

## **1 Introduction**

This report addresses the public interest issues raised by the presence of large flocks of Feral Pigeons (*Columba livia*) in Trafalgar Square. It details the reasons for the presence of the birds, the problems and benefits that they cause, and the likely effect of the removal or reduction of the food supply available to the birds following the removal of licensed selling of pigeon food in the square. The contents of this document are based on a review of the published literature, an examination of the various reports, letters and responses from the public concerning the pigeon problem in Trafalgar Square. A brief visit to the square on 22<sup>nd</sup> September 2000 was made by the author to observe pigeon behaviour.

## **2 Background To The Situation**

Large flocks of Feral Pigeons have been a feature of Trafalgar Square for many years and feeding the pigeons there is a recognised tourist attraction. The precise level of income generated by the presence of the pigeons is impossible to quantify, but their presence has supported the licensed selling of pigeon food since the 1950's. Many visitors also bring their own food to give to the birds. In addition, some religions value the ability to feed wild birds as part of their religious practices, and it is likely that at least some of the feeding of pigeons in Trafalgar Square is for this purpose.

Whilst many people, both visitors and residents, undoubtedly gain pleasure from interacting with the pigeons, the presence of hundreds, sometimes thousands, of birds concentrated into a small space, every day of the year, brings its own problems. Cleaning of pavements and statuary has a cost to the public purse and to private organisations, accumulations of droppings may result in health hazards to the public, and the birds' own welfare may suffer as their close proximity to each other and feeding amongst their own droppings may encourage the transmission of disease. Previous reports have considered possible ways to reduce these negative impacts on the public interest both in Trafalgar Square and in the surrounding City of Westminster (e.g. E.C. Harris (1996), City Of Westminster (1997)). These reports reviewed the available information on the costs of pigeon damage and street cleaning as well as describing a number of damage reduction options, including protection of statuary by netting or spikes, culling of birds to reduce numbers and the control of the available food supply. Any suggestion of culling bird populations is inevitably controversial and the E.C. Harris report (1996) resulted in a number of alternative suggestions being proposed (e.g. Cuthbert (1996)).

## **3 Factors Influencing Feral Pigeon Abundance In Trafalgar Square**

Mobile animals such as Feral Pigeons are able to sample their environment on a regular basis in order to identify the best feeding nesting and roosting sites that are available to them (Begon et al 1986, Le Febvre 1990). Although no data are available on the behaviour of the pigeons that use Trafalgar Square, they are highly unlikely to have abandoned this instinctive behaviour and will, from time to time, explore alternative feeding sites nearby (e.g. St. James' Park) to ascertain whether it would be more

profitable to feed there. If all other factors are equal, birds will remain at the most profitable site, and birds will accumulate at different sites until the total population becomes distributed in such a way that the resources obtained from being in one place are equal to those obtained from any other place nearby. Thus, put simply, if there is ten times as much food in one location compared to another, birds will accumulate until there are ten times as many birds in that location and the rewards of being in either place are the same. This behaviour was demonstrated by Murton et al (1972) who showed that the size of Feral Pigeon feeding flocks in an urban situation was proportional to the quantity of food available. This 'Ideal Free Distribution' (Fretwell & Lucas 1970) rarely occurs perfectly in nature as the various other factors in the environment (e.g. availability of nesting or roosting sites, predation pressure etc.) are rarely constant from site to site and will, themselves, influence the numbers present. It is likely, however, that the other resources such as nesting or perching sites available to Feral Pigeons elsewhere in London are broadly similar to those in Trafalgar Square, and that the only major difference is the availability of a superabundant and reliable source of food.

A number of approaches have been suggested for reducing the pigeon population in Trafalgar Square including culling (E.C. Harris 1996) and reducing reproductive output by provision of nest-boxes from which eggs could be removed (Cuthbert 1996). Neither of these approaches is likely to succeed, however, because of the large number of pigeons in the surrounding city which will rapidly move into Trafalgar Square to take advantage of the food supply there if the numbers of birds is reduced either by culling or reproductive control. To have any chance of successfully reducing bird numbers in the square whilst the food supply remains at the current high levels, population control programmes of any sort would need to be applied on a city wide basis.

