

New Paradigms for Shelters and Community Cats

Each year, millions of cats lose their lives in animal shelters. We now know that euthanasia of healthy cats in shelters can be replaced with programs that are dramatically more humane and effective for cats and communities alike. Learn about trap-neuter-return, managed admissions, and other life-saving ideas.

Table of Contents:

[What are “community cats”?](#)

[How many community cats are there?](#)

[What is the role of community cats in animal shelters?](#)

[What happens to community cats in animal shelters?](#)

[What alternatives exist to taking community cats into shelters for euthanasia?](#)

[What is trap-neuter-return?](#)

[What if shelters or communities can't afford trap-neuter-return for all cats?](#)

[Couldn't greater efforts be made to find adoptive homes for all cats entering shelters?](#)

[Couldn't we move all the community cats to a sanctuary instead of euthanizing them?](#)

[Will community cats suffer if we don't take them into shelters?](#)

[If shelters reduce their intake of community cats, won't birds and wildlife be harmed?](#)

[If shelters don't admit stray and community cats, how will owners find their lost pets?](#)

[If shelters limit intake of unwanted cats, what are people supposed to do if they have a pet cat they can't keep?](#)

[Doesn't the public expect shelters to take responsibility for community cats?](#)

[Does this mean cats should never be brought to shelters?](#)

[References](#)

Prefer to listen to a webinar on this? Dr. Hurley explains this extremely important topic in the clip below.

Introduction

Historically most shelters routinely admitted more healthy cats than could be placed into adoptive homes. While the intention behind this practice has been to protect both cats and communities, the result has been chronically over-crowded shelters and the death of many millions of cats. At one time, this was seen as sadly inevitable.

However, new research and innovative programs suggest that there are humane and cost effective alternatives to this traditional approach. These strategies can virtually eliminate both shelter crowding and euthanasia of healthy cats, and include spay/neuter/return programs and scheduled/managed intake to shelters.

A holistic approach to unwanted and free-roaming cats allows shelters to focus on positive, life-saving programs that account for the needs of pets, wildlife and people in our communities. Below are some of the most frequently asked questions about these new approaches.

What are “community cats”?

“Community cat” is an umbrella definition that includes any *un-owned* free-roaming cat. These cats may be “feral” (un-socialized) or friendly, may have been born into the wild or may be lost or abandoned pet cats. Some community cats are routinely fed by one or more community members, while others survive without human intervention. Whatever a cat’s individual circumstances, the term “community cat” reflects the reality that for these cats, “home” is within the community rather than in an individual household.

How many community cats are there?

According to the American Veterinary Medicine Association, approximately 30.4% of American households have an average of 2.1 cats^[1]. The number of pet cats that are owned in the United States is estimated at approximately 74-82 million, making cats America’s most popular pet^[1, 2]. Using data from the AVMA 2012 survey, a community’s pet cat population can be estimated by dividing the human population (available at www.census.gov) by 4.1 (assuming 2.6 persons per household according to national census data; persons per household, household rate of pet ownership, and pets per household will vary by region, rendering this a rough estimate only).

A more elusive figure is the number of community cats. Surveys of cat feeding suggest that the fed community cat population can be estimated by dividing the human population by 6^[3]. The number of cats that are not fed is un-counted, therefore the total community cat population is likely even higher and may equal or exceed the number of pet cats in some communities.

What is the role of community cats in animal shelters?

Community cats have a far greater impact on most shelters than do pet cats. Over 80% of pet cats in the United States are sterilized (spayed or

neutered), with most litters being the result of accidental breeding^[4, 5]. By contrast, only ~ 2% of community cats are sterilized and can produce multiple litters each year^[3, 6]. This results in a massive and ongoing influx of cats and kittens into shelters. Programs targeted at pet cats (e.g. low cost spay/neuter programs, legislation requiring that pets be sterilized, or humane education promoting responsible pet ownership) are unlikely to substantially affect the community cat population. This may explain why cats continue to be admitted to many shelters at a higher rate than dogs, in spite of higher percentages of pet cats than pet dogs being sterilized in most communities^[4, 7].

What happens to community cats in animal shelters?

