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#### Daniel Haag-Wackernagel The Feral Pigeon



#### **The Feral Pigeon**

Its fascinating journey from the temple of the goddess of love into the streets of our towns.



Feral pigeon drinking Picture by Daniel Haag-Wackernagel

The pigeon is one of the first animals that man domesticated and it holds a special place in man's affections. Wherever pigeons have been bred, they have always been important for their symbolic expression of human and divine features. The feral pigeon is a wild descendant of dovecote pigeons and from domestic breeds. It is one of the few animals that is able to survive in our hectic cities, and it is considered by many people to enrich our town centres with a component of nature in places where few other animals can survive. Pigeons bring pleasure to so many people who feed them. But unfortunately, enormeous food supplies, together with the absence of enemies, encourage large populations of pigeons which in many respects can lead to problems.

#### **Descendants and History**



The rock dove is the ancestor of all domestic pigeons and their descendant, the wild living feral pigeon. Rock doves still live on sea coasts, like the one shown above in Sardinia, and also on inland cliffs.

Picture painted by Dietrich Bornham, Celle

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desert of soutnern Asia and was to conquer man's world beyond comparison (Haag-Wackernagel 1998). This bird, the rock dove, expanded successfully from its centre of development across western Europe and northern Africa. Excavations of pigeon fossils show that pigeons already lived in Jordan and on the Palestinian coast 300 000 years ago. In the course of history, several subspecies evolved. According to estimates of different authors, there are between 8 and 14 subspecies that differ only slightly from each other.

The ideal habitat and nesting sites for rock doves are sea-cliffs, preferably those affording caves and crevices. The Sardinian coast is one example. Pigeons are monogamous and mate for life, equally sharing parental care for their nestlings. Male and female pigeons do not show any obvious physical differences, a factor that may be related to their equal sharing of parental duties. The female lays two white eggs that both parents will incubate alternately. For the first few days, the hatched nestlings will be fed upon curdy "milk". This pigeon milk is produced, under the influence of the hormone prolactin, by cells in the wall of the crop of both parents. It is extremely nourishing since it consists mainly of proteins and fats, together with water. Since it is a concentrated, rich nutrient, it enables the nestlings to double their weight within 34 hours after hatching (Vogel 1992). That is why pigeons are one of the fastest growing vertebrates. Crop milk makes the pigeon parents independent from special foods during the breeding season, while an insect-eating bird like the great tit, and even seed-eating birds like finches, have to search diligently for adequate nutritious food, e.g. small insects, to offer to their nestlings. So pigeon parents can simply enjoy chocolate, sausage or whatever they find to eat, and transformate it into "all-round baby milk". According to studies (Engberg et al. 1992), cropmilk even contains immunoglobuling that provide immunity against pathogenic organisms.

Nobody knows exactly when man and the rock dove had their first contact in the distant past, as the first written documents did not appear until towards the end of the fourth millennium B.C. in ancient Mesopotamia (today's Iraq). Astonishingly, the pigeon was already mentioned in ancient cuneiform scripts and we even find dovecotes mentioned in an Akkadian atonement psalm dating back to 2300 B.C., but the text does not say whether rock doves or domesticated dovecote pigeons were being bred.

In ancient Mesopotania, there was a very interesting way of using pigeons in the third millenium B.C.: they were carried at sea and released from ships, since pigeons, after orientating themselves first, instinctly and immediately fly towards land to reach the nearest shore. A flying pigeon can sight land sharply at a distance of 35 km, which was enough at that time to allow mariners to navigate offshore. This "living compass" and means of finding land was important in ancient times before the Phoenicians improved astronomical navigation. The first description of pigeons, and also ravens, being used as a means of orientation at sea are mentioned in the epic of Gilgamesh, the oldest known adventure story (Schmökel 1998). In the "bird sequence" where the Mesopotamian deluge is described, Noah's "ancestor" Utnapishtim releases a pigeon to see whether the water had begun to fall. This motive appears again around a thousand years later with Noah in the Old Testament. In addition, the Phoenician, Greek, Indian and Chinese used birds to explore land (Haag-Wackernagel 1998).

There is a vast variety of pigeons sculptured in ancient art from the 4th

needles. At that time already, the pigeon was associated with Magna Mater, the Near Eastern mother goddess, who developed into the famous Babylonian goddess of love, Ishtar. On a wall painting of the palace of Mari (around 1750 B.C.) an Ishtar sanctuary is depicted. An overproportioned white dove is sitting on a palm as the symbol of the goddess Ishtar. In the temples of the goddesses of love, white pigeons were kept as a symbol of theses goddesses all over the Near East and later also in Greek regions.



Aphrodite, the Greek goddes of love, is derived from the Babylonian goddess Ishtar. The pigeon was associated with these godesses as a symbol of them; it was their embodiment as well as a sacrificial animal. (Bronze mirror stand from the northern Peloponnese, around 460/50 B.C.)

