Section 1
Introduction

1
Introduction to Animal Sheltering

Stephen Zawistowski and Julie Morris

HISTORY

Animal shelters in America evolved from the livestock impounds that were found in colonial towns and villages. At that time, it was common for people living in a town or village to keep chickens for eggs, a goat or cow for milk, and a feeder pig to be fattened on kitchen scraps and then slaughtered to provide hams and bacon for the family. Animals who escaped their confinement near the family's home, or were found wandering on public property, would be rounded up by the community's poundmaster and taken to the impound. The impound would be fenced in and might have a shed. People searching for their missing beasts would come to the impound, and if they could identify their animal, they could pay an impoundment fine or fee and take their property home. The poundmasters kept any unclaimed animals for their personal use. They might keep the animals to feed their own family, or sell them to someone else. The poundmaster's income was based on the impound fees, and the money earned from the sale of these livestock, supplemented by the animals they kept for their own use (Zawistowski and Morris, 2004; Zawistowski, 2008). Companion animals, while present in many homes, occupied an awkward place in the culture (Grier, 2006). Wealthy families might have high-quality hunting dogs, or cherished lap dogs. Portraits from the era frequently show individuals and families posing with their prized companions. Grier's research also showed that families of lesser means also shared their lives with animal companions. However, companion animals did not enjoy the same protection afforded to livestock. The earliest laws to protect animals in America were meant to protect animals with value as property (Favre, 2003). This included livestock, but not dogs and cats. Just as they do today, dogs would stray from their homes. From time to time, the poundmaster would catch them and take them to the impound. If no one came to claim them and pay the required impoundment fee, the poundmaster faced a conundrum. Unlike the horses, cattle, pigs, or other livestock that came to the impound, it was unlikely that the poundmaster would be able to sell unclaimed dogs. And of course they were not likely candidates for the poundmaster's table. As a result, most of these stray dogs were killed. Depending on the skill and sensitivity of the poundmaster this could be a quick death or a prolonged and painful death. Clubbing, strangling, and drowning were common methods (Zawistowski, 2008).

As villages became towns, and towns became cities, it became less likely for people to keep their own livestock for meat, milk, and eggs. Stray dogs flourished in these cities, surviving on scraps, trash, and handouts. Reproduction was unfettered, and the poundmaster now found that stray dogs became their primary quarry. By now, the impound was known as the dog pound. Few dogs were claimed by owners or bought by people interested in having a pet. As a result, the poundmaster now had a substantial job finding an efficient way to kill dozens, if not hundreds, of dogs at a time. By 1870s, the pound in New York City resorted to drowning the unwanted

animals in a large iron cage lowered into the East River. A century before the birth of the no-kill movement in America, strolling down to the river to watch stray dogs being drowned was an afternoon's diversion.

Dogcatchers of the era were despised, and not because they killed stray dogs. The men were still not paid a steady wage and continued to depend on redemption fees from people reclaiming their dogs at the shelter (Crossen, 2007). Their income depended on catching owned dogs and having people reclaim them. In time, the pound system evolved into a corrupted practice of kidnaping owned dogs and ransoming them back to their owners, while at the same time ignoring the many strays that plagued the city.

Slow change came to animal sheltering with the initiation of the American animal welfare movement (Lane and Zawistowski, 2008). Henry Bergh, a philanthropist and former diplomat learned of the Royal Society for the Prevention of Cruelty to Animals (RSPCA) in England, while returning from an assignment in St. Petersburg, Russia. He stopped in London and met with the Lord of Harrowby, the president of the RSPCA. When Bergh arrived back in New York City in 1865, he quickly set to work gathering support to establish a similar society in America. On April 10, 1866 his efforts were rewarded with a special charter from the State of New York for The American Society for the Prevention of Cruelty to Animals (ASPCA). Bergh's initial efforts were directed toward protecting the many horses who worked in the streets of the city. However, the early records of the ASPCA offer numerous examples of Bergh's interventions on behalf of dogs and cats. These included pursuit of dogfighters, ragpickers who used dogs to pull their carts, and frequent criticism of the city dog pound. City officials called upon Bergh and the ASPCA to take over the management of the city pound several times over the years. Each time, however, Bergh declined. He was well acquainted with the politicians of his era, and he feared that they would fail to provide him with the resources required to run the pound in a successful and humane fashion, and at the same time imperiling the broader work of his fledgling society.