Although often treated as “strays” and held for possible reclaim by an owner, community cats by definition have no owner to claim them. Overall, only about 1 in 50 cats are reclaimed at most shelters^[8]. Feral or very fearful community cats have historically been euthanized either immediately or at the end of a holding period at most shelters. Friendly cats will commonly be offered for adoption or transferred to rescue groups, if available. However, because the number of community cats entering most shelters is significantly greater than the number adopted, even friendly community cats are sometimes euthanized. This often takes place after efforts to find a home have failed or the cat has become sick or overly stressed under crowded shelter conditions. For example, in 2010 California animal control shelters admitted 400,433 cats. Of these, 111,915 were released alive, and 276,052 were euthanized^[9]. In many communities, euthanasia of dogs has decreased over the last decade, while euthanasia of cats has risen ^[9-11].

What alternatives exist to taking community cats into shelters for euthanasia?

A recent (January 2012) poll by the Associated Press found that almost three-fourths of Americans believe shelters should be “allowed to euthanize animals only when they are too sick to be treated or too aggressive to be adopted.” However, when no limits are placed on intake, in most communities shelters admit more than twice as many healthy cats as they are able to rehome^[8-10]. This number far exceeds shelters’ ability to provide permanent housing.

If euthanasia of healthy cats is not considered an acceptable option and the number of cats presented to a shelter exceeds the number of adoptive homes, this leaves two basic possibilities: 1) Adding alternative live

outcomes for cats admitted to the shelter (generally in the form of sterilization and release to a non-housed environment, e.g. trap-neuter-return), or 2) deferring or declining intake in the first place. For any possibility, we must bear in mind what *real alternative options exist*. Even if there are concerns or problems associated with new approaches, we need to consider whether they are preferable to the current situation, rather than whether they represent flawless solutions to all the many issues associated with free-roaming or abandoned cats in our communities.

Download an example of one shelter's [stray cat decision flow chart](#).

What is trap-neuter-return (TNR)?

One increasingly popular option is to spay/neuter and vaccinate healthy cats, then return them to the location where they were found. These programs are sometimes known as “trap-neuter-return” (TNR) programs. The fact that a cat is in good condition is considered evidence that it has a source of food and shelter – essentially it already has a “home” in the community, and is likely to continue doing well if it is returned to that home. Spay/neuter and vaccination improves health and welfare of cats and reduces problematic behaviors such as fighting, vocalizing, and of course reproducing. If community members are still concerned about the nuisance impact of these cats, they can be provided with resources and advice for co-existing with cats, such as use of non-toxic repellants and removal of food sources. This is similar to the guidelines for co-existing with other small wild mammals such as raccoons, skunks and opossums.

What if shelters or communities cannot afford TNR for all cats?

As noted above, TNR is the ideal solution for un-owned, free roaming cats in many cases. However, not all shelters or communities have the resources to operate a full-scale TNR program. In some communities this activity is actually prohibited for shelters. If TNR is not an option, the other alternative to euthanasia of healthy cats is to simply not take them in to shelters until (and if) a home can be guaranteed. Shelters can schedule admission of healthy, adoptable cats when they have space, and provide educational resources in the meantime for community members to either continue to co-exist with, or rehome, healthy cats without bringing them into the shelter. This allows shelters to focus on public safety and humane care by taking in dangerous, sick, or injured cats, and focus on lifesaving by taking in only those healthy cats that are likely to be adopted. Savings realized by not admitting, holding, euthanizing and disposing of healthy cats, can be invested in building TNR capacity for the future.

Couldn't greater efforts be made to find adoptive homes for all cats entering shelters?

Ideally all healthy, social cats in communities would be placed into permanent, responsible, loving homes. Creative, proactive adoptions programs are certainly worthwhile and have succeeded in increasing the number of adoptions from many shelters. For instance, in California from 2000 to 2010, the number of cats adopted from animal control shelters reportedly increased by almost 40%, from under 60,000 to over 80,000 a year^[9]. However, at the same time feline intake increased from about 280,000 to over 400,000, resulting in over 75,000 more cats being euthanized annually.

