat, however, such activities will need to be continued year on year.

Similar strategies have been deployed by the 'Geese Peace' organisation based in the USA (Feld 2005). They include elements of scaring, limiting food access and egg control. These strategies rely on acceptable and unacceptable areas in which humans and Canada geese can co-exist. The objective is to arrange, via local contributions and training of volunteers, a reduction in Canada goose numbers from key areas by egg oiling, and a deterrence of moulting birds by regular and routine patrols from Border Collie dogs. The programme has had a level of successful deployment in Stratford upon Avon in the UK (<http://www.geesepeace.org/Stratford-upon-Avon.htm>). From discussions with the president of this organisation they also encourage artificial feeding of birds using foods that do not contain bread in order to reduce the risk of flightless birds developing (bread does not contain sufficient calcium and minerals to allow correct bone formation resulting in birds with weak, upward bending wings developing). Data from the Stratford Society suggested reductions from around 800 birds to 120 birds had been achieved by autumn following the year the programme started. It is understood from discussions that continued dog work has, to date, prevented the majority of moulting birds from returning but that the 'resident' population remains stable. Similar moult dispersal could be possible in York as geese have access to rivers and can therefore move freely between areas.

Removing the availability or attraction of an area through habitat management, dispersal of birds away from key areas and prevention of population rises provide the main drivers behind the integrated management strategies available for York.



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4 Management Options

Feral geese in York breed along the banks of the two main rivers and occasionally in local parks. Ringing returns (Bone pers comm.), show that some birds move significant distances but the majority remain faithful to York as long as they have breeding sites, feeding sites and security available throughout the year. In urban environments current best practice emphasises the use of integrated management strategies that combine techniques (Mott and Timbrook 1988, Heinrich and Craven 1990) and the use of repellents and population control to reduce damage at sensitive sites (Conover 1993). No single technique is likely to resolve the overall issue.

Habitat Management

Habitat management techniques require geese to feel insecure and unwelcome by prevention (physical exclusion) or habitat modification (removal of attractive sites). Options include:

- Identification of all breeding sites
- Installation of goose proof fencing to all breeding sites where possible
- An education programme to prevent birds being fed by the public
- A refresh of signage
- The prevention of access to grass areas via fencing or planting
- Application of MA under a trial licence
- Sowing of endophytic grass seeds if available

Reducing the security, proofing or removing breeding sites and minimising or eliminating feeding opportunities should be the primary methods used so that remaining birds can be dispersed or moved more easily.

Egg management

Egg management is one of the most effective ways of containing population growth provided coverage is high and the vast majority of nests and eggs are located (estimates of over 90% coverage needed to prevent growth). Options include:

- Continue ongoing egg oiling programme, under licence for Greylag Geese.
- Work with other landowners to include more nest sites within the treatment area.



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Deterrence or removal

Following as much habitat management and egg control as possible, deterrence or removal strategies should be targeted at the remaining key times and locations. In general, techniques that modify behaviour such as scaring can be advantageous as they are more publicly acceptable. Use of these techniques may be time limited to coincide with peak periods of conflict. However, the main problem with these techniques is habituation. Options include:

- Deterrence at night by lasers
- Deterrence during the day by trained dogs
- Testing the use of distress calls
- Testing the use of falconry

Birds will, however, become accustomed to many stimuli if they are not reinforced (e.g. shooting) or varied. Some scaring and exclusion techniques can also be unselective and influence the behaviour of other species. Loud or visual stimuli may also conflict with public access or land use requirements.

Shooting in fields known to be frequented by York birds (via monitoring from August to confirm movements), may provide a method by which reductions could be made in the problems associated with geese without culling in the urban area. Reductions in this way could be achieved by:

- Culling in urban area during moult
- Shooting in surrounding farmland during autumn (either in season or under licence).

Conclusions

A combination of techniques, tailored to individual sites represents the most appropriate way forward. This could entail education and breeding control across York, followed by deterrence from key sites that cause the most concern. Similarly a moult round-up and cull could reduce the overall issues significantly but may not prove to be an acceptable way forward.



