

SOME OBSERVATIONS ON DOG WELFARE IN THE BAHAMAS

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Abstract

This article uses data from several sources to outline dog welfare and to identify areas in which it could be improved. The data include 253 dog licence records, 11 observations from free-roaming dogs, and two convenience samples (of 411 people in total). Dog age is used as the indicator of welfare. The current care given results in low average dog ages (three years). The actions of owners allow many animals to roam and so mate unchecked, and this exacerbates the nuisance of free-roaming dogs and diminishes the welfare of society. Three areas are identified which would enhance the welfare of dogs and society: keeping dogs inside the house, not in the yard; sterilizing dogs; and taking dogs to the veterinarian at least "when necessary".

Introduction

We consider the dog population of The Bahamas to consist of two overlapping groups: owned dogs (which people claim to own) and unowned dogs (dogs which people do not claim to own)¹ (Mather, Fielding and Darling, 1999). Owned and unowned dogs contribute to the free-roaming population. Some Bahamian islands have feral dog populations (dogs which have reverted to "wild" – they breed and exist in the wild) (*The Tribune*, 2000a). These, and dogs kept for commercial purposes, are not considered. Dogs said to be feral on New Providence are probably simply free-roaming as the island is essentially an urban area (Mather et al., 1999).

When Mather et al. (1999) provided the first review of the so-called "stray-dog problem", they indicated that awareness of good animal care among Bahamians was a relatively recent phenomenon. Letters in the press suggest that poor animal welfare was probably common even in the 1950s (*The Tribune*, 1950). Thus, despite the establishment of the Bahamas Humane

Society in the 1920s, it seems only recent generations have grown up aware of animal "welfare". Mather et al. (1999) concluded that free-roaming dogs result from poor pet care and that the nuisance caused by these dogs would continue until the level of pet care was improved.

Based on Fielding (1999a), we estimate that in The Bahamas there are currently 48,000 unowned dogs and 98,000 owned dogs, of which less than five percent are licensed (Fielding, 2000a). The majority of dogs in The Bahamas are "potcakes", the local mongrel. In addition to locally bred dogs, pure-bred (or "breed" dogs) are imported.² It is estimated that 32% of licensed dogs are "breed" animals, with the remainder being crossbreeds (Fielding, 2000a). The overwhelming majority of free-roaming dogs are potcakes but breed animals are also found in this group (Isaacs, 2000).

As with human beings, age is a useful indicator of well-being or welfare, so this article will stress this character. However, we are aware of the limitations of this indicator to measure welfare. We present median ages of dogs given by owners as these are comparable to measured ages (Fielding & Mather, 2001).

Sources of data

This study draws principally upon data from licenses for 253 dogs (Fielding, 2000a) and results from two convenience samples of residents covering 374 dogs, owned by 306 people in New Providence (Fielding, 1999a) and 87 dogs, owned by 105 people in Abaco (Fielding, 2000b). In addition, data on 11 free-roaming dogs put-down by the Government's animal control officers were available (Fielding, 2000c). These data are used to expand our knowledge of dog welfare, an issue briefly included in Fielding & Mather (2001).

Statistical methods

Two-way tables were analysed using Fisher's exact test. Larger tables were analysed with Chi-squared tests. Medians were compared using appropriate non-parametric tests.

RESULTS

Ages of dogs

The ages of three classes of dogs, licensed, owned (which people claim, but probably not licensed)³, and unowned (those which are unclaimed) are given in Table 1. This summary suggests that owners who legally claim ownership (i.e. owners of licensed dogs) offer a similar level of pet welfare to those who do not, since the average age of the dogs of both classes of owner is three years. Unowned dogs appear to have the lowest average age. Over 25% of owned pets live to be four years of age or more, while less than 25% of unowned dogs reach this age (Table 1). However, such an interpretation omits consideration of other factors that influence pet welfare and which are discussed below.

Table 1 A summary of the ages (years) of three classes of dogs in the Bahamas.