It is therefore clear that, without reducing the number of pigeons in the city as a whole, the removal or reduction of the food supply is the only viable method that will result in a reduction in the number of pigeons in Trafalgar Square. Other organisations (e.g. the Royal Society for the Protection of Birds (Williams 1996), The Royal Parks (Robertson 1996) and the Department of the Environment (Clorley 1996)) also suggested withdrawal or reduction of food as the best option for humane control of the problem.

The size of any reduction in numbers that would be achieved is more difficult to assess, however, because the proportion of pigeon food supplied by the licensed seller compared to that brought to the square by members of the public is unknown. It is also possible that if food is not available for sale, more members of the public will begin to bring food with them to feed the birds. Depending upon how the withdrawal of the licensed food selling reduces bird numbers, further action in the form of publicity or even bye-laws to discourage the public from feeding the birds may be necessary to reduce pigeon numbers to an acceptable level. It is also unclear what level the bird numbers need to be reduced to in order to reduce the negative impacts to an acceptable level. The following section details the positive and negative impacts of the pigeons and predicts, where possible, the effect on those impacts of a reduction in bird numbers.

## **4 Negative impacts**

### **4.1 Damage and fouling of buildings**

The problems caused by Feral Pigeons to buildings are well documented (Weber 1979, Feare 1984, Haag-Wackernagel 1995), and were summarised in relation to Trafalgar Square by EC Harris (1996) in their report to the Department of National Heritage (DNH). Figures of £14,000 for cleaning of statuary and £90,893 for cleaning and washing of pavements in Trafalgar Square were quoted. This is clearly a considerable drain on the public purse, but the costs due directly to pigeons are difficult to separate from routine cleaning that would take place anyway. If the costs of additional cleaning of ledges, sills and statuary specifically to remove pigeon droppings can be quantified and compared to routine cleaning costs, the true costs of the additional cleaning needed to cope with the high pigeon density in the square could be determined. It is not possible to estimate, however, how big a reduction in pigeon numbers would be needed to produce a given reduction in cleaning costs. In part, this is because it is not clear what proportion of the pigeons that feed in the square roost or perch on the surrounding buildings and statues and what proportion roost elsewhere. Casual personal observations suggest that the majority of the pigeons remain on the ground close to the feeding areas with relatively small numbers perched on the buildings. Thus, even a significant reduction in the number of feeding birds may not impact on the smaller numbers perched on the statues and buildings close by. A further problem in predicting savings in cleaning costs is the fact that bills for periodic cleaning of buildings are likely to be based on the number of times cleaning is required annually. It is therefore likely that a threshold number of pigeons would need to be reached below which the frequency of cleaning operations could be reduced. For example, a reduction in pigeon numbers of 10% might still require 3 cleanings of statuary per year (no saving) whilst a reduction of 20% in bird numbers might result in only 2 cleanings per year being required and result in a 30% saving. If data on pigeon numbers and cleaning costs were available from other London squares where pigeon numbers are lower, then such a cost/benefit calculation could be attempted.

The alternative to regular cleaning of ledges etc. is to proof them with nets, spikes or gels to deter the pigeons. These measures are relatively easy to cost, and if properly maintained they will keep pigeons off particularly sensitive areas. However, because there are so many alternative roosting sites close to the square, the birds can move to alternative sites nearby and export the problem to surrounding buildings. Similar problems with estimating savings due to lowered bird numbers exist as for cleaning. It is impossible to determine to what level the total number of pigeons would need to be reduced before it became cost effective not to proof the buildings.

### **4.2 Fouling of public spaces**

A similar argument applies to the cleaning of public spaces required as a result of the presence of large numbers of pigeons. Additional cleaning (e.g. washing as opposed to sweeping) that may be needed to remove large quantities of droppings, over and above the routine cleaning that occurs elsewhere, is a cost that could be reduced if pigeon

numbers were lowered. The extent that bird numbers would need to be lowered to bring a significant saving in cleaning costs is unclear, however. It has been suggested that a restricted 'pigeon feeding area' could be established in the square, which would concentrate the droppings and reduce the area that needed to be cleaned (Cuthbert 1996). This would, however, also concentrate the birds into a smaller area, possibly increasing the already aggressive competitive interactions. It may also exacerbate negative impacts on the birds' own welfare in respect of disease transmission due to increased close contact with both their own droppings and each other (see section 4.7 below). There are no methods available to physically restrict the use of the open spaces by pigeons that would not also restrict their use by the public.