Picture by Daniel Haag-Wackernagel

The Phoenicians, who were mercantile sailors living in the first millenium B.C. in the south of Syria and along the Mediterranean coast, distributed their holy white bird throughout the Mediterranean area as a representation of their goddess of love, Astarte. Pigeons were probably kept in the temple of Astarte in Paphos (Cyprus) as we can deduce from representations there. The Greeks not only assimilated the Near Eastern goddess into their culture later, calling her Aphrodite, but they also adopted the white pigeon as a symbol of her. But the bird was not only a holy animal to them; they also gave pigeons to their children as toys, pigeons were eaten since squabs (nestlings) were a popular food, and their faeces were used as excellent manure. Furthermore, in ancient medicine, the pigeon and its faeces played an important role. In the 6th century B.C., pigeons were used as message-carriers for the first time in ancient Greece. Advantage of their homing abilities was taken because they are even reliable over longer distances.

The Romans adouted the niceon as a net on the one hand hut on the other anatomie.unibas.ch/IntegrativeBiology/haag/Culture-History-Pigeon/feral-pigeon-haag.html 4

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hand, it was also associated with love, representing their goddess Venus. Pigeon meat is tasty, and for the first time, because of the great demand for squabs, a sophisticated industrialized squab market was established. The biggest pigeon lofts held 5000 pigeons and had a tube system to supply food and water. Parallel to its use for food, the Romans selected certain traits to create many pigeon breeds that we can see on surviving mosaics and paintings. The Roman pigeon breeds can be divided into two groups: the semi-domesticated dovecote pigeons and the domestic pigeons that are more dependent on man. The Roman dovecote pigeons were strong utility breeds that supplied meat on the one hand and dung on the other. When the Roman Empire expanded to the north, pigeons also spread across those regions beyond the Alps for the first time. In Zurzach in Switzerland for example, the earliest pigeon bones date back to 10 to 35 B.C. (Morel 1994).



The Romans had sophisticated breeding farms of utility breeds and of pigeons that were kept for fancy. Many pictures of these Roman pigeon breeds survive. In the example shown above from Pompeii, we can see a flying dominant red domestic pigeon.

Picture by the Archaeologic Department, University of Basel

Many local races of the pigeon, that were bred for domestic purposes or for their aesthetic appearance in the Middle Ages and in modern times, descend from these Roman forms. As recently as the beginning of the 20th century, millions of squabs were slaughtered for food in Germany every year. The original dovecote pigeon has become very rare nowadays or has even died out, because fitter specialized utility breeds displaced it through

commercialized breeding. In addition, intensive agriculture diminished their anatomie.unibas.ch/IntegrativeBiology/haag/Culture-History-Pigeon/feral-pigeon-haag.html

food supply by reducing the amount of lost grains on the fields, and demand for pigeon meat declined as cheap mass produced ckicken meat entered into competition, banishing most of the squab meat production from the market.

Today, pigeons play a role mainly as a spare-time occupation for a variety of people with different interests. In Switzerland and Germany, hundreds of different breeds of pigeons are bred and presented at exhibitions. Pigeon racing is especially widely practiced, a sport that originated in Arabian culture.

In competition flights, trained racing pigeons are released from different distances and the birds who reach their loft first will win a considerable prize. In 1997 for instance, the prize money for competitions was as high as 118 000 EUR (*Neue Zürcher Zeitung*, 1.2.1997). There are over 1.2 million breeders with more than 60 million racing pigeons in 50 countries all over the world.



The pigeon is far more than an ordinary bird since it is a symbol of different gods and human virtues. The pigeon was simply a biological creature in the beginning. In man's mental world, it became a symbol of the godesses of love, of love itself, innocence, the soul of the deceased, the Holy Ghost and peace. These associations contribute to man's love and admiration of pigeons. Collage by Daniel Haag-Wackernagel

The pigeon has always played a prime role wherever symbols and representation of gods and virtues had to be created. Hardly any other symbol than the dove of peace, derived from Noah's dove in the Old Testament, is so widely spread and omnipresent in our society. In today's advertising, the pigeon represents purity and cleanness, or it recalls our urban way of life as, for instance, in a scene where a roaring car frightens off a flock of pigeons, making them rush up instantaneously.

#### **City Life**



The urban habitat with its façades and narrow streets is the equivalent of the natural habitat of the rock dove above, where the Sardinian coast and the Market Place of Basel are compared. Picture painted by Dietrich Bornham, Celle

In villages and towns, it was mainly the dovecote pigeon, who was essentially free-living, that formed feral populations. High buildings that border streets form gorges that resemble rocky cliffs, their original habitat. Feral pigeons thus adapted easily to the structure of our towns. In addition, vast food sources are available nearby through accumulations of rubbish, accidental spillage, and deliberate feeding by people.