	Licensed dogs	"Owned" dogs	"Unowned" dogs
25 percentile	1.5	1.75	1.25
50 percentile (Median)	3.0	3.0	2.0
75 percentile	5.0	4.25	3.75
Sample size	256.00	84.00	8.00
Source	Fielding (2000a)	Fielding (2000b)	Fielding (2000c)

Owned dogs: These are claimed to be owned, but probably not licensed

Unowned dogs: Dogs put down by the Canine Control Unit. These dogs were aged by animal control officers at the the Canine Control Units using a modified teeth-ageing chart supplied by Beck (2000).

Licensed dogs

Dog license records describe a sub-set of owned dogs. They permit factors such as the effect of breed, gender and reproductive ability on age to be assessed.

More male (59%) than female dogs (41%) were licensed, which shows a real preference for male animals ($p < 0.05$). This preference for males did not change with the type of dog ($p = 0.4$).

Although males and females had the same median age (three years), they had different age distributions ($p < 0.01$), which indicate that there were more old females than males (Table 2). Only 25% of males exceeded five years, while 25% of females exceeded 6 years (Figure 1).

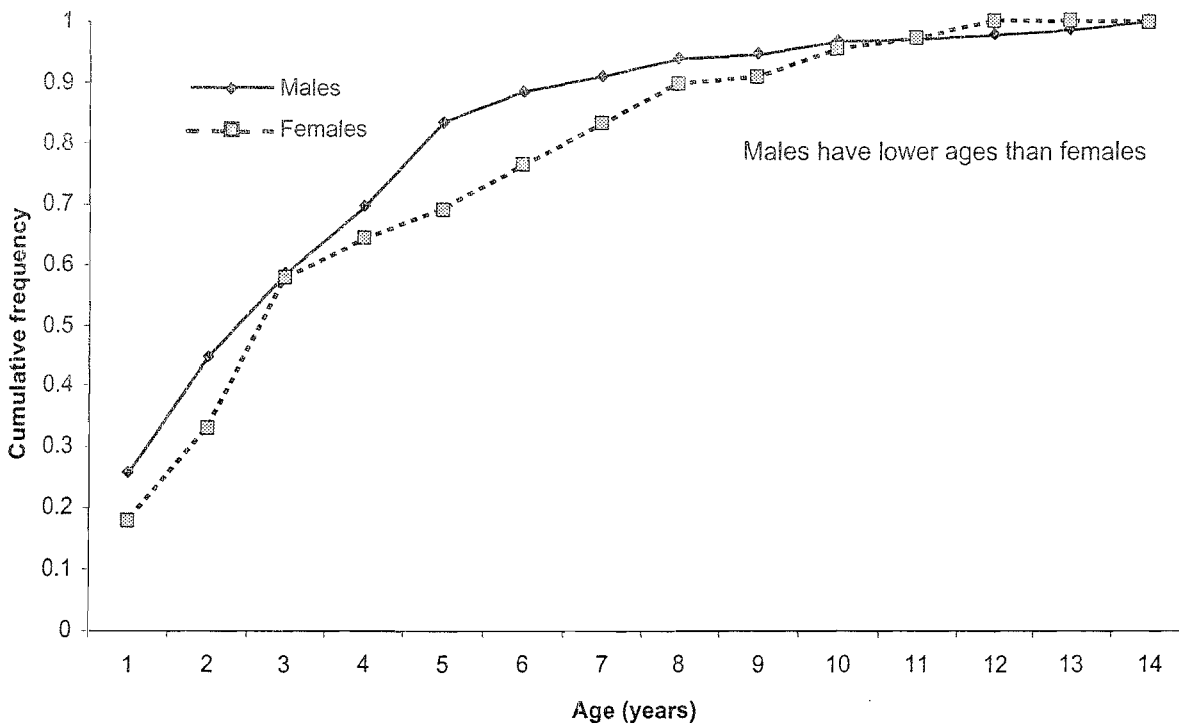


Figure 1 Cumulative frequency distribution of age of licensed male and female dogs in The Bahamas.