### **4.3 Disease transmission to humans**

There are numerous documented instances of humans contracting diseases from pigeons (Weber 1979a). The majority of these are, however, respiratory conditions such as 'pigeon fanciers lung' associated with those involved in keeping pigeons and is thought to occur following working in confined spaces with large quantities of pigeon droppings and feathers (e.g. cleaning out pigeon lofts). It is also known that pigeons carry a number of pathogenic organisms that have the potential to cause harm to humans (e.g. *E. Coli* (Dell'Omo et al 1998) *Salmonella* (Niida et al 1983) *Chlamydia* (Pavlak et al 2000) *Cryptococcus neoformans* – the cause of cryptococcal meningitis (Weber 1979b). Weber (1979b) lists 30 diseases that pigeons may pass to humans, and a further 10 to domestic animals. The true rate of transmission of diseases from pigeons to humans in cities is impossible to determine accurately (Murton 1971), and the real risk of infection to members of the public using Trafalgar Square is unknown. Dobbertin (cited by Feare (1986)) suggests that diseases carried by Feral Pigeons are unimportant and the risk of infection to humans did not justify large scale population reduction.

Large concentrations of Feral Pigeons clearly represent a potential hazard to public health, but the true severity and extent of the risk is not properly understood. It is not, therefore, possible to compare the risks to the public from pigeons in Trafalgar Square to risks of infection from other sources in the urban environment. It is likely that larger numbers of pigeons in a given location will increase the risk of disease transmission, but whether this represents a significant threat to health in the open air environment remains unclear.

### **4.4 Slip hazards**

Accumulations of bird droppings can make surfaces slippery and could result in falls and injuries. As with disease transmission, the true extent and severity of this problem has not been quantified, but larger numbers of pigeons would undoubtedly make the problem worse. Soiling of the shoes of pedestrians may also cause offence and/or distress and may cause some people to refrain from using some parts of the square.

### **4.5 Intimidation of visitors**

Large flocks of very tame birds perching on the heads and shoulders of pedestrians may act to intimidate or cause distress to some users of the square. Aside from the pigeons, Trafalgar Square contains monuments of great historical significance and buildings such as the National Gallery stand near the site. Fear of large flocks of birds and possible damage or soiling of clothing may cause some members of the public to avoid the square or reduce their enjoyment of the various attractions that the square has to offer. Reducing the numbers of birds would reduce the severity of these effects.

#### **4.6 Road traffic issues**

Large flocks of pigeons flying around the square, and possibly flying in front of vehicles, may create a road traffic hazard by distracting drivers or cause drivers to swerve to avoid birds in the road. Again these factors, if they occur at all, are largely unquantified.

#### **4.7 Disease transmission to other Feral Pigeons**

Food sources that cause birds to congregate in artificially high numbers and to feed in the same place from day to day are often associated with the transmission of disease from bird to bird. For example, feeding of birds in domestic gardens is associated with outbreaks of Salmonella amongst some species, probably because the birds regularly collect food from areas where droppings have built up and disease organisms are present. A similar effect may occur in Trafalgar Square, since the pigeons feed from the ground and their droppings accumulate in the same area where they feed. Weber (1979a) documents a number of avian diseases carried by Feral Pigeons, as well as numerous species of internal and external parasites. The close proximity of the individual birds which frequently pack 'shoulder to shoulder' in the area where they are being fed and clamber on top of one another in their rush to obtain food, will facilitate the transmission of these avian diseases. The extent to which the birds are harmed by this is unknown, as is the level of infection of birds that feed in Trafalgar Square compared to elsewhere. Reducing the pigeon numbers, and avoiding the current situation where the birds are packed very tightly in the area close to the food retail point, should lower the potential for disease transmission between pigeons.

#### **4.8 Disease transmission to other birds**

There are few bird species other than pigeons in the square itself, but when the pigeons move out of the square to roost, nest or to explore other feeding sites (e.g. St. James' Park) they may come into contact with other bird species and pass on diseases or parasites contracted in the square. Feral Pigeons are known to act as vectors of avian paramyxovirus (Lister et al 1986), but in general, evidence that Feral Pigeons are a more significant source of disease than any other bird species is lacking. The square could thus act as a focal point for the transmission of avian diseases and parasites across the part of the city over which the pigeons range, but the extent to which this actually occurs is unknown.