Bergh's influence rapidly expanded outside of his native New York City. Just 1 year after the founding of the ASPCA, a society for the prevention of cruelty to animals (SPCA) was formed in Erie County/ Buffalo, NY, with former president Millard Fillmore chairing the meeting. Philadelphia and Boston followed in 1868. Bergh was in communication with founders of these organizations. He provided information on the ASPCA charter, an understanding of the mission and organization, and encouraged them to adopt the SPCA name. Dozens of additional SPCAs were created in the next decade. Bergh's society remained a model for these other organizations to emulate, but there was no formal relationship between the ASPCA and the many local and regional societies for the prevention of cruelty to animals that followed. As a result, early in the history of the American animal welfare movement the seeds were planted for a problem that persists to this time, the misconception that SPCAs are somehow organized under or linked to the ASPCA.[1]

Caroline Earle White was the founder of the Pennsylvania SPCA in 1868. Social convention of the era denied her a position on the board of directors for the PSPCA because she was a woman. She then formed a Woman's Auxiliary of the PSPCA. It was in this role that she led the Woman's Auxiliary in the development of the first *humane* animal shelter. They conceived and built the City Refuge for Lost and Suffering Animals. This facility accepted stray animals, provided food and medical care, and promoted the placement of these as pets into new homes. They confronted the question of what to do with animals that could not be placed by commissioning the development of a humane euthanasia chamber that used gas to asphyxiate the animals—a dramatic improvement over the practice of clubbing and drowning.

The next major development in animal sheltering followed Henry Bergh's death in 1888. While Bergh had not taken up New York City's offer to operate the city's public animal shelters, his successors at the ASPCA took up the task in 1894. As part of this arrangement, the city approved the requirement

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1. This was further complicated when the term "humane society" became another common organization name. It is important to recognize that "society for the prevention of cruelty to animals (SPCA)" and "humane society" are generic terms that refer to groups that provide animal sheltering and other services to their communities. They may be loosely organized in state or regional groups, but in the end are independent entities.

that dogs in New York City be licensed, and authorized the ASPCA to collect the $1.00 license fee, and use the funds to provide animal control services. The license income permitted the ASPCA to hire salaried workers and convert a warehouse into a holding kennel. Workers on salary no longer needed to depend on reclaim fees for their income. They were then able to concentrate on picking up stray dogs and cats from the city streets. In just 1 year, the ASPCA was praised for the performance of the transformed animal shelter system. This included the fact that the ASPCA-operated shelter captured and euthanized more dogs than the shelters had done in the previous years. It was indeed considered an important service to remove these nuisance dogs from the streets. The city fathers of Brooklyn, NY—Brooklyn was still an independent city at the time—were so impressed with what they observed happening across the East River that they prevailed upon the ASPCA to step in and manage their animal shelter as well.

Many SPCAs around the country followed the example of both the Woman's SPCA and the ASPCA. Some would open charitable animal shelters that would take unwanted animals from the public, provide medical care, and make them available for adoption, or euthanize them if they were not adopted. Other societies would enter into relationships with city and town governments to provide animal-sheltering services. In still other communities, the local government owned and operated the animal shelter and provided the associated services. The current state of affairs in animal sheltering across the country remains a mix of these various models. In some places, SPCAs and humane societies continue to provide animal-sheltering services as charitable organizations. In other places, they may have service contracts with one or more city or town governments to provide some or all animal-sheltering services. These arrangements may include capturing stray animals, handling enforcement of animal-related regulations such as licensing and aggressive or dangerous dogs, cruelty investigations, sheltering animals, providing lost and found and animal adoption programs, public health functions such as holding animals for rabies observation, and euthanizing sick, injured, or unwanted animals. They may even provide spay/neuter services for shelter and privately owned pets. In some cases, the humane group may provide only part of these services. For exam-

ple, the local government may cover the salaries of animal control officers who capture strays and handle regulatory enforcement, but may contract with a humane society to provide sheltering services. It is not uncommon to find that a community has both a government-operated animal shelter and one or more shelters operated by humane groups. All in all, it is a complicated state of affairs, and those interested in working with an animal shelter should take the time to understand the nature of its management, scope of services, and areas of responsibility.

In the years since Caroline Earle White pioneered the first humane animal shelter, there have been many advances in both methods and scope of services and programs, as evidenced by the breadth of topics covered in this text. The rest of this chapter will be a short introduction to some of the services and programs not covered elsewhere in the text, as well as some of the important issues that animal-sheltering organizations currently face.