Feral pigeons were already fed by the beginning of the 20th century with great passion, as this postcard of Venice shows. The vast food supply in towns saved the pigeons from flying to the more hazardous countryside, avoiding selection by predators like the peregrine falcon, the goshawk and the sparrow hawk. That is how large populations of feral pigeons developed. Postcard of Venice, 1906

Feral pigeons have existed since the domestication of the rock dove occurred and have been widely distributed for hundreds if not thousands of years. There is mention of a "bird spreading faeces in the street", probably a pigeon, in a 4000-year-old script from ancient Mesopotamia. The Roman poet Plautus reported pigeons living on the roofs of houses in Rome in the 2nd century B.C. and Aelian wrote that Roman feral pigeons are very tame.



dovecote pigeon

feral pigeon

The rock dove is the ancestor of all domesticated pigeons and their descendants that have become wild and are now called feral pigeons. The dovecote pigeon is a strong utility breed, kept in semi-liberty, that was imported by the Romans to areas north of the Alps. The first highly domesticated pigeons were bred from the dovecote pigeon, presumably 4000 years earlier. Wild dovecote pigeons, domestic pigeons and, since the beginning of the 20th century, also homing pigeons formed today's feral pigeon populations.

Pigeons painted by Dietrich Bornham, Celle; picture by Daniel Haag-Wackernagel

In the late 14th century, we find the Bishop of St Paul's Cathedral in London complaining about people throwing stones at feral pigeons and breaking the window glass of the cathedral. Valuable information about the living conditions and population size of our feral pigeons at the beginning of the 20th century is given in the work of Scherdlin (1913). According to one of his enquiries, some feral pigeon populations are very old. As a matter of fact, the population in Strasbourg is hundreds of years old, as is the one around the Cologne Cathedral. Since most churches of Cologne are built in the Romanesque style, where nesting is not possible because of their flat façades without any crevices, the pigeons concentrate on the façade of the gothic cathedral which obviously offers plenty of hiding-places.



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Pictures of towns taken at the beginning of the 20th century, like the one above illustrating the Market Place of Basel, regularly show feral pigeons (to the right at the bottom). Postcard of Basel, around 1920

In the 20th century, populations of feral pigeons, many very old and concentrated in central Europe, were augmented by homing pigeons that had escaped from the expanding sport of pigeon racing. Unfortunately, precise information about the origins of specific feral pigeon populations are rare. In Scherdlin's work (1913), dovecote pigeons are explicitly described, and the feral pigeons of Neuchâtel (Switzerland) are said to descend from brown domestic pigeons. The appearance and plumage colour of local feral pigeon populations are always similar to their respective ancestors. That is why, for example, recent feral pigeon populations in the Ruhr area in Germany can be identified as descending from escaped homing pigeons, while the pigeons of Basel in Switzerland are mainly of the dovecote pigeon type. Of all wild birds, feral pigeons have the richest known variability of plumage colours and patterns. In Vienna, we found that out of a total of 52 hereditary factors that define plumage known in breeds of pigeons, 23 existed in 100 different combinations (Leiss and Haag-Wackernagel 1999, 2000).

Pigeons were regularly fed by the public in many towns in earlier times. Moreover snilt food that was presented to draught horses and semidigested anatomie.unibas.ch/IntegrativeBiology/haag/Culture-History-Pigeon/feral-pigeon-haag.html 10/31

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oats in their faeces in the street, used to be important food sources, as also were all kinds of rubbish in the market places, especially in the gaps between paving stones that were very common at that time. When street cobbling or paving was replaced by asphalt and the draught horses disappeared in the beginning of the 20th century, pigeon populations decreased. Schwarz (1966) describes living conditions of early feral pigeon populations as follows: "Pigeons could only survive by foraging in the fields around the town searching for food for themselves as well as for their nestlings as long as man was forced to be economical with food, and as long as waste, especially of cereals and bread, was considered a sin. Besides, goshawk and peregrine falcon were very common predatory birds who chased the feeding pigeons, reducing their number. Breeding, moreover, was consequently limited to a short time of the year when seeds were available. Many broods might also have been victimized by widespread domestic martens and predatory rats."



Feral pigeons are very adaptable and can even breed on trees, although they are traditionally cave breeders. The picture shows a three-weekold nestling sitting on a weeping willow in the Zoo of Basel. Picture by Daniel Haag-Wackernagel

In most European towns, pigeon populations increased considerably after World War II. Today, one can assume that there is one pigeon for every twenty citizens of a big town. The number of pigeons in the world is estimated to amount to several hundreds of millions of individuals. This explosion of the pigeon population is due to the large food supply, because after the war food became cheap in relation to income. Since this increase in our welfare, society has produced pigeon food in abundance through our wasteful practices. Consequently, pigeons do not have to commute on risky flights to more natural food supplies in the countryside. In addition, predatory birds were drastically decimated by hunting and later by deliberate and accidental poisoning. Regular feeding of pigeons by their fanciers throughout the year allows pigeons extra time for breeding, so that some pigeons can breed throughout the year. Furthermore, several behavioural changes increased their survival prospects in towns. Feral pigeons are extremely adaptable, which enables them to accept breeding places that are unnatural to them. In Basel for instance, we found pigeons breeding in running ventilation systems or on exhaust air tubes of underground car parks, under noisy bridges, beneath bright neon signs and even on trees, which is very atypical of cavity-breeders. In Britain some years ago, pigeons nested in the wave guide in the centre of satellite-tracking dishes; this neting area was apparently so warm that the birds had to devote little time to incubation (Chris Feare, pers. communication).