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References

- ADAS (1987). Bird scaring. Leaflet P903, MAFF Publications.
- Aguilera, E., Knight, R.L. and Cummings, J.L. (1991). An evaluation of two hazing methods for urban Canada Geese. *Wildlife Society Bulletin* 91: 32-35.
- Allan, J.R., Kirby, J.S. & Feare, C.J. (1995). The biology of Canada Geese *Branta canadensis* in relation to the management of feral populations. *Wildl. Biol.* 1: 129-143.
- Austin, G.E., Rehfisch, M.M., Allan, J.R. & Holloway, S.J.(2007). Population size and differential population growth of introduced Greater Canada Geese *Branta canadensis* and re-established Greylag Geese *Anser anser* across habitats in Great Britain in the year 2000: Capsule Both populations are increasing at a similar rate. *Bird Study*, Volume 54, Number 3, 1 November 2007 , pp. 343-352(10).
- Baker, S.J. Feare, C.J., Wilson, C.J., Mallam, D.S. and Sellars, G.R. (1993). Prevention of breeding Canada Geese by coating eggs with liquid paraffin. *International Journal of Pest Management.* 39: 246-249.
- Baker, H., Stroud, D.A., Aebischer, N.J., Cranswick, P.A., Gregory, R.D. McSorley, C.A., Noble, D.G. & Rehfisch, M.M. (2006). Population estimates of birds in Great Britain and the United Kingdom. *British Birds* 99: 25-44.
- Barnard, S. (1991). Modelling the Canada goose population at Great Linford. *Game Conservancy Annual Review* 22: 141.
- Baxter, A.T., & Robinson, A.P. (2007). Monitoring and influencing feral Canada goose (*Branta canadensis*) behaviour to reduce birdstrike risks to aircraft. *International Journal of Pest Management.* October - December 2007; 53(4): 341-346.
- Baxter, A.T. (2007i). Heathrow Airport Canada Goose Moulting Management & Census; CSL Commercial in confidence report to BAA. Issue Date: 08/08/2007, pp13.
- Baxter, A.T. (2007ii). Canada Goose breeding control in the vicinity of London Heathrow Airport: 2007.; CSL Commercial in confidence report to BAA. Issue Date: May 2007, pp11.
- Baxter, A.T. (2007iii). Laser dispersal of gulls from reservoirs near airports. Birdstrike Committee USA / Canada, Kingston, Ontario, 9th – 13th September 2007.
- Blair, M.J., McKay, H., Musgrove, A.J. & Rehfisch, M.M.(2000). Review of the Status of Introduced Non-Native waterbird species in the Agreement area of the African-Eurasian Waterbird Agreement. BTO Research Report No. 229 to DETR, Thetford, UK: BTO.
- Bonner B.M. (2004). Do Canada Geese carry infectious agents for birds and man? *Eur. J. Wildl. Res.* 50: 78-84.
- BSCUSAi. Understanding and reducing bird hazards to aircraft. Significant Birdstrikes. Available from: <http://www.birdstrike.org/events/signif.htm>
- BSCUSAii. Birdstrike Committee USA web site. Available at <http://www.birdstrike.org>
- Cheplick, G.P. and S.H. Faeth. 2009. *Ecology and Evolution of the Grass-Endophyte Symbiosis*. Oxford University Press, Oxford.



Bird Management Unit

Close, et al. (in prep). Modelling of Canada goose population dynamics (University of Newcastle upon Tyne PhD thesis).

Conover, M.R. (1993). Ecological approach to managing problems caused by urban Canada Geese – Proceedings of the 15th Vertebrate Pest Conference University of California, Davis Ca: 110-111.

Conover, M.R. and Kania, G.S. (1991). Characteristics of feeding sites used by urban-suburban flocks of Canada Geese in Connecticut. Wildlife Society Bulletin 19: 36-38.

Converse, K.A., Lolcott, M.J., Docherty, D.E., & Cole, R.A. (2003). Screening fecal material from Canada Geese for potential human pathogens. International Canada goose Symposium. Monona Terrace Convention Center, Madison, Wisconsin, USA, March 19-21. 2003.