Table 2 Percentile points of the ages in (years) of male and female dogs licensed in 1999.

	Males	Females
25 percentile	1	2
50 percentile	32	3
75 percentile	5	6

Owners of licensed dogs must specify the dog's breed. Some owners used the term "cross-breed", as typically the animal would "have some breed in him", even if the exact cross was unknown. Other owners might, of course, use this term to include potcakes. Nevertheless, we have retained this classification in the results. The median age of three years for potcakes was the same as that for breed and crossbreed dogs (Table 3) and each class of dog had a similar age distribution ($p>0.15$).

Table 3 Percentile points of the ages in (years) of the classes of licensed dog.

	Potcake	Cross-breed	Breed
25 percentile	1.9	1.0	1.1
50 percentile	3.0	3.0	3.0
75 percentile	5.0	6.0	6.0

Sterilised animals were older than un-sterilised ones ($p<0.001$) (Table 4). To allow for those animals which may have been licensed before it might be wise to sterilise them, all animals under one year of age were omitted. This re-analysis still showed that sterilised animals were older than un-sterilised ones ($p<0.001$).

Table 4 Percentile points of the ages in (years) of sterilised and un-sterilised dogs licensed in 1999.

	Sterilised	Un-Sterilised
25 percentile	2	1
50 percentile	3	2
75 percentile	6	4

Female dogs were more likely to be sterilised than male dogs as 72% of females (106 records) were sterilized compared with 51% of males (147 records) ($p<0.001$). Potcakes were more likely to be sterilised than other types of dog ($p=0.02$) (Table 5). Of the 19 pit bulls (pure or cross-breed) licensed, 26% were sterilised. This is less ($p<0.01$) than the 62% of all other types of dog.

Table 5 Percentage of licensed dogs classified by breed and breeding capability.

	Un-Sterilised	Sterilised	n
Breed	49	51	81
Potcake	36	64	134
Cross-bred	45	55	38

Owned dogs

Detailed data, similar to those for licensed dogs, are lacking for owned dogs that are probably unlicensed. Information on the welfare of owned dogs in the general population is available from studies primarily in Abaco and to a lesser extent in New Providence.

Owned dogs in Abaco

Thirty-seven percent (of 87) of owned dogs were females, which confirms the bias for male pets observed in the licensed dog population. Twenty-three percent (of 31) of breeding females whelped in the previous 12 months. The number of surviving pups per litter was 3.4. All the females, which had pups (that survived), had been allowed to roam. This suggests that many of these litters were unplanned. Some females had been spayed after producing a litter, which suggests that these owners wanted no more pups.

In Abaco and New Providence, 66% of dog owners kept some or all their dogs outside the house; once outside, such animals might roam, and breed. Both keeping pets outside the house and allowing them to roam reduced their welfare as fewer dogs live beyond four years of age compared to when either activity was prevented (Table 6).

Table 6 Ages (in years) of owned dogs classified by place of habitation and ability to roam in Abaco.

	25 percentile	50 percentile	75 percentile	n
Dogs confined	2	4	6	40
Dogs kept inside the house	2	3	10	21
Dogs kept outside the house	1.5	3	4	63
Dogs allowed to roam	1	3	3	45

Confined dogs had a significantly higher average age than those which were not ($p < 0.01$) and dogs kept inside the house had a significantly higher average age than those which were not ($p < 0.05$). The habitat of the dog might be an indicator of whether or not a dog visits a veterinarian. Almost a third of all owners who kept their pets outside the house had never taken them to the veterinarian compared with only 13% of owners who kept their animals inside the house (Table 7). Although the sample size from Abaco was too small to support statistical significance, its message is verified by data from New Providence which showed that 16% of owners who kept their dogs in a

“fenced” yard had never taken their pet to the veterinarian, compared with 47% who did not keep their pet in a “fenced” yard ($p < 0.001$). Of those owners who never took their pet to the veterinarian in Abaco, 13% kept their pets inside the house and 87% kept them outside.