#### The Feral Pigeon — Both Enrichment and a Problem



Pigeons are passionately fed everywhere. Picture by Daniel Haag-Wackernagel

#### **Enrichment by Pigeons**

Feral pigeons are one of the few bigger animals that are successful in populating noisy and hectic town centres. In many respects, they are a valuable enrichment. Feeding pigeons is an important spare-time activity to many people who enjoy animals and are looking for a form of relaxation. Pigeons living in urban areas have expanded their originally granivorous diet to eat all kinds of rubbish, to the extent that town pigeons are now omnivorous. In many towns, pigeons are a tourist attraction. Moreover, studying them is an enrichment to hobby ornithologists as well as to scientists who are concerned with biology in towns.

## Feral Pigeons as Enrichment

Feeding gives pleasure and is relaxing



Experience of nature

Object of study

Tourist attraction

Elimination of rubbish

#### Should We Feed Pigeons? — Yes, We Should, but ...

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Feeding pigeons is one of the most wonderful experiences to many people. Feeding animals is probably an innate human instinct since a ten-month-old baby already offers food to others in order to establish a friendly contact (Haag-Wackernagel 1997a). Children in particular enjoy feeding pigeons. Provocing begging, fights or approach is fun to the young as well as to the old, and hardly any wild animal can be observed as closely as pigeons that are being fed. There is nothing to say against occasional public feeding, in particular if pigeons are given approriate food like special pigeon food mixtures, corn, cereals or rice. Rubbish, however, is not suitable. All in all, educational advantages of occasional feeding outweigh the disadvantages that might occur. Occasional feeding by thousands of people, as in Trafalgar Square in London, creates huge problems. Occasional feeding by a few people may be less serious, but where pigeons congregate occasional feeders often become regular feeders.

However, regular excessive public feeding is seriously not recommended. Systematic daily pigeon feeding with kilos of food must not be practised, because it is harmful to the birds as well as to the local environment. Pigeons are extremely fast learners and immediately get used to a reliable food source. Knowing quickly the habits of their fanciers, the pigeons arrive in good time to the "rendez-vous" with the food provider. Pigeons can eat their daily food requirements of 20 to 50 g within a few minutes. Consequently, they do not have to look for food by foraging for hours any more and they can spend their gained "spare-time" in breeding instead. A large supply of artificial food allows numbers to increase rapidly, and in nesting and roosting areas this can create unhygenic living conditions. Our towns offer plenty of natural food and rubbish that enable small pigeon populations to survive on their own. Excessive feeding is an artificial intervention in the ecological systems of towns and must be prevented.



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An individual feral pigeon produces around 12 kg of excrement each year, soiling façades and monuments. Pigeon faeces form an ideal substrate for mould fungus. Fungus tissue secretes acids that are able to dissolve limestone, creating interstices that fill with water. Frost will crack stone blocks and bricks that have been eroded in this way by this corrosive process, causing damage. Picture by Daniel Haag-Wackernagel

Besides, large feral pigeon populations cause various problems. The large quantity of droppings mentioned above accumulate especially on its roosting and breeding places. Even where large numbers are fed, however, walking areas can become dangerously slippery to people who walk there.

Different analysis, in particular the work of Bassi and Chiatante (1976), were able to prove that pigeon faeces cause damage to limestone. Not the faeces themselves are the harmful part, but contact with water causes ideal conditions for various kinds of mould fungus (e.g. Aspergillus) to grow. Its mycelium enters the stone. As a result, the end product of metabolism produces acids that are powerful enough to dissolve stone. They form gaps and capillaries where water can penetrate, so that frozen water will crack

them and cause frost damage in winter. Destruction is especially dramatic for ancient buildings like Cologne Cathedral, which is inadequately protected

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against pigeons despite the use of piecautionary measures such as mechanical deterring systems (Haag-Wackernagel 2000b).

Feral pigeons are transmitters of a whole series of diseases and parasites that can attack man. Cases have been reported where feral pigeons had passed ornithosis, cryptococcosis and toxoplasmosis to people. Soft ticks like Argas reflexus, fleas and red mites that disperse from pigeon breeding places can attack people, causing big problems repeatedly. At present, my research group at the University of Basel is investigating mechanisms of disease transmission from feral pigeons to people.