In general, increasing adoptions enough to keep up with the number admitted to shelters has proven more difficult for cats compared to dogs. In many communities, most healthy, non-aggressive dogs admitted to shelters are released alive. For instance, in California in 2010, 58% of all dogs admitted to animal control shelters were released alive, compared to only 28% of cats^[9]. The role of community cats likely explains a large part of this difference.

Many community cats are "feral" and would be neither appropriate nor happy as traditional pets in a home. In our increasingly urban society, there are few "barn homes" into which these cats can be adopted. On the other hand, many feral cats have adapted to living in the community. These cats have found a source of food and shelter just as other wild animals have. Some experts now believe the best option is to keep these cats where they are unless serious problems are documented. This can be accomplished through a TNR program or simply by leaving the cats in place and providing community members with recommendations for successful coexistence.

Community cats also contribute to the difficulty of finding homes for all the non-feral cats entering shelters. According to the American Pet Products Manufacturer's Association survey (2005), about 15% of dogs and cats were obtained from animal shelters. However, 34% of cats compared to only 9% of dogs were obtained by adopting an animal found roaming as a "stray". By contrast, 31% of dogs compared to only 3% of cats were obtained from breeders. When shelters succeed in increasing adoptions, some people may choose a shelter pet rather than adopting or purchasing from another source. Breeders can respond by decreasing the number of litters produced if demand declines. However, a negligible number of cats are obtained from breeders. A decline in "demand" for stray cats will not similarly reduce their population; in fact, strays that otherwise might have been adopted off the street may well end up in shelters, further increasing intake numbers. In some cases, simply leaving friendly stray cats where they are, or performing TNR and replacing them in the community, may increase their chances of finding a new home rather than being euthanized in an overcrowded shelter.

Couldn't we move all the community cats to a sanctuary instead of euthanizing them?

Although it is tempting to consider relocating community cats to the safety of sanctuaries for the remainder of their lives, it ignores the fact that most of the cats already have a "home" within the community and often live with a network of familiar or related cats. And although certainly a desirable alternative for cats that can't safely remain in communities, sanctuary care is the most demanding, expensive, and time-consuming way to care for cats. Once opened, sanctuaries rapidly fill to capacity.

Despite the founding of sanctuaries with the best of intentions, many have struggled to find enough funding and staff to provide minimally acceptable care for the natural lifespan of the cats. There is a disturbing trend in the number of hoarding and cruelty investigations of such facilities when the number of cats accumulated outstrips the resources of those responsible for the humane care of the cats. Recent cases involve the seizure of 800 cats from the FLOCK sanctuary in Nevada in 2007, 750 cats from the Tiger Ranch Sanctuary in Pennsylvania in 2008, 600 cats from the 10th Life Sanctuary in Florida in 2009, 700 cats from the Haven Acres sanctuary in Florida in 2011, and 700 cats from the Caboodle Ranch sanctuary in Florida in 2012. These cases, in which each facility was presumably established with the best intentions, illustrate the challenge of identifying sustainable nonlethal management options for cats following their removal from the community in which they have made their homes.

Will community cats suffer if we do not take them into shelters?

Although it has long been assumed that community cats were at great risk for suffering and untimely death if not admitted to a shelter, there is a growing body of evidence that this is not the case. Cats trapped in the community and brought to TNR clinics are generally fit and healthy,^[12] with less than 1% requiring euthanasia for debilitating conditions, trauma, or infectious diseases^[6]. While the risks of some infections (such as parasites) are higher in community cats than in pet cats, the risk of others is equal (FeLV, FIV) or lower (FIP)^[13, 14].

Cats admitted to shelters are likely to be those at higher risk for pre-existing injury and illness, but even so, less than 10% of cats are noted to have a medical condition on intake at many shelters^[15]. In the most complete long-term study of community cats in a TNR program, death or euthanasia occurred after an average of 3-5 years of observation^[16]. The cats still remaining on the property at the end of the 11-year follow-up period had

been present for an average of 7 years.

Many community cats do receive some care. Feeding these cats is a common activity, with studies finding up to a quarter of American households feeding one or more cats they do not own [3, 17]. One study found that the 14 month survival rate was 90% for “semi-owned cats” (free roaming cats fed by a community member who did not consider themselves the cat’s owner) [18]. There is also a chance that community cats will be adopted into a permanent home. Many cat lovers have either taken a stray cat into their home or know someone who has, and surveys support this observation, finding that cats are actually more likely to be obtained as strays than adopted from shelters or rescue groups [17, 19].