SHELTER ORGANIZATIONS

As noted above, animal sheltering across the country evolved as an odd mix of organizations and circumstances. Many of the early humane groups developed in major urban areas such as New York City, Buffalo, Boston, Philadelphia, San Francisco, and others. Each of these organizations was founded by local community leaders and focused on the specific needs of their regions. In 1877, some of these leaders felt the need to coordinate their efforts in a more effective fashion. John G. Shortall of the Illinois Humane Society was the impetus behind a meeting of humane leaders that eventually lead to the formation of the American Humane Association (AHA). The early focus of AHA was the cross-country transport of livestock. Eventually, it would also address animal-sheltering issues. While originally conceived to be an umbrella organization for humane groups in the United States, this goal was never fully realized. Instead, AHA has established itself as a resource on animal welfare issues, including animal sheltering. Through publications, conferences, and educational outreach to the field, it provides a range of support services.

In the 1950s, a small group within AHA felt that the organization was becoming too focused on animal-sheltering issues and was not providing active leadership on other humane issues such as

vivisection and hunting (Unti, 2004). In 1954, a small group led by Fred Myers formed the Humane Society of the United States (HSUS). An early animal-sheltering focus for HSUS was the effort to combat "pound seizure," where animal shelters were required to provide unclaimed dogs and cats to research laboratories. HSUS currently sponsors the largest annual conference for animal shelter professionals, Animal Care Expo, and publishes *Animal Sheltering* magazine; it also provides a variety of other educational and consulting services for local animal shelters.

The National Animal Control Association (NACA) represents professionals working in the animal control field, and the Society of Animal Welfare Administrators (SAWA) is composed of shelter professionals who work at a range of both nonprofit and government-run animal shelters. As evidence of the continued evolution of the animal-sheltering field and its development as a viable professional career, SAWA has developed the credential of Certified Animal Welfare Administrator (CAWA). Certification is earned through management and animal welfare experience as well as successful performance on a certification examination. Elements of that program include:

- Administration and management, including strategic planning, accounting, budgeting and financial policies, contract negotiation, and rules related to nonprofit status
- Personnel supervision and leadership, including recruitment, selection, training and performance evaluation, labor relations, compensation and benefits
- Public relations and fund-raising, including media and presentation skills, customer service policies, fund-raising and development
- Animal care and treatment, including humane animal treatment, animal care and control laws, animal health and welfare, and shelter design
- Reasoning related to problem solving, information analysis and synthesis, and discretion.

While NACA and SAWA are composed of individual professionals working in the field, the National Federation of Humane Societies (NFHS) membership is composed of organizations. The NFHS works to foster collaboration and cooperation among the many shelter, animal rescue, and animal control organizations in the field.

In 1994, the ASPCA ended its contract to provide animal control services to New York City. Since then it has developed a Community Outreach department that provides grants, training, and assistance for animal shelters across the United States.

SHELTER SERVICES

Shelter services have evolved over the years, and have changed substantially from the original mission of rounding up strays, returning a handful to owners, placing a few in new homes, and euthanizing the rest. Perhaps, most significant has been the general acceptance that cats should also be a part of a community's animal-sheltering programs. Early shelter programs concentrated on dogs, and indeed, more often than not, the shelters—called dog pounds—were funded at least in part by dog license fees. In general, the essential elements of a well-organized animal-sheltering program include the following (Handy, 2001):

- Uniformly enforce laws related to public health and safety
- Respond to nuisance complaints in a timely manner
- Investigate complaints of animal cruelty, abuse, and neglect
- Rescue mistreated and injured animals
- Shelter stray and homeless animals
- Work to reunite lost pets with their families
- Place healthy, behaviorally sound animals in responsible homes
- Euthanize suffering animals as well as those who are neither reclaimed nor adopted
- Promote mandatory identification of both dogs and cats
- Create incentives for the public to have pets sterilized
- Deter future problems through education programs.

While the above elements constitute what are frequently considered the core of primary services that should be available in a community, often one or more are omitted in various locations. A critical development in animal sheltering is the acknowledgment by some animal welfare organizations that

in order to increase their effectiveness, communities should form collaborative coalitions among groups that provide animal care and sheltering services. This coalition would include both municipal and nonprofit animal shelters as well as various rescue groups that may operate through foster care programs. Again, while coalitions are becoming more common, they are by no means pervasive in the field. But when an effective coalition is formed, there is the recognition that the welfare of companion animals in that community is the responsibility of the entire community. Through collaboration and pooling of resources of the coalition members, more positive outcomes can be achieved for all the animals. Hosting joint adoption events, sharing vehicles to transport animals between shelters for adoptions or for foster care, and co-funding a community spay/neuter clinic are just a few ways through which coalitions increase their efficiency and outreach to the community. While individual shelters and rescue groups continue to maintain their own statistical data to track program performance, the true measure of success is the combined community data. The critical statistical measure of performance is the live release rate (LRR). Stated simply, it is the percentage of animals that enter the community shelter system and leave that system alive either through return to owners (RTO), adoption into new homes, transfer to other groups that guarantee an adoption placement, or rarely, transfer to an appropriate sanctuary.