As the density of nesting and roosting pigeons increases, the quality of life of a population deteriorates, just as in human populations. An enormous food supply in our towns increases the feral pigeon population sufficiently to make the birds suffer. Consequently, excessive population density activates and stimulates regulation mechanisms that decimate nestlings and juvenile pigeons in particular as a result of diseases and attacks from parasites. Such regulation mechanisms could probably never emerge to such an extent in natural environments of rock doves, since territorial behaviour as well as other regulatory mechanisms, including predation by bird of prey, would react to increasing density and keep the pigeon population below that at which density dependent mechanisms of regulation (e.g. diseases and parasites, territorial stress) would be activated. Crowded breeding places make pigeons behave more aggressively, which mostly affects nestlings and juveniles that are the weakest members of the population. The impact of the worst "slum conditions" causes further problems to the feral pigeons.



Large food quantities together with the absence of enemies allow the pigeon populations to grow fast. Consequently, pigeons live highly crowded in flocks, often under poor hvaienic circumstances, denselv packing into the few adequate breeding anatomie.unibas.ch/IntegrativeBiology/haag/Culture-History-Pigeon/feral-pigeon-haag.html sites. Stress caused by population density promotes infestations of parasites and diseases. Under the roof shown above, over 120 pigeons lived. Carcasses of pigeons were spread all over the floor and the furniture was covered inches deep with excrement. From such seedy places, parasites and vermin, that ruin materials, can invade man's homes and offices.

Picture by Daniel Haag-Wackernagel

People start to kill or exterminate as many individuals of an animal species as possible once they feel disturbed or affected by them. This is often done in ignorance of the ecological context. Soiled buildings and monuments have always been a problem to owners and local authorities. At the beginning of the 20th century, reduction of large feral pigeon populations was attempted in Washington, London and Dresden by hunting and shooting (Haag-Wackernagel 1998). Munich was estimated to have a feral pigeon population of approximately 60 000 individuals in 1934. They were being fed by passers-by, in particular on Odeonsplatz and in front of the castle. At that time, the town planned to limit pigeon numbers by destroying their eggs. Feral pigeons had been regularly shot by the Basel police since 1927. Such measures provoked disputes with animal protection organisations; some of these arguments were described as a "pigeon war" (Schmidt 1973). After 1935, pigeons were caught in traps made of net or wire-mesh and were killed. At the same time, advertisments in newspapers tried to persuade pigeon fanciers to stop feeding pigeons. Animal killing seems to stimulate man's imagination about possible methods in innumerable ways. Many different means of poisoning by contact or eating were used to kill pigeons, as well as firing nets over flocks with rockets and using guns that fired pressed-salt pellets that do not damage buildings. Even an "electric chair" to kill pigeons was invented (Geisthart 1977): feral pigeons were attracted by food lying on a metal platform of four square meters and were killed instantaneously by a strong electric shock once they had stepped on the metal.

Today, control programmes that aim to reduce pigeon numbers attempt to eliminate as many individuals as possible by trapping, shooting or poisoning. But several scientific studies have demonstrated that killing like this fails to keep the number of birds low, because the place of the killed birds is filled within a short period of time by new juveniles, or by birds that immigrate from neighbouring areas. Because of the high rate of reproduction that pigeons can achieve – up to 12 fledglings per year per pair – a lasting control of our feral pigeon populations cannot be achieved by killing.

Number-regulating measures like "the pill" for pigeons are very controversial. Chemosterilants, which mostly are extremely poisonous, cause either temporary or permanent infertility. These substances must under no circumstances be introduced into urban ecosystems because there is no garantee of safety for people or other urban animals (Haag-Wackernagel 2002). Treatments of pigeons with hormones, which were undertaken in several towns, had no lasting success. However, a new kind of pill with hormones similar to those used for humans proved effective under laboratory conditions (Kummerfeld et al. 1996); until field experiments have demonstrated that a permanent reduction in numbers can be achieved, this

matrerial should not be used in towns. With this kind of control a major difficulty arises from the difficulty in administering exact doses of a substance to wild animals. But precise administration of biologically active substances

like hormones or chemosterilants is essential for this king of population control. In pigeons and other animals, dominant individuals chase the weaker ones from a food source, so that strong adults eat too much of the administered substance and subordinate individuals eat too little. Unfortunately for the dominant birds, unavoidable overdoses would be the result, and the effect would mostly be poisoning. Instead of selecting weak animals, unwanted selection of the stongest individuals would occur, which is exactly the opposite of the aimed result.

The ability of animal populations to compensate for additional mortality imposed by man is a powerful defence against almost any human attempt to reduce animal populations successfully by either decreasing the birth-rate or by increasing mortality (Kautz and Malecki 1990). According to this ecological fact, a high mortality-rate among adult animals – e.g. as a result of hunting – improves the chances of juveniles surviving to adulthood. The reasons are easy to explain. If numerous adults die, the young will consequently find more food and space for living. The young would simply take their place and "inherit" ecological gaps, without having to find new territories or undertake risky emigration any more. Paradoxically, decimation usually restocks a population instead of decimating it. The same is true for species like pigeons with their high fertility-rates. Their enormous capacity for reproduction can compensate for even great losses within a short period of time.

# Killing feral pigeons only restocks them. The gaps created are immediately filled by immigrating pigeons and juveniles.