While adult cats can thrive in the community, kittens are less likely to survive. In one study, 75% of feral kittens died or disappeared before 6 months of age, a survival rate similar to other small carnivores[20]. TNR programs will alleviate this risk by reducing reproduction. Kittens should also be prioritized for rehoming through sheltering programs whenever possible[16]. However, euthanasia rates of 75% or higher are not uncommon for shelter cats[9, 10]; thus when a better chance of survival cannot be provided by a shelter, healthy kittens may still be better off remaining in place or being rehomed through another avenue.

If shelters reduce their intake of community cats, won’t birds and wildlife be harmed?

It has been argued that cats should be collected from the community, impounded and euthanized in shelters to protect wildlife and public health. Studies have come to varying and sometimes contradictory conclusions regarding the impact of cats on native species. The advisability of removing and destroying cats and/or limiting their population through TNR is likewise debated. Even when successful at substantially reducing the feline population, lethal control or removal methods may lead to an increased population of other non-native species with an even more detrimental effect[21, 22]. However, there is no doubt that free roaming cats prey upon both native and non-native species and in a few cases this has been linked to decreased wildlife populations in focal areas. Likewise all free-roaming animals, including cats, can carry diseases that are harmful to people or pose a risk to pets, although the magnitude of the threat posed by cats has been questioned[23].

Although the actual impacts of community and pet cats on wildlife are hotly debated, one fact is clear: *the capacities of most shelter programs are simply insufficient to decrease the overall number of outdoor cats in a community.* The most common cat management policy in the U.S. is to impound cats

reported or brought to shelters by residents and to ignore the cats that do not generate concern. Rarely is this targeted to focus on the cats that present the greatest welfare, environmental, or public health concerns. Additionally, the number of cats impounded by shelters in most communities is far too low to have any meaningful impact on the daily risk of disease, injury, or wildlife predation by cats. Even with open-admission shelter policies that encourage the public to turn in cats at any time without restriction, few shelters take in more than 10% of the community's free-roaming cats each year^[9].

Such an untargeted approach may placate the most vocal residents, but cannot be expected to have any effect on the overall cat population or its welfare. Similarly there is no expectation that wildlife or community health would be protected by these unfocused activities. On the other hand, reducing overall intake allows shelters to focus on rehoming those cats that are adoptable and removing those that truly pose a significant threat, while allowing the majority of cats to remain within the community. Meanwhile, encouraging owners to keep pet cats inside can potentially impact a much higher number of cats than even a large scale impoundment and euthanasia program.

If shelters do not admit stray and community cats, how will owners find their lost pets?

Reuniting lost pets with their owners is a major function of many animal shelters. For dogs, shelters are often quite successful in this effort, but often substantially less so for cats. Nationally, reclaim rates for cats of 2% or less are commonly reported ^[8-10]. This is probably the result of two factors: many cats entering shelters as "strays" are actually community cats with no owner to come looking for them; and when pet cats do become lost, owners are unlikely to look for their cat at a shelter. One study found that lost cats were over 13 times more likely to be reunited with their owners by non-shelter means than by a visit or call to a shelter, with "returning home on their own" accounting for over 60% of found cats^[24]. By contrast, more than a third of dogs were found via a shelter visit or call^[25]. Even if they do look, owners generally delay searching for lost cats longer than they do for dogs, meaning that by the time they get to the shelter their cat may already be gone.

Evidence is building that lost cats without identification *may actually have a better chance of being reunited with their owners if they are left where they are versus brought to a shelter*. Lost cats whose owners are not located may also be more likely to find a home if not brought to a shelter, especially if the shelter is full or the cat would not fit criteria for "adoptability". In one survey, 68% of people who found cats and were unable to find the owner kept the cat, and another 14% rehomed the cat on their own ^[26].

Shelters can help those who find a cat by providing fliers to complete and post in their neighborhood and other suggestions for finding the owners of a lost cat (such as contact information for free lost-and-found listing services). Shelters can further help by offering finders a way to post a description and photo of the cat on an easily accessible website, and by matching these with lost cat reports from the public. Finders should also be encouraged to bring the cat to a local veterinarian or shelter to be scanned for a microchip.