When dogs were classified by place of habitation and ability to roam, those animals that were both confined and kept inside had the highest median age, of six years. Those confined but kept outside the house had a median age of four years. Those allowed to roam and kept inside or outside the house had median ages of two and three years respectively. The age for those always kept inside the house was significantly higher than that of any other group ($p < 0.05$).

Table 7 Percentage of owners keeping their dogs in selected places by frequency of visit to veterinarians in Abaco.

	Once a year	When necessary	Never	n
Kept inside the house	63%	25%	13%	8
Kept outside the house	40%	32%	28%	25

Visits to the veterinarian and dog welfare in Abaco

From the study in Abaco we can examine the effect of frequency of visits to a veterinarian on pet age. Although owned pets that visited the veterinarian had a higher median age than those which did not, the level of variability was insufficient to determine if increased age was associated with visits to a clinic, (Table 8). The slightly lower ages of dogs visiting a clinic at least once a year should be treated with caution due to the fact that people’s interpretation of “when necessary” could mean that owners of these pets may offer a better level of care than owners who only take their pets to the veterinarian once a year.

Table 8 A summary of the ages (in years) of owned dogs by frequency of visits to veterinarian in Abaco.

	No visit	Visits when necessary	Visits at least once a year
25 percentile	1	2	2
50 percentile	2	4	3
75 percentile	4	5	4
Sample Size	13	34	40

Owners who never took their pets to the veterinarian were least likely to have them sterilised ($p < 0.001$) (Table, 9).

Table 9 Percentages of owners in New Providence with sterilised dogs classified by frequency to veterinarian clinics*

	Annual Visit	Visits when needed	Never
Un-Sterilised	54%	58%	94%
Sterilised	46%	42%	6%
Number of replies:	52	59	33

*also includes visits to clinics for cats

The study in Nassau provided indicators on how the welfare of owned dogs depends on the economic status of their households. Data in Table 10 indicate minimal variation in feelings and treatment of dogs between poorer

(household income of under \$20,000 per year) and richer households (income over \$20,000 per year). There were no statistically significant differences between the two groups of households ($p>0.05$), except for aspects concerning sterilization, visits to the veterinarian ($p<0.05$), "stolen" animals ($p<0.001$) and keeping pets in a fenced-in yard ($p=0.085$).

Table 10 Indicators of animal welfare by household income (New Providence). Poor households have incomes under \$20,000 per year, richer households exceed this amount. (From unpublished data, Fielding, 1999a)

Percentage of owners:	Poorer Households n—68	Richer Households n—69
Liking pets in general	85%	83%
Keeping dogs in a "fenced" yard	74%	86%
Having animals stolen	31%	7%
Taking their pet to the vet yearly	21%	51%
With licensed dogs	20%	31%
Disposing of unwanted dogs	14%	19%
With sterilised dogs	10%	58%
Who would dispose of unwanted animals inhumanely	10%	6%

Note: the sample size, n, was not the same for each question.

Unowned dogs

The ages of eight dogs at the Canine Control Unit indicated that unowned dogs might have a lower average age than dogs that have more human care (Table 1). The mean weight of 11 unowned dogs was 16.6 kg ($se=2.13$).

Discussion

Consideration of the welfare of animals is not trivial. It is easy to apply erroneous ideas of human welfare to animals. It is not known for sure if, or how, animals "think", so what determines a satisfactory quality of life is equally hard to assess (Hauser, 2000). We take the view that humans have developed a high degree of association with dogs and so mankind has to ensure that the animal receives care and attention in return for its companionship. This responsibility is heightened by the fact that domesticated dogs are less able

to look after themselves than wolves (Douglas, 2000). Therefore, if the welfare of an owned dog is no greater than that of an unowned dog, its owner, we feel, is failing to provide any level of what we might regard as "pet care". Owners of "dangerous" breeds (as with any pet that poses a clear threat to society) have an additional responsibility. The level of pet care that they offer their "pets" is of utmost importance, as these animals can reduce human welfare through threatening behaviour or even the death of residents (*The Nassau Guardian*, 1993).