Pigeon excreta: soiling of buildings and monuments



Hygienic problems: transmission of parasites and diseases

Poor living conditions of the feral pigeons

Stress - Parasites - Diseases

### **Pigeons on the Balcony?**

Roofs and facades are, as already mentioned, the pigeons' favorite urban structures since they resemble the rocky coasts that used to be their original habitat. Our buildings offer perfect breeding, sleeping and roosting sites to them as well as lookouts for spotting their fanciers who will bring them food. The easiest way for us is to simply tolerate pigeons and enjoy watching them. If a pigeon pair happens to settle down on your balcony to breed, you will get the fascinating opportunity of closely observating nesting and hatching among pigeons. In urban environments, nature is usually only experienced indirectly through television and does not convey the biological reality. A pair of pigeons on a balcony presents an opportunity to observe the real life of our urban animals since it seldom occurs in places that we can so readily see. Children in particular can take advantage of regularly observing the breeding behaviour of feral pigeons as part of their studies. Why not document that important sequence of life in a diary with drawings, descriptions and pictures during five weeks or more?

As soon as the male pigeon finds a suitable location for nesting, he starts to woo a hen intensively in order to gain her for mating. Once mated, the cock drives the hen towards the nesting place, away from other pigeons. He marches after her in a very upright posture, taking long steps and picking at her so as to lead her directly to the nest site. When nest-making has started the cock searches for building material, leaving it at the nesting site. In building the nest, the pair at first works in complete accord and sympathy, their interest is mutual and of the same degree. Shortly before oviposition only the

cock leaves the nest to search for more material, while the hen begins the construction, using all the collected dry fibres, twigs and feathers to build the nest, often on a bed of guano left after a former nesting -Wa00946110/atg2el - Culture History of the Pigeon - Kulturgeschichte der Taube

attempt. Mating among pigeons lasts approximately ten days, starting with the wooing. In mating, the birds' "kiss" reminds us of human ritualized food exchange from mouth to mouth. During the mating ceremony the pair is often disturbed aggressively by other pigeons. This "sex jealousy" cannot be explained yet, but it has also been observed with many other species. After copulation the hen struts around proudly in a very upright posture while the cock rushes up by clapping his wings loudly and flies off, apparently wanting to impress everybody. Everywhere the female goes she is followed by her mate. Eight to ten days later, a clutch of two eggs is laid, the second egg 24 hours after the first. The eggs are oval, white and weigh approximately 17 g each. After the first egg has been laid, both partners alternate in standing beside it, but do not start incubating until the second egg is laid. The cock sits on the eggs in the morning until the early afternoon, while the hen incubates them for the rest of the time. After 17 days of incubation the eggs hatch. The squabs at hatching are blind, downy and nidicolous.



Pigeons feed their nestlings exclusively with crop milk during the first five days of life. The crop milk gleams through the still very thin skin on the nestling's crop. Pigeon nestlings can double their weight within 34 hours of hatching and are therefore one of the fastest growing vertebrates. Picture by Daniel Haag-Wackernagel

Both parents feed them with pigeon "milk" in which they soak more and more seeds every day. At first, it is the parents who impose food upon the chicks, while later the squabs beg for it themselves by calling their parents with loud cheeping and by clapping their wings. The age of a nestling can be estimated according to its plumage and body size. The young chick is covered with yellowish down feathers on its first day of life; by the third day, it has doubled its body length! On the 7th day, the plumage forms two dark rows along its back. On the 14th day, the remiges emerge from their waxy sheaths, and from the 18th day on, feathers gradually cover the wings and the back region. On the 21st day, the squab is covered all over with feathers, but the tall is still missing. Feathering is completed on the 28th day when body weight has reached its maximum. The young pigeons are then ready for the first flight, which is attended by the male pigeon.



Watching the young breed is a fascinating experience of nature. These two little fellows are three days old and keep each other warm. Picture by Daniel Haag-Wackernagel

#### What if Pigeons Settle down at Your House?

When numerous pigeons habitually congregate on buildings, measures are usually taken against them once their excrement starts to deface the surroundings to an unbareable extent. There are different reasons why pigeons roost on buildings. If they are fed, they come close to the source of food, waiting there for their fanciers or an opportunity to eat. In such cases, it is advisable to talk to the fancier, i.e. the feeder, who caused the problem. Public feeders might be persuaded to feed pigeons in parks instead. Pigeon droppings would then be deposited on trees rather than on facades. If pigeons use a building only for roosting, you can attempt to spoil the quality of the place by making noise repeatedly. Pigeons are highly sensitive to bangs, and they will leave the place for good if they are persistently disturbed by clapping of hands. Complete freedom from pigeons can be achieved by blocking openings by means of nets or wirescreens, or by installing ledges not wider than 6 cm or at a 60-degree angle to present a slope on which the bird cannot roost (Haag-Wackernagel 1997b), or by installing specially made spike systems on the ledges. Net or wirescreen, and spikes, must be fitted properly

to prevent pigeons or other animals from perching, and also from getting trapped.