Key Programs

There is much greater public scrutiny of animal shelter performance today than a generation ago. The no-kill movement, which had its birth with the publication of an influential essay by Ed Duvin (Duvin, 1989), has galvanized a diverse constituency to support, and indeed demand the end of euthanizing healthy dogs and cats as a means of population control. This increased pressure on animal shelters has caused some of them to reimagine their roles in their communities. Among other things shelter professionals have seen is the need to upgrade the skills of their managers and staff.

Shelters have hired more staff with training in animal behavior to evaluate and rehabilitate dogs and cats in the shelter, assist with appropriate adoption placements, and with adoption follow-up and support programs. Shelter medicine has been another part of the evolution of animal sheltering, leading to the first and current edition of this text, the formation of the Association of Shelter Veterinarians, and the creation of several formal shelter medicine programs at veterinary colleges, on the Internet, and at major veterinary conferences.

Reducing Animal Intake

In many cases, the best case scenario for animals in a community is to not enter the shelter system at all. Animals are best served when they are able to remain with their families in safe and secure homes. Shelters may employ a range of outreach and intervention programs that serve as safety nets that help keep animals with their current guardians. Research on relinquishment indicates that animal behavior problems, along with cost of care, moving, and other human household issues are strongly associated with a risk of relinquishment (Patronek *et al*., 1996a, 1996b; Salman *et al*., 1998). As a result, shelters and others have begun to offer animal behavior helplines (Lawson, 2000), food pantries (Hettinger, 2010), and lists of rental properties that will accept pets (People With Pets, n.d.).

A cornerstone program to reduce animal shelter intake is the sterilization of dogs and cats through aggressive spay/neuter programs. Anecdotal evidence and research (New *et al*., 2004) suggest that a significant proportion of the puppies and kittens born each year are the result of unplanned litters. Some of these puppies and kittens will be relinquished to shelters while still young; others may be taken into homes for some period of time before they too are relinquished to an animal shelter. Several chapters in this text address both the logistical and medical aspects of these programs. Expanded access to and affordability of spay/neuter services for the public has led to a dramatic decrease in the number of animals impounded at shelters each year, and the number subsequently euthanized (Marsh, 2010). Suffice to say, an ounce of prevention is worth a pound of cure.

Two significant advances to reduce the intake of cats at animal shelters are Trap-Neuter-Return (TNR) and Feral Freedom. TNR is described in detail in the chapter on management of stray and feral community cats. The Feral Freedom concept was initially developed in Jacksonville, FL (Weiss, 2011). The program targets free roaming cats that may not be well socialized when they enter the shelter and are

not part of a managed colony or formal TNR effort. If they have been doing well in the environment where they were found and are not under any type of threat, they will be spayed or neutered, and returned. Otherwise, they have little chance of being adopted and would likely be euthanized. Local residents and businesses are provided with information regarding the program. The reality is that in many shelters, the prospects of a successful adoption for any adult cat may be quite poor, with euthanasia being the far-too common end result. Feral Freedom offers these cats a chance for a reasonable quality of life, and reduces the population of cats that a shelter may need to manage within its facility.

Release Programs

Release programs refer to efforts a shelter makes to ensure animals are either returned to their original homes, or are placed in new homes. The goal is "live release."

Lost and Found

A major focus of animal control programs is to capture stray dogs and cats and bring them to the shelter, where they are typically held for a mandated period of time that will vary from one community to another, providing an opportunity for owners to reclaim them. In addition, other shelters in a community may also accept strays brought into the shelter by members of the public. Lord *et al*. (2007a, 2007b, 2007c) studied the recovery of lost dogs and cats in one community in Ohio. They generated their survey sample data by contacting people who had called an animal agency searching for a lost pet, or had placed an advertisement in a newspaper regarding their lost pet. Cat owners reported a recovery rate of 53% and dog owners recovered 71% of their lost pets. Just 7% of the cat owners recovered their cat through an animal agency, while 34.8% of dogs were recovered through an animal agency. It is important to note that just 19% of cats and only 48% of dogs had some type of identification when they were lost. It does seem obvious that significant efforts will be needed to encourage owners to provide their pets with identification to help recover lost pets. There is evidence that a concerted effort can provide positive results (Lord *et al*., 2010). A study in four different communities showed that when cat owners were provided with collars and tags, more than 70% of cats were still wearing their collars 6 months later.