Cats with identification are approximately 20 times more likely to be reclaimed than unidentified cats ^[27]. If shelters limit intake of lost cats to those with identification, they can afford to hold these cats for an ample time period to allow owners to come in and reclaim their pet. Meanwhile, unidentified cats will also be given the best chance of returning home by not removing them from the area where they were found, or by returning them to that area following vaccination and sterilization.

If shelters schedule intake of unwanted cats, what are people supposed to do if they have a pet cat they cannot keep?

Like every individual and organization, shelters can only do so much. When a shelter admits more healthy cats than they can either provide with lifetime care, place into homes, or otherwise release alive, they will euthanize the difference. In the past this has been considered the norm and even to some extent inevitable in shelters in the United States; however, increasingly both shelters and communities find the practice of euthanizing healthy cats unacceptable.

The only way to guarantee that healthy cats will not be euthanized in shelters is to admit no more than are released alive over time. When the shelter is full, healthy cats can await admission until space is created by adoption, transfer, TNR or some other means of live release. To do otherwise will result in euthanasia – either of the cat newly admitted, or another cat already in the shelter. Even if cats that entered the shelter healthy are ultimately euthanized as a result of illness or stress rather than for space, the goal of “no euthanasia of healthy cats” has not been met.

In a few communities, the pet population is in balance. The number of unwanted, healthy pets does not exceed the number of available homes, and no formal checks on shelter intake are required. However, many communities have yet to reach this happy condition, especially when it comes to cats. In some cases, waiting for a cat to be released alive before admitting another one will result in long waiting periods. In the meantime (and for cats that would not be “adoptable” in a particular shelter), owners can be provided with other options for either keeping the cat or re-homing the cat themselves.

Owners who wish to keep their pet can be provided with resources to help resolve whatever problem led them to consider giving up the animal, such as information on resolving common behavioral problems, referrals for low cost spay/neuter services and affordable veterinary care, information on pet-friendly housing, or food and supplies to get the pet and owner through a crisis. For those who truly can't keep their cat, shelters can offer web-based services where people can post photographs and descriptions of cats available for adoption; provide guidance and support for preparation of the cat for adoption (e.g. by getting it vaccinated and spayed/neutered); and suggestions for how to take a good photograph and write a successful "personal ad" to rehome a pet.

In the United States, we have been accustomed to the idea that the best thing for an unwanted cat is to be surrendered to a shelter. When the shelter is reasonably sure of finding the cat an adoptive home or providing it with lifelong humane care, this is certainly the case. However, we now recognize that admitting more healthy cats than can be released alive over time does not necessarily serve cats, communities, or shelters well. Some pet owners will surely be frustrated by the shelter's inability to take in their pet, but with some encouragement may discover other options that might not be perfect solutions but are preferable to euthanasia. Meanwhile, if the shelter maintains a population of adoptable cats within the reasonable capacity of the organization to provide care and find homes, cats will be healthier, staff will be better able to serve the public, medical and euthanasia costs will be reduced, and adoptions are likely to increase over time. By waiting to serve cats until there is space and the guarantee of a positive outcome, more cats and community members may ultimately be served.

Doesn't the public expect shelters to take responsibility for community cats?

We are a nation of animal lovers. Pets are included in over 60% of American households and are increasingly seen as important family members. This compassion does not end with pets, but extends to homeless animals as well. "Pet overpopulation" ranked as the number one concern for the majority of pet owners in a 2000 survey, easily eclipsing even such pressing concerns as increased funding for animal health research and improved preventive care for animals [\[28\]](#).

For over a century, animal shelters have formed the cornerstone of our society's response to the problem of unwanted, abandoned, and free roaming pets in communities [\[29\]](#). During that time, dramatic reductions in the number and percentage of pets euthanized in shelters have been achieved. It has been estimated that the number of cats and dogs euthanized in shelters has declined from ~ 115 per 1000 Americans in 1970 to less than

14 per 1000 in 2007 [30]. However, in recent years the trends for dogs and cats have diverged in many communities, with canine euthanasia continuing to decline but feline euthanasia holding steady or even rising in many areas [9-11].