Reducing the food supply, which will cause the pigeons to move to other feeding sites nearby, may actually increase the possibility of disease spreading to other bird species in the short term as pigeons may move into areas such as parks where more birds of other species are present.

## **5 Positive impacts**

### **5.1 Tourist attraction and income**

Many people visit Trafalgar Square annually, and the presence of pigeons has long been associated with the visit experience. Reducing pigeon numbers to the point where they were no different to the average London street would clearly remove this feature of the square. It is the large flocks and extreme tameness of the birds that makes the experience unusual. It is not clear, however, to what level the number and tameness of the birds could be reduced before the public became conscious that the experience had changed nor whether the majority of the public would regard this as a change for the better or worse.

### **5.2 General utility**

Irrespective of the tradition of pigeons in Trafalgar Square, many members of the public simply enjoy being close to wild animals and observing their behaviour. There is an unquantifiable but real benefit that the public derives from this contact. Such contact would still be possible with a much lower number of pigeons, however, and similar experiences are possible in almost any London park.

### **5.3 Pigeon welfare**

The provision of large volumes of food, with a guaranteed regularity of supply may be thought likely to have beneficial effects on the local pigeon population. However, biological theory suggests that (providing that other factors such as roosting site availability do not act to limit the number of pigeons) birds will move in from the surrounding area to exploit the food available. Bird numbers will increase until the competition for food reaches the point where it is equally profitable for the birds to feed elsewhere. At this point further immigration to the square should cease providing that the food supply remains constant. If this is the case then the birds will do no better in Trafalgar Square than in other parts of the city nearby. Combined with the fact that concentrating the birds in a small area and causing them to feed amongst their own droppings will facilitate the transmission of disease, the net effect of feeding pigeons in Trafalgar square may be deleterious to their general health. Following his study in Basel, Haag-Wackernagel (1995) took the view that to feed urban pigeons is cruel, as it facilitated disease transmission within the pigeon population and led to overpopulation in the city as a whole.

## 6 Impact of reducing food availability on pigeon numbers

It is clear that the main attraction to Feral Pigeons in Trafalgar Square is the presence of large quantities of regularly available food. A reduction of the food supply will reduce the numbers of birds that use the square. Birds will continue to periodically sample the surrounding environment and will remain in other sites if they offer greater food resources than are available in the square. It is likely that dominant adult birds will remain in the square longest as they are more likely to be able to compete successfully for reduced resources and thus the reward to dominant birds from feeding in the square will remain high as long as some food is available.

Some interested parties (e.g. Merchant 2000) have contended that the Pigeons in Trafalgar Square are unique in that they are semi-domesticated and have lost their natural tendency to explore their environment for alternative food sources. Whilst one must concede that this is a real, if remote, possibility, there is no evidence to support this contention. Indeed, the fact that the numbers of pigeons in the square can fluctuate dramatically (from hundreds to thousands) shows that the birds can, and do, feed elsewhere from time to time, presumably responding to fluctuations in food supply related to tourist numbers in the square.

The removal of the licensed food seller will undoubtedly reduce the amount of food available, but it is not clear what proportion of the total food supply available to the birds comes from this source. Many members of the public bring their own food to feed the pigeons and others may start to do so if the licensed food seller is not present. Additional food may also be provided by members of the public concerned for the pigeon's welfare if commercial food selling was discontinued. Thus, although reducing the food supply will reduce pigeon numbers, the impact on bird numbers of withdrawing the licensed sale of pigeon food *per se* is less certain. Additional measures, such as publicity and signage, or possibly bylaws to prohibit feeding of the birds, may be needed to discourage the public from continuing to supply food in order to achieve a desired reduction in numbers.

As it is not clear how many of the birds that feed in the square also roost and nest there, it is harder to predict the effect of reducing food supplies on the use of buildings to nest and roost. It is unlikely that all of the birds that frequent the square during the day also nest on the surrounding buildings and those that do so are probably socially dominant birds that are able to secure a nest site closest to the main food source. Thus the number of nesting birds in the immediate vicinity of the square is unlikely to fall until food supplies reach very low levels. The number of roosting birds may be reduced as bird numbers decline, but this also depends on how many of the birds roost on the square itself and how many roost on other sites. If the roosting sites on the square are the most desirable, being closest to the food source, then they will be the last to be vacated as bird numbers fall.