Pigeons, who used to live on rocky cliffs, prefer lofts, balconies and protected hiding places within façades as a breeding place. Picture by Daniel Haag-Wackernagel

If pigeons use buildings for nesting, however, it will be much more difficult to solve the problem because pigeons stick to their breeding site persistently. Even if intentionally dusturbed, they are difficult to chase away. Furthermore, it is no use taking away their eggs since they will replace them immediately by new ones. However, if one egg is taken and the other left, but rendered infertile by pricking it or coating it with light oil, the pigeon pair will go on incubating the destroyed eggs for a while.

### **Animal Protection and Pigeon Deterring Systems**



g-Wacesetnolatgel - Culture History of the Pigeon - Kulturgeschichte der Taube



Nets or bars must be fixed properly, otherwise pigeons can be caught behind them, unable to find their way out. In these death traps pigeons perish miserably. Picture by Daniel Haag-Wackernagel

Feral pigeons have become a problem in almost all larger towns. Laws for animal protection claim the following: "Nobody is allowed to hurt, torture, frighten or do harm to any animal without justification." The same is expected from pigeon deterring systems, but unfortunately, law is sometimes violated. We analyzed the most common pigeon excluding systems that have been used in recent years (Haag-Wackernagel 1997b, 2000b, 2000c) and stated that there are basically two systems: deterring systems by contact and those by distance. The latter try to keep pigeons off permanently from a specific area by sending visual, acustic, magnetic or olfactory impulses. Those defense systems (ultrasonic sound, magnetic pulses, olfactory repellent, all kinds of scarecrows) that physically keep pigeons at a distance are inefficient in the long run, according to our as well as other scientists' studies (Woronecki 1988, Griffiths 1988, Bomford & O'Brien 1990). On the other hand, systems that keep pigeons away by contact are generally more reliable.

#### **Pin and Wire Systems**

## VIII. XXXXXXXXX

-Wacetoatgel - Culture History of the Pigeon - Kulturgeschichte der Taube



The figure above shows the most common mechanical antiperching devices for the exclusion of pigeons. Sharp endings of needle and claw systems from the USA (fig. a. and b.) intend to inflict pain on pigeons. They are dangerous and can also be very injuring for the person who installs and subsequently manitains them. Plastic spikes (fig. c.) or clear bird spikes like the ones shown in figure e. are at the same time efficient and harmless. Also, wire systems can be recommended (fig. f.) or even systems that prevent pigeons from creeping beneath the obstacle (fig. g.).

Systems that, according to adjustment, cause stronger or weaker electric shocks to pigeons by contact only are acceptable if they use a low level of power under 0.5 joule. Extremely strong electric shocking equipments like the ones produced by some German companies are unnecessary and imply cruelty to animals so as to violate the laws for animal protection. They are banned from use in the European Union under the Conservation of Birds Directive (Council Directive 79/409/EEC). Contact repellents like the ones formerly used -Wa009/eff0/atg2el - Culture History of the Pigeon - Kulturgeschichte der Taube

in several European countries, which trap pigeons using gels or sticky pastes that spoil their feathers, and which put smaller birds into danger as well, are not allowed for animal protection reasons (Wormuth & Lagoni 1985). According to our experience, pigeons are able to overcome any repellent system if they are obstinate enough, no matter what kind of pigeon deterrent system is applied or how intense the repellent stimulus is (disturbance of balance, obstacles, painful stimuli inflicted by spikes or electric shocks). No repellent system we tested can keep a pigeon away if it wants to reach its squabs in the nest; motivation is simply too strong. In this kind of situation, pigeons are ready to accept any handicaps, even the worst. "Brutalising" the repellent system is therefore no means of better protection at all in comparison to harmless solutions, since the motivation of the bird is of overriding importance in determining what the bird will tolerate. Consequently, no brutal deterring systems should be used in the future because they are no more effective than deterrents that do not inflict pain.



Electroshock systems like the one on the Dome of Milan should only be used with weak currents, and only in countries where they are permitted. Picture by Daniel Haag-Wackernagel

#### The "Pigeon Action of Basel"

## The "Pigeon Action of Basel" is based on information and education instead of prohibition.

All experiences up to now lead to the conclusion that reduction of pigeon populations can only be achieved by reducing their food supply. In order to garantee a permanent human solution to the problem, the "Basel Pigeon Action" was initiated. 1988, the Basel animal protection organisation "Tierschutz beider Basel" started and led the action, in cooperation with the University of Basel and the Health Department of Basel (Haag-Wackernagel 1993, 1994, 1995). From the ecological point of view, food supply provided by man is responsible for the maintence of excessively large feral pigeon populations. Therefore, the public, especially the fanciers among them, were the target of our efforts, instead of the pigeon populations themselves.