The public clearly supports the role that shelters play in keeping pets and communities safe. However, the majority of people do not support the use of euthanasia as a strategy to achieve this. A 2012 poll by the Associated Press found that almost three-fourths of Americans believe shelters should euthanize animals “only when they are too sick to be treated or too aggressive to be adopted.” In another survey of people who found pets and listed them either in the newspaper or contacted an animal shelter, only 8% were initially willing to bring the animal to a shelter. The main reason given for not bringing the animal to a shelter was concern that the animal would be euthanized [26].

People also commonly believe that life on the streets is better than death for cats. A national telephone survey in 2007 queried people about options for community cats living on the street. Given only two options from which to choose, more than 4 out of 5 people thought it was more humane to leave the cat where it was than to have the cat caught and killed [31]. Given a second scenario asking how they would feel if they thought the cat would die in two years after being hit by a car, over 70% of respondents still chose to let the cat remain in its community rather than have it killed immediately.

Some members of the public will be unhappy regardless of the strategy a shelter or community chooses to manage community cats. However, the data suggest that, if the alternative is euthanasia, most people will support non-lethal strategies even if these represent an imperfect solution. There are no easy answers, no magical solution that affordably, humanely and safely eliminates the many issues associated with cats in communities. In the long run, strategies that focus on removing dangerous, sick and injured cats, rehoming adoptable cats, and providing resources to help community cats and people co-exist peacefully may be more cost effective, palatable, and successful than reliance on continued removal and euthanasia of unwanted cats.

Does this mean cats should never be brought to shelters?

Absolutely not. As noted above, shelters can be very successful in rehoming cats, provided intake is in balance with the availability of adoptive homes. In many cases this is best achieved by scheduling intake to match the number of adoptions, but in some communities population control efforts have been so successful that admission appointments are not necessary.

Of course there are also times when a cat needs to be admitted right away – if the owner is suddenly unable to care for a pet cat, for instance, immediate intake to a shelter is often the best choice. Sick, injured, and dangerous cats are also often better off admitted to shelters than managed within the community, as are kittens in poor body condition.

Fortunately, shelters are better able to provide for the special needs of these animals when they are not overwhelmed by an influx of healthy cats beyond their ability to provide care and find homes. Shelters can also function as key partners to spay/neuter, vaccinate and return cats that they are unable to rehome. Ultimately, the best outcome for a friendly cat is to be spayed/neutered, vaccinated and returned to the owner or placed in a home. When that possibility is not available, whether because of the cat's temperament or the availability of adoptive homes, the best option for healthy cats is to be spayed/neutered and remain in the environment to which they have already adapted. Either of these options can be provided by community members, rescue organizations or shelters; when all members of the community work together in partnership, everybody wins.

To learn more about how to address nuisance complaints and resources on living with community cats, please refer to our information sheet on [Living with Neighborhood Cats](#).

References

1. AVMA, U.S. Pet Ownership & Demographics Sourcebook. 2012, Schaumburg, IL: American Veterinary Medical Association.
2. Chu, K., W.M. Anderson, and M.Y. Rieser, Population characteristics and neuter status of cats living in households in the United States. *J Am Vet Med Assoc*, 2009. 234(8): p. 1023-30.
3. Levy, J.K. and P.C. Crawford, Humane strategies for controlling feral cat populations. *J Am Vet Med Assoc*, 2004. 225(9): p. 1354-60.
4. Manning, A.M. and A.N. Rowan, Companion animal demographics and sterilization status: results from a survey in four Massachusetts towns. *Anthrozoos*, 2005. 5(3): p. 192-201.
5. Marsh, Replacing Myth with Math. 2010.
6. Wallace, J.L. and J.K. Levy, Population characteristics of feral cats admitted to seven trap-neuter-return programs in the United States. *Journal of Feline Medicine & Surgery*, 2006. 8(4): p. 279-284.
7. Mahlow, J.C., Estimation of the proportions of dogs and cats that are surgically sterilized. *J Am Vet Med Assoc*, 1999. 215(5): p. 640-3.
8. Shelter Statistical Survey. National Council on Pet Population Study and Policy, 1999.
9. Local Rabies Control Activities. [cited 2012; Available from: <http://www.cdph.ca.gov/HealthInfo/discond/Pages/LocalRabiesControlActivi...>
10. Lord, L.K., et al., Demographic trends for animal care and control agencies in Ohio from 1996 to 2004. *J Am Vet Med Assoc*, 2006. 229(1): p.