The welfare of potcakes

The observation that licensed breed and owned dogs (primarily potcakes) have the same average age does not seem to support the idea that owners of breed animals look after their pets any better than potcake owners. Potcakes are seen as "survivors" in need of less care than "breed" animals (Mather et al., 1999). About 75% of owned dogs are potcakes but less than 45% of dogs visiting veterinarian clinics are potcakes (Fielding, 2000d). This suggests that potcakes are better adapted to the local environment than breed dogs; i.e. they are indeed survivors. This observation also indicates that potcakes could have a higher average age if their level of health care were increased.

Licensed dogs

It is easy to suppose that owners who bother to license their dogs might also take better care of them than other dog owners. However, the data do not support this view but suggest that there is great variation in the welfare of licensed dogs, i.e. licensing is a poor indicator of dog welfare. The current differential in the license fee, \$4, in favour of sterilized animals (Dupuch, 1998), might not be sufficient to encourage owners to sterilise their pets. A similar behaviour, where there is a small difference in license fees, has been noted by Manning and Rowan (1992).

Sterilisation

The data confirm the belief that female dogs are more likely to be sterilised than males, an observation also made by Manning and Rowan (1992). The preference for male over female dogs (also observed by Beck, 1973, but not Patronek et al, 1997) may reflect a desire by owners not to be troubled by animals producing pups. The proportion of sterilized dogs (60%) is higher in the licensed dog population than in the wider owned dog population where 35% of owners have sterilised dogs (Fielding, 1999a) so is noteworthy that the licensed dog population has a similar median age to the owned dog population, as sterilization is associated with a higher median age. In North America where 43% of dogs are sterilized (Beck, 2000), those pets also have a higher average age (Patronek et al., 1997).

Owners of licensed potcakes are most likely to have their animals sterilized. The observation that owners of breed dogs are unwilling to have their pets sterilised has also been noted in North America (Rowan and Williams, 1988). Owners of breed dogs, particularly those used as guard dogs, may want to breed their animals for commercial purposes. The observations suggest that owners of breed dogs who allow their dogs to roam might supply the genetic material which has resulted in the increased size of potcakes in recent years (Mather et al., 1999) and explain the high average weight of free-roaming dogs.

The beneficial effect of sterilization on average age is clear for both males and females. Although these data cannot offer an explanation for this effect, reasons might include: (1) unsterilised males die early due to venereal tumours (Mather et al., 1999), (2) unsterilised females are weakened by giving birth. Spay/neuter programme organisers should exploit this observation as a beneficial reason why owners should have their animals sterilized. It is worrying that while demand for sterilization operations is high, clinics are unable to satisfy it, (Mather & Fielding, 1999) but poorer owners cannot appear to afford to prolong the life of their pets via this operation. Owning a pet for longer allows a better bond to form between pet and owner. The importance of this bond has been discussed by, for example McEloy, (1996).

In our study, 23% of owned female dogs had a litter, which is higher than 3.4% reported by Patronek *et al* (1997). The limited number of dogs sterilized and their ability to roam are probable explanations of this. This interpretation is reinforced by the fact that all owners of whelping females let their animals roam. The consequent abundance of pups can encourage owners to abandon them to “take their chance”, and join the free-roaming population.

Visits to the veterinarian

It is not surprising that owners who never take their dogs to the veterinarian are least likely to have their dogs sterilised. However, the fact that some sterilized animals never visit the veterinarian suggests that these may be animals that were sterilized before the current owner obtained the pet.⁴ If these are adopted animals, then animal welfare groups either need to encourage programmes which would permit continuing contact between owners and clinics, or prospective owners need to be better screened before being allowed to adopt an animal. The similarity in median age between animals that never receive any health care and unowned dogs suggests that owners who never take their animals to the veterinarian might offer minimal pet care.