Brochures, posters, articles in newspapers and programmes on TV and radio were used to explain to the public what the negative consequences of feeding feral pigeons would be, no matter how well-meant the courtesy is. Bad living conditions of the pigeons caused by public feeding were presented with shocking pictures. The media campaign tried to make the public aware of the consequences of uncontrolled public feeding, demonstrating that it is the large food supply that is responsible for large feral pigeon populations. Overpopulation, as a result, causes "slum living conditions" for the crowded pigeons, encouraging parasites and diseases. Additionally, those poor living conditions can indirectly lead to hygienic problems which threaten humans n and their pets. Pigeon fanciers were therefore asked to stop feeding pigeons, or at least do it within severe limits, for the benefit of the pigeons themselves. In order to avoid starving the pigeons because of the limited food supply during the action, as many pigeons as possible were caught by officials of the game inspectorate of Basel. A cage trap was used for that purpose. Amid toughening competition the pigeons adapt faster to the new living conditions. The yearly catching of the pigeons is limited to 20% of a population. This measure alone is probably not enough to control the number.

In order to demonstrate exemplary animal keeping of the town, the government of Basel had eight dovecotes built for feral pigeons under the roofs of publically-owned buildings. The dovecotes are cleaned and surveyed by a keeper once a week. So, if a flock grows too fast, fertilized eggs are removed from the nests and replaced by infertile ones. From 1991 to 1996, 8100 kg of faeces and 10 749 eggs were removed from the dovecotes. Public authorities finance the dovecotes in order to show that the town does not intend to exterminate the pigeons but, on the contrary, wants to keep a small, but healthy, pigeon population. Moreover, they want to demonstrate that it is not enough to simply feed the pigeons, leaving responsibility to everybody else. Good animal keeping implies much more than throwing food to the pigeons, it also implies provision and maintenance of dovecotes and the availability of veterinary assistance.

The average size of 13 controlled flocks decreased from 1400 to 708 individuals within 50 months. The results allow conclusions that can be drawn for the entire feral pigeon population. The population of approx. 20 000 pigeons was considered to have been reduced to 10 000 individuals within the 50 months. Accordingly, there was a decrease in the amount of damage during that period. The gardening authorities of Basel stated that there had been a reduction of damage of approx. 50% in public green areas. Changes in the public attitude towards public pigeon feeding was evaluated by exploring the socio-cultural success. The results drawn from analysis of articles in the press,

letters from readers in newspapers, telephone calls and ordinary letters proved that the message saying that public feeding does harm to the pigeons had been understood. There were national as well as international positive responses to the Basel Pigeon Action. Today, most people in Basel are aware that uncontrolled public feeding is harmful to the pigeons. According to our experience, a population of wild animals can only be influenced after careful analysis of the ecological context. Because of the enormous reproduction rate of the pigeons, killing attempts without any simultaneous food reduction do not have any influence on the number of birds in the population. They only treat the symptoms, not the cause and are therefore in vain.

# The Pigeon Action of Basel

Information and public education



Decreased feeding activity:

- more competition
- less breeding success



Tierschutzist: Tauben nicht füttern!



Controlled dovecotes: 1200 kg pigeon excrement per year Elimination of 2000 eggs

Trapping: Adaptation of the size of the population to the reduced food supply

## Decrease of the population

#### The Future of the Feral Pigeon

#### A successful feral pigeon is clever, tame and cautious at the same time, has a modest food supply and is considerably resistant to diseases and parasites.

Feral pigeons are loved by the ones who kindly feed them, and hated by others who chase and torture them. It makes our symbol of the holy spirit and peace become denigrated to a flying rat or flying rubbish. Some people are not able to see that our pigeon problem is an ecological consequence of misguided human behaviour, they blame the pigeons themselves instead. In Basel, pigeons are found again and again that have been poisoned or shot and these birds usually die after a long agony.

Fit feral pigeons are clever, tame and cautious at the same time and they are modest and considerably resistant to diseases and parasites. The male pigeon must be a good fighter if it wants to conquer one of the rare breeding sites and it must succeed in competition for food. The female pigeon must help raise the nestlings together with its partner. If one partner dies, breeding fails. After fledging, the young are usually further assisted by their father. He takes them with him to his feeding places, which widens their chances of survival. Like any other creatures, pigeons are only interested in one thing: survive as long as possible and generate as many fit offspring as possible. That is how a species optimizes conditions for spreading its own genes. Considering this natural instinct, it is obvious that a pigeon population coming under pressure because of killing actions by man will adapt even faster to the new selective process for survival. We can expect that feral pigeons will go on adapting to the living conditions of city life, so that also in the future, these lovely wild birds will hopefully stay with us in our towns.





Feral pigeons can perfectly cope with the urban life situation. Hopefully, these confiding and attractive associates of our town centres, that have very restricted animal life, will continue to exist in the future. Picture by Daniel Haag-Wackernagel

#### **The Author**

Daniel Haag-Wackernagel is working as a professor of Biology at the Medical Faculty of the University of Basel. He has dedicated his scientific research to the pigeon for more than 20 years.

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