48-54.

11. Morris, K.N., J.L. Wolf, and D.L. Gies, Trends in intake and outcome data for animal shelters in Colorado, 2000 to 2007. *J Am Vet Med Assoc*, 2011. 238(3): p. 329-36.
12. Scott, K.C., J.K. Levy, and P.C. Crawford, Characteristics of free-roaming cats evaluated in a trap-neuter-return program. *J Am Vet Med Assoc*, 2002. 221(8): p. 1136-8.
13. Lee, I.T., et al., Prevalence of feline leukemia virus infection and serum antibodies against feline immunodeficiency virus in unowned free-roaming cats. *J Am Vet Med Assoc*, 2002. 220(5): p. 620-2.
14. Luria, B.J., et al., Prevalence of infectious diseases in feral cats in Northern Florida. *J Feline Med Surg*, 2004. 6(5): p. 287-96.
15. Wenstrup, J. and A. Dowidchuk, Pet overpopulation: data and measurement issues in shelters. *J appl anim welf sci*, 1999. 2(4): p. 303-319.
16. Levy, J.K., D.W. Gale, and L.A. Gale, Evaluation of the effect of a long-term trap-neuter-return and adoption program on a free-roaming cat population. *J Am Vet Med Assoc*, 2003. 222(1): p. 42-6.
17. Lord, L.K., Attitudes toward and perceptions of free-roaming cats among individuals living in Ohio. *J Am Vet Med Assoc*, 2008. 232(8): p. 1159-67.
18. Schmidt, P.M., R. Lopez, and B. Collier, Survival, Fecundity, and Movements of Free-Roaming Cats. *Journal of Wildlife Management*, 2007. 71(3): p. 915-919.
19. Inc., N.R., APPMA National Pet Owners Survey. 2005, American Pet Products Manufacturers: Greenwich.
20. Nutter, F.B., J.F. Levine, and M.K. Stoskopf, Reproductive capacity of free-roaming domestic cats and kitten survival rate. *J Am Vet Med Assoc*, 2004. 225(9): p. 1399-402.
21. Fan, M., Y. Kuang, and Z. Feng, Cats protecting birds revisited. *Bull Math Biol*, 2005. 67(5): p. 1081-106.
22. Courchamp, F., M. Langlais, and G. Sugihara, Cats protecting birds: modelling the mesopredator release effect. *Journal of Animal Ecology* 1999. 68: p. 282-292.
23. Levy, J.K., Considerations and management of infectious disease in feral cats, in *Infectious diseases of the dog and cat*, C. Greene, Editor. 2011, W. B. Saunders Company: Philadelphia. p. 1136-1138.
24. Lord, L.K., et al., Search and identification methods that owners use to find a lost cat. *J Am Vet Med Assoc*, 2007. 230(2): p. 217-20.
25. Lord, L.K., et al., Search and identification methods that owners use to find a lost dog. *J Am Vet Med Assoc*, 2007. 230(2): p. 211-6.
26. Lord, L.K., et al., Search methods that people use to find owners of lost pets. *J Am Vet Med Assoc*, 2007. 230(12): p. 1835-40.
27. Lord, L.K., et al., Characterization of animals with microchips entering animal shelters. *J Am Vet Med Assoc*, 2009. 235(2): p. 160-7.
28. Purina, R., *The State of the American Pet*. 2000.
29. Miller, L. and S. Zawistowski, Chapter One: The Evolving Animal Shelter, in *Shelter Medicine for Veterinarians and Staff*. 2004, Blackwell

Publishing: Ames, Iowa.

30. Clifton, M., U.S. shelter killing toll drops to 3.7 million dogs & cats in Animal People. 2007. p. 18-19.

31. Chu, K. and W.M. Anderseon, U.S. Public Opinion on Humane Treatment of Stray Cats. 2007, Alley Cat Allies: Bethesda, MD. p. 6.