“Dangerous” breeds and the welfare of society

The potential hazard of “dangerous” dogs has long been recognised (*The Nassau Guardian*, 1987) but no regulations on these dogs have yet been enforced. Licensed pit bulls are more likely to be unsterilised than other types of dog, and unsterilized dogs are more likely to roam than sterilized dogs; so the roaming of “dangerous” breeds is a grave concern. Pit bulls are “the most popular breed on the island” (de Frisching, 2000) and said to be “far too dangerous to be kept as family pets”. Since almost 70% of households with dogs have them as pets (Fielding, 1999a) this is a cause for worry. In Germany and other European countries law requires such breeds to be sterilised. In this study, pit bulls accounted for only 16% of licensed dogs, which suggests that, if it is the most popular breed, then many are unlicensed. It will, therefore, be difficult to enforce policies that specifically relate to these animals. If the welfare of this type of animal is neglected, the welfare of society might be endangered.

Habitat of dogs

While Bahamians are not alone in keeping their dogs outside (Miura, Bradshaw and Tanida, 2000), free-roaming dogs reduce the welfare of society. When such dogs prevent people from walking on beaches, which are both

a tourism resource and a place of recreation for residents, society needs to demand action from owners (*The Punch*, 2000).

Dogs which are kept outside the house, or allowed to roam, are offered a lower level of welfare than those kept inside. Programmes designed to enhance pet welfare should target this group of owners. Once dogs are outside, access to the street is possible, and these dogs can be killed by cars, subjected to acts of cruelty, or even poisoned.

The issue of roaming dogs is complicated by the fact that poorer people are less likely than richer people to keep their pets within a "fenced" yard (Fielding, 1999a). The 21% of owners who admitted that their dogs roam (Fielding, 2000b) should be regarded as a minimum figure due to the sensitive nature of the topic. Our case studies⁵ show that even people who consider themselves "responsible" pet owners allow their dogs to roam. It is more difficult for owners to establish strong bonds with pets not fully integrated into the household and this lack of interaction may account for the fact that owners who keep dogs outside, do not take their pets to the veterinarian. Many dogs are kept outside the house in order to "protect" the household (Fielding 2000b). Owners who use dogs in this way need to be conscious of the level of welfare that they offer the animals in return for this service.

Economic considerations of pet welfare

An obstacle to dog owners offering their pets adequate care may be that they own too many dogs. In North America there are 1.7 dogs per owning household (Veterinary Market Statistics, 1996) compared with 2.6 dogs in The Bahamas (Fielding, 2000b). Although we know of little information about the amount people spend on visits to the veterinarian per year, in 1993, households spent \$52 on veterinary fees.⁶ Manufactured dog food can cost about \$550 per animal per year and medicines such as heartworm tablets etc. could cost another \$43 per animal per year, so the total household bill could be near \$1,600 per year.⁷ Thus, if Bahamians owned fewer dogs, they might be able better to afford the cost of looking after them.

The economic burden of pet ownership is not the same for all households. The uneven distribution of pet ownership throughout society is marked; in New Providence more than half the households own no dog, while 10% of households own 50% of the dogs (Fielding & Mather, 2000a). Poorer people (those in households earning less than \$20,000 per year) own disproportionately more dogs than richer households (Fielding & Mather, 2000a; Beck 1973). A poorer dog owning household has an average of 3.0 dogs ($se=0.33$) and a richer dog-owning household 2.4 ($se=0.31$) ($p=0.049$) (unpublished data from Fielding (1999b)). As a result, it is probably more difficult for poorer owners to afford the same level of care to their pets as richer owners.