Cooper, J.A. (1986). The effectiveness of translocation control of Minneapolis St. Paul Goose populations. In: Adams, L.W. & Leedy, D.L. (eds.); Integrating Man and Nature in the Metropolitan Environment. Proceedings of a National symposium on urban Wildlife, Chevy Chase, pp 169-171.

Cooper, J.A. & Keefe, T. (1997). Urban Canada goose management: Policies and procedures. Transactions of the North American Wildlife and Natural Resources Conference [TRAN. N. AM. WILDL. NAT. RESOUR. CONF.]. pp. 412-430.

Cramp, S. & Simmons, K.E.L. (1977). Handbook of the Birds of Europe, Middle East and North Africa. The Birds of the Western Palearctic. Vol. 1 Ostriches-Ducks. OUP.

Crocker, D.R. and Reid, K. 1993. repellency of cinnamic acid derivatives to Rooks and chaffinches. Wildlife Society Bulletin 21: 456-460.

Cummings, J.L., Mason, J.R., Otis, D.L. and Heisterberg, J.F. (1991). Evaluation of Dimethyl and Methyl Anthranillate as a Canada goose repellent on grass. Wildlife Society Bulletin 19: 184-190.

Deacon, N. 2003. The use of natural and artificial line of sight obstructions as bird deterrents on near and aerodromes. International Birdstrike Committee, Proceedings of Warsaw meeting, Poland, 23rd May 2003.

Eschenfelder, P. (2000). Jet Engine Certification Standards. Proceedings of the International Birdstrike Committee, Amsterdam, Netherlands, 17-21 April 2000. Available from http://www.int-birdstrike.org/Amsterdam_Papers/IBSC25%20WPIE1.pdf

Feare, C.J. Sanders, M.F., Blasco, R. & Bishop, J.D. (1999) Canada Goose (*Branta canadensis*) droppings as a potential source of pathogenic bacteria. J. Royal Society for the Promotion of Health. 119(3) 146-155.

Feld, David (2005). <http://www.geesepeace.org/integratedsolutions.html>

Federal Register (2006). Migratory Bird Hunting and Permits; Regulations for Managing Resident Canada Goose Populations; Final Rule. Department of the Interior, Part III. 50 CFR Parts 20 and 21. Thursday 10th August 2006. Federal Register, Vol. 71. No. 154.

Gibbons, D.W., Reid, J.B. & Chapman, R.A. (1993). The new atlas of breeding birds in Britain and Ireland 1988-1991. T & AD Poyser Ltd. London.

Gorenzel, W. P., Blackwell, B. F., Simmons, G. D. Salmon, T. P. & Dolbeer, R. A. (2002). Evaluation of lasers to disperse American crows, *Corvus brachyrhynchos*,



Bird Management Unit

from urban night roosts. *International Journal of Pest Management*, Volume 48, Issue 4 October 2002 , pages 327 – 331.

Heinrich, J.W. and Craven, S.R. (1990). Evaluation of three damage abatement techniques for Canada Geese. *Wildlife Society Bulletin* 18: 405-410.

Imber, M.J. and Williams, G.R. (1968). Mortality rates of a Canada goose population in New Zealand. *Journal of Wildlife Management* 32: 256-267.

Kassa, H., Harrington, B.J. & Bisesi, M.S. (2004) Cryptosporidiosis: A Brief Literature Review and Update Regarding Cryptosporidium in Feces of Canada Geese (*Branta canadensis*). *Journal of Environmental Health* 66: 34 - 39.

Kear, J. (2005). *Bird Families of the World. Ducks, Geese and Swans*. Oxford University Press. pp 908.

Kirby, J.S., Haines, W.G. & Austin, G.E. (1999). Translocation of Canada Geese *Branta canadensis* in Great Britain. *Ringling & Migration* (19). pp 264 - 271.