## **7 Impact of reducing food availability on pigeon welfare**

The natural behaviour of Feral Pigeons means that they will not starve if the amount of food available in Trafalgar Square is reduced. Much of the correspondence to the Mayor of London generated by this issue (see section 9) is based on the view that withdrawal of food is 'culling by starvation' (e.g. Cuthbert 2000). Whilst these views are genuinely and sincerely held, they are based on a fundamental misunderstanding of the biology of the birds involved. There are many other sites in central London where Feral Pigeons can, and do, feed regularly. The birds which frequent Trafalgar Square will be aware of the location of the sites closest to them through periodically sampling the food available there. As the food supply in the square decreases, the birds will range more widely to explore these other sites and will remain there if they are more profitable than Trafalgar Square. The birds will thus spread out into the surrounding city habitat and this will result in a temporary increase in bird numbers in these areas. However, as the birds continue to explore adjacent feeding locations, they will gradually spread even further afield to take advantage of better feeding opportunities wherever they can find them.

As this adjustment takes place, the immediate withdrawal of food from Trafalgar Square may place the birds under nutritional stress. Depending upon the severity of this stress (which will depend on the amount of food that is removed compared to that which continues to be delivered by the public) some weak or diseased birds may become distressed or die, especially those that may be too weak to explore the surrounding environment extensively. Although the prevalence of disease in the Trafalgar Square pigeons is unknown, the conditions in the square are such that a high level of disease in the population might be expected (see sect 4.7). Pigeons feeding young in the nest may also find it more difficult to keep their chicks provisioned if they have to forage further afield. Some mortality of nestlings may, therefore, also be expected. It would, therefore, be wise to monitor the situation following the removal of the licensed food selling in order to ensure that the birds do not experience undue suffering.

The pigeons may also experience a reduction in the nutritional value of their daily food intake depending upon the quality and quantity of the new food resources that they exploit relative to the food currently available in the square. It would, therefore, be advisable to reduce the food supply gradually over a period of a few weeks to allow the birds more time to adjust their foraging behaviour. Conversely, the pigeons that are forced to leave the square may experience reduced exposure to transmissible avian diseases than in the crowded conditions that they currently experience and, once the birds have redistributed themselves around the other available feeding sites, the net effect on their welfare may be beneficial.

## **8 References**

Begon M., Harper J.L. & Townsend C.R. (1986) *Ecology: Individuals, Populations and Communities*. Blackwell, Oxford.

- City of Westminster. (1998) report on 'Pigeon nuisance' from the Director of Environment and Planning and the City Solicitor. 17<sup>th</sup> Feb. 1998.
- Clorley, J. (1996) Letter to Department of National Heritage on behalf of the Department of the Environment. 14<sup>th</sup> August, 1996.
- Cuthbert J. (1996) Feral Pigeon Management In Trafalgar Square. Unpublished report submitted to Department of National Heritage.
- Cuthbert J. (2000) Letter to the Mayor of London. 15<sup>th</sup>. August 2000
- Dell'Omo G., Morabito S., Quondam R., Agrimi U., Ciuchini F., Macri A. & Caprioli A. (1998) Feral Pigeons as a source of verocytotoxin-producing *Escherichia coli*. Veterinary Record 142 309-10.
- E.C. Harris (1996) Report for the control of the pigeon population in Trafalgar Square. Unpublished report to Department of National Heritage.
- Fretwell S.D. & Lucas H.L. (1970) On territorial behaviour and other factors influencing habitat distribution in birds. Acta Biotheoretica 19 16-36.
- Feare C.J. (1984) Humane control of urban birds pp 50-62 in Britt D.P. ed. Humane Control Of Land Mammals And Birds. Proc. Symposium Univ. Surrey Guildford.
- Feare C.J. (1986) Pigeons: Past, present and prerequisites for management
- Haag-Wackernagel D. (1995) Regulation of the street pigeon in Basel. Wildl. Soc. Bull. 23 256-260.
- Le Febvre, L. (1990) Flocking behaviour of urban pigeons. In British Ornithologists Union symposium on feral pigeons. ADAS
- Lister S.A., Alexander D.J. & Hogg R.A. (1986) Evidence for the presence of avian paramyxovirus type 1 in feral pigeons in England and Wales. Veterinary Record 118 476-479.
- Merchant G. (2000) Pigeon control/welfare Trafalgar Square. Letter to Christmas & Sheehan, Solicitors, 14<sup>th</sup> October 2000
- Murton R.K. (1971) Man and Birds. New Naturalist, Collins, London.
- Murton R.K., Combs C.F.B. & Thearle R.J.P. (1972) Ecological studies of the Feral Pigeon *Columba livia* var. II Flock behaviour and social organisation. J. App. Ecol. 9 875-889.