The data in Table 10 indicate little variation between poorer and richer households on various aspects of pet welfare. This result may be due to the fact that either the wealth classifications are too coarse, or attitudes towards pet welfare are indeed traditional and transcend economic or educational considerations. The fact that poorer owners are less likely to take their pets to the veterinarian or have their animals sterilized highlights the inability of

poorer owners to cope with economic aspects of pet ownership; an observation seen elsewhere (Patronek, Beck and Glickman, 1997). Interviews with 30 participants in a dog sterilisation programme revealed that only 29% of them would get a new dog sterilized at the veterinarian, because of the cost of the operation (Fielding, 2000d). In contrast, Manning and Rowan (1992) did not find that cost was an important reason for owners not having pets sterilized. The economic aspects of pet ownership raise awkward questions about fees charged by clinics; the failure of humane groups to reach poorer owners; issues regarding the responsibilities associated with pet ownership; and whether or not ownership should be denied those who cannot provide proper care. Such concerns are not the topic of this article, but they are pertinent to the welfare of dogs, owners and society.

Abandoned dogs

The source of recruits to the free-roaming population is probably abandoned animals. Five thousand animals a year could be abandoned in Nassau (Fielding, 1999b). Dogs are abandoned when people move house (Mather et al, 1999) and, presumably, when the number of dogs in a household exceeds the householder's requirements. In addition to people actively abandoning dogs by leaving them in the bush (e.g.: the Pine Barrens) (Turnquest, 2000), people also passively abandon animals when they no longer care for them, and the animals seek care elsewhere. Additional recruitment to the free-roaming population might be provided by some of the 8,500 owned dogs "stolen" per year (Fielding, 1999b). Inadequate fencing allows animals to wander off, and they may appear to be "stolen", an observation also made in Baltimore by Beck (2000).

Abandoned owned dogs typify an extreme in the poor level of care offered by owners. Owners who abandon animals consign them to a short life, probably less than two years, in which they need to scavenge and depend on handouts for survival. In societies averse to humanely killing old or unwanted dogs, owners abandon dogs (Miura et al., 2000). Relatively few animals are "put to sleep" in New Providence (Fielding, 1999c), and the reluctance of Bahamians to put down animals may increase abandonment. Dogs obtained at little or no cost are at greater risk of being relinquished (Animal Sheltering, 2001). This would put potcakes at particular risk of being abandoned, as they are perceived to be of little value (Fielding & Mather, 2001). By abdicating their responsibility for their pets, owners who abandon dogs exemplify the worst aspects of "irresponsible" pet ownership.

The estimated 8,500 "stolen" dogs probably represent those that went "missing". Some, in particular breed animals, may indeed have been stolen, but others could have been killed on the road or recruited to the free-roaming population because the dogs roamed. However, we can only speculate on the fate of these animals. If all breed dogs in this group were actually stolen, and we assume that all the dogs killed on the roads were "stolen", then we estimate that another 3,000 "stolen" dogs might be available for recruitment to the free-roaming population.

Unowned dogs

Actions of humans affect the welfare of unowned dogs. Unowned dogs are fed handouts by 56% of households in New Providence (Fielding, 1999a).

They also have access to 40-80,000 garbage bins that can be scavenged to yield enough food to feed 20,000-40,000 dogs. The implications of dogs spilling garbage in order to obtain food have been discussed elsewhere (Fielding & Mather, 2000b). Even though our data on weights are limited, unowned dogs were some four kilogrammes larger than those in other free-roaming dog populations (Beck, 1973). This could suggest that either the potcake has developed into one of the larger free-roaming dogs, or that food is not a factor limiting its growth.

The lack of health care for unowned dogs results in a sick population (Mather et al., 1999) and one in which half its members are less than two years of age. Further, this population is unable to breed more than once a year (Fielding & Mather, 2001), which inhibits its potential growth. In New Providence, an average of 42 dogs a week are killed on the roads (Hepburn, 2000), or about 2,200 a year; others are caught by the Government's dog control officers (Fielding, 2000e) and some poisoned (*The Tribune*, 2000b). These figures indicate that the population cannot sustain itself without recruitment.