Kuiken, T., Fouchier, R.A.M., Rimmelzwaan, G.F. & Osterhaus A.D.M.E. (2006). Emerging viral diseases in waterbirds. *Waterbirds of the world*. Eds. G.C.Boare, C.A. Galbraith & D.A.Stroud. The stationary office, edinburgh, UK. pp 418-421.

Manitoba Wildlife Management (2009) . Available from: http://www.gov.mb.ca/conservation/wildlife/problem_wildlife/waterfowl_cranes.html

Mott, D.F. and Timbrook, S.K. (1998). Alleviating nuisance Canada Goose problems with acoustical stimuli. In: Crabb, A.C. & Marsh, R.E. (eds.); *Proceedings of the 13th Vertebrate Pest Conference*, University of California, Davis Ca: 301-305.

Pimentel, D. (2002). *Biological Invasions. Chapter 7: Economic and Environmental Costs of Alien Vertebrate Species in Britain* p.125.

Rochard, J.B.A. and Irving A.J.B. (1987). A trial of fine overhead lines to exclude gulls from a feeding site. *Central science laboratory, Ministry of Agriculture, Fisheries and Food, Guildford*, pp 9.

Rowell, H., Ward, R., Hall, C. & Cranswick, P. (2004). *The Naturalised Goose Survey 2000*. *Wildfowl and Wetlands Trust Research report*, Slimbridge.

Rusch, D.H., Samuel, M.D., Humburg, D.D. & Sullivan, B.D., (Eds), (1998). *Biology and management of Canada Geese*. *Proceedings of the International Canada goose symposium*, Milwaukee, Wisconsin. 515pp.

Scottish Executive (2007). *Report of the National Goose Management Review Group: Review of the National Policy Framework for Goose Management in Scotland - Response by the Scottish Executive. SECTION 2 Population Viability Analyses (PVA) and review of populations of Geese wintering and breeding in Scotland*. Available from: <http://www.scotland.gov.uk/Publications/2007/10/30142133/3>

Shaeffer, S.E., Malecki, R.A. and Trost, R.E. (1987). Survival harvest and distribution of resident Canada Geese in New York 1975-1984. *Transactions of the North-East section of the Wildlife society* 44: 53-60.

Spurr, E.B., & Coleman, J.D. (2005). *Review of Canada goose population trends, damage, and control in New Zealand*. *Landcare Research Science Series No. 30*. Lincoln, Canterbury, New Zealand, 2005. Manaaki Whenua Press.

Streng, L.A & Whitford, P (2001). *Efficacy of Recorded Alarm and Alert Calls for Canada Goose*. Available from [Dispersalhttp://www.pestproducts.com/goose.htm](http://www.pestproducts.com/goose.htm)



Bird Management Unit

Summers, R.W. and Hillman, G. (1990). Scaring Brent Geese *Branta bernicula* from fields of winter wheat with tapes. *Crop Protection* 9: 459-462.

Thorpe, J. (2005). Fatalities and destroyed aircraft due to birdstrikes, 2002-2004 (with an appendix of animal strikes). International conference held in Athens, May 23-27, 2005, Athens Greece: International birdstrike committee 27: 17-25.

Underhill, M (1996). Integrated Management of Urban Canada Geese, web citation: http://wildlife1.wildlifeinformation.org/s/00Ref/proceedingscontents/proceedingsref100_waterfowlinformationnetwork/paper11.htm

Unckless R.L. Makarewicz J.C. (2007) The impact of nutrient loading from Canada Geese (*Branta Canadensis*) on water quality, a mesocosm approach. *Hydrobiologia*. 586: 393-401.

Vikberg, P. and Moilanen, P., (1985). Introduction of the Canada goose in Finland. *Suomen Riista* 32: 50-56.

Whitford, P.C. (2008). Successful Use of Alarm and Alert Calls to Reduce Emerging Crop Damage by Resident Canada Geese near Horicon Marsh, Wisconsin. *Proc. 23rd Vertebr. Pest Conf.* (R. M. Timm and M. B. Madon, Eds.) University of California, Davis. 2008. Pp. 74-79.