Niida M., Ishiguro N., Shinagawa M. & Sato G. (1983) Genetic and molecular characterisation of conjugative R plasmids detected in Salmonella strains isolated from humans and pigeons in the same district. *Jpn. J. Vet. Sci.* 45 647-658.

Pavlak M., Vlahovic K., Greguric J., Zupanicic Z., Jercic J. & Bozikov J. (2000) An epidemiologic study of Chlamydia Sp. in Feral Pigeons. *Z. Jagdwiss* 46 84-95.

Robertson, V. (1996). Letter to the Department of National Heritage on behalf of the Royal Parks. 14<sup>th</sup> August 1996.

Weber W.J. (1979a) Health hazards from Pigeons, Starlings and English Sparrows. Thompson Publications Fresno.

Weber W.J. (1979b) Pigeon associated people diseases. Proc. 8th Bird Control Seminar. Bowling Green State Univ Ohio 156-158.

Williams, G. (1996) Letter to the Department of National Heritage on behalf of the Royal Society of Protection of Birds. 15<sup>th</sup> August 1996.

## **9 Other documents reviewed in the preparation of this report**

Burgess, P. (2000) Letter to Mayor of London, 13 October 2000.

Campbell, I. & Campbell, P. (2000) Letter to Mayor of London, 4 October 2000.

Christmas & Sheehan (2000) Letter to GLA Legal Directorate, 15 October 2000, on behalf of Christmas and Sheehan Solicitors.

Clifford, J. (2000) Letter to Mayor of London.

Cuthbert, J. (2000) Letter to Mayor of London, 15 August 2000.

Horn, S. (2000) Letter to Mayor of London, 16 October 2000, on behalf of West Wales Animal Aid.

Huxtable, T. (2000) Letter to Mayor of London, 4 October 2000, on behalf of the Dr Hadwen Trust – Humanity in Research.

Jain, K. (2000) Letter to Mayor of London, 25 September 2000.

Knight, S. (2000) Letter to Mayor of London, 24 September 2000, on behalf of The Swan Sanctuary

Maris, S. (2000) Letter to Mayor of London, 3 October 2000.

Mehta, R. (2000) Letter to Mayor of London, 17 Spetember 2000, on behalf of Jain Samaj Europe.

Merchat, G. (2000a) Letter to Mayor of London, 28 August 2000, on behalf of PICAS.

Merchant, G. (2000b) Letter to Christmas and Sheehan Solicitors, 14 October 2000, on behalf of PICAS.

Meroyne, R. (2000) Letter to Mayor of London, 26 August 2000.

Toland, E. (2000a) Letter to Mayor of London, 30 August 2000, on behalf of Animal Aid.

Toland, E. (2000b) Letter to Mayor of London, 10 October 2000, on behalf of Animal Aid.

Tripp, M. (2000) Letter to Mayor of London, 24 August 2000, on behalf of Animal Christian Concern.

Tyler, A. (2000) Letter to Mayor of London, 10 October 2000, on behalf of Animal Aid.

Ward, L. (2000a) Letter to Mayor of London, 8 September 2000, on behalf of Advocates for Animals.

Ward, L. (2000b) Letter to Mayor of London, 25 September 2000, on behalf of Advocates for Animals.

Ward, L. (2000c) Letter to Mayor of London, 9 October 2000, on behalf of Advocates for Animals.

White, J. (2000) Letter to Mayor of London, 6 October 2000.