Free-roaming dogs live on the margin of society and become a concern when they invite responses of fear, irritation or pity. These reactions cannot be considered long-term benefits to the dogs. Fear is likely to result in acts of real cruelty towards the dogs (*The Tribune*, 2000b); irritation can encourage people to "run" dogs causing the dogs to become shy of humans, a behaviour which can then be misinterpreted as wildness (*The Tribune*, 2000a). Pity results in people providing handouts. Such pity does not protect animals from death on the road or by disease, and it can increase the potential public health hazard associated with free-roaming dogs (Mather and Fielding, 2001). Handouts encourage dogs to visit the yards of those providing them and so dogs are a nuisance to feeders (Fielding, 1999a) and, presumably, their neighbours. Handouts are often left on the ground where they are available to rats and other vermin (Beck, 1973). Handouts are not necessarily provided regularly, and when they are unavailable dogs will scavenge from garbage and so make rubbish available to rats etc. Dogs can also catch diseases from garbage (Fielding and Mather, 2000b) endangering their welfare. Spilt garbage and dog faeces provide breeding places for flies, which can be a health hazard to householders (Beck, 1973). People who provide handouts for dogs are probably unaware of the potential health hazard to which their actions might contribute. Beck (2000) has suggested that handouts may have little influence on the welfare of free-roaming dogs. Further investigations of the public health issues associated with handouts are required.

Our information on the free-roaming population indicates that it is similar to other such populations (e.g.: Beck (1973), Boitani, Francisci, Ciucci and Andreoli (1995)). Unowned free-roaming dogs live a short, sick life and have limited breeding capacity. An indicator of the prevalence of disease in the free-roaming population is given by Grieve, Glickman, Bater, Mika-Grieve, Thomas and Patronek (1986) who found that over 95% of dogs, under one year of age, in Grand Bahama had *Dirofilaria immitis*; dogs only five months old were infected.

Health care

Dogs are said to be treated “not well enough, but [the treatment is] getting better” (de Frisching, 2000). While this may be true for those visiting a veterinarian, many dogs still never visit a clinic.⁸ The studies indicate that owners who never take their pet to the veterinarian might be considered to offer almost no care at all to their pets since these pets have a similar average age to unowned dogs.⁹ If efforts to improve animal care can target this group of owners, then a major improvement in dog welfare can be expected.

The proportion of owners taking their pets to the veterinarian at least once a year is only about 30% (Fielding, 2000b); this contrasts with 85% of owners in North America (American Veterinary Association, 1997). The importance of owners taking their pets to the veterinarian is clear, which suggests that, more should be done to encourage owners to bring in their pets to clinics. The spay/neuter programmes, which are available to poorer owners, are also not advertised which limits their accessibility (Mather and Fielding, 1999). The apparent economic barrier, which prevents owners from increasing their pet welfare, needs to be further investigated. If it is a real impediment to poor owners, programmes may be required to assist owners. Veterinarians need to reach out to owners who never take their pets to clinics and to provide owners with information on the benefits of keeping their animals inside the house and sterilised. Not only will these measures increase the welfare of owned animals, but also they will reduce the number of free-roaming dogs and hence improve the welfare of society.

Disclaimer

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- 1 This group can be further divided into licensed and unlicensed dogs.
- 2 In 1999, over 2,930 dog import licenses were issued (Anon, undated).
- 3 In our 1999 perception study in New Providence, 25% of owners claimed to have licensed dogs, but we feel this is likely to be an over-estimate.
- 4 Probably as a gift or through adoption.
- 5 Unpublished.
- 6 Information from the Bahamas Humane Society.
- 7 Veterinarian and other bills are higher in the Family Islands, so the costs would be more outside New Providence.
- 8 Although owners have on average 2.6 dogs, on average, owners visiting the clinic only bring one dog to the clinic at a time; information from the Bahamas Humane Society.
- 9 Due to the limited number of observations on unowned dogs we recognise that statements about their ages and weights must be made with caution.

William Fielding has been studying the dog population in New Providence since 1998. He had provided reports on dog populations for the Department of Agriculture, Nassau, and the Humane Society International, Washington DC as well as writing research papers and giving presentations, both nationally and internationally, about these studies. He is currently a researcher at The College of The Bahamas.

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