Adoption

Adoption programs have seen substantial change in the past two decades. Adoption programs in the mid-twentieth century had few standards, often placing animals for no fee and without an application process. By the early 1970s, greater concern was placed on the quality of an animal placement, and it became more common to require some sort of adoption application and interview. Some of these applications were quite long and complicated, and some generated complaints about the difficulty in adopting an animal. In New York City in 1973, the ASPCA became the first major shelter system to require that adopters agree to have their new pet spayed or neutered (Lane and Zawistowski, 2008). Although now a standard practice in the field, this was such a novel and controversial idea at the time that ASPCA staff and directors were called upon to explain this decision in major media outlets.

In 1999, prompted by two prominent instances of long-time, well-qualified animal welfare professionals being denied adoption by their local shelters, AHA hosted Adoption Forum I, a meeting of a group of shelter directors from around the country to develop recommendations for less rigid but perhaps more valid (or relevant) adoption criteria. As a result, a new concept of "open adoptions" began to emerge whereby the adoption process is conducted less like an interrogation with pass/fail criteria and more like a conversation focused on matchmaking and animal care. Four years later, PetSmart Charities hosted Adoption Forum II, with some of the same and some new directors at the table. Results of this forum, aimed at defining "successful" adoptions, are widely used by shelters wishing to update their adoption policies to be more customer-friendly and relevant to the desired outcome—a lasting animal placement (Moulton, 2003).

As adoption programs expanded to make animals more accessible to the public through evening and weekend hours, adoptions fairs, special promotions and events, revamped and reduced fees, and mobile adoption units, some have questioned whether the "ease" of these adoptions might preclude a significant commitment to the animal by the new guardian. For example, as shelters began to offer adoption access at off-site locations, or as part of large "adoption fairs," the question arose whether these easy-access opportunities encouraged low-quality adoption placements with the pets at risk

of relinquishment shortly thereafter. Neidhart and Boyd (2002) addressed this question and found that adoption retention was comparable among those who adopted from an off-site adoption location, a large-scale adoption event, or at an animal shelter. Another study addressed the success of fee-waived adoptions for cats (Weiss and Gramann, 2009). Critics have argued that a required adoption fee ensured the adopter was ready and able to make a commitment to the cat's care and placed a value on the animal. Results of the research, however, indicated that when people were later contacted, those who did not pay an adoption fee were as committed and bonded to their new companions as those people who did pay a fee.

Animal Transport

As the number of puppies entering and being euthanized in shelters began to decrease in the 1980s, shelters began to rethink adoption supply and demand in their local communities, and a number of innovative programs began to emerge. Breed rescue was one of the earliest forms of relocation for adoption; organizations that could understand and best find homes for specific dog breeds would remove those animals from shelters and market to adopters, who not only got to "rescue" an at-risk animal, but also acquired a purebred animal for less cost than buying one.

At the same time, North Shore Animal League in New York was finding it harder to supply desirable animals for their high-volume adoption program. They began transporting small dogs, purebreds and puppies from local and then regional animal control facilities to their shelter in Long Island. This trend expanded to organizations across the Northeast and beyond, with many animals journeying thousands of miles from a shelter where they may have been at risk of euthanasia to a new home. And websites like PetFinder made it possible for adopters to look beyond the local shelter to find their desired new pet.

Transport programs vary in their complexity and structure. In some cases volunteers relay pets from one location to another. They will arrange to meet at highway rest stops or parking lots to transfer animals from one vehicle to another and then carry them along the next leg of their journey. A more formal effort is the PetSmart Charities Rescue Waggin' program which facilitates safe and humane transport for 50 dogs at a time, also helping the "source" shelters address overpopulation issues in their community. Dogs are being moved in large numbers by commercial haulers, from region to region by vans and trucks, and across the country by plane.

There are concerns that adoption transport programs may facilitate the spread of infectious diseases (Newbury *et al*., 2010; O'Shea, 2010). The NFHS recommends a best-practice approach that includes a veterinary examination and a valid health certificate for each animal being shipped (National Federation of Humane Societies, 2010). The Association of Shelter Veterinarian's Guidelines for Standards of Care in Animal Shelters devotes a section to animal transport as well (ASV, 2010).

Relocation programs have helped weave a more effective network of shelters within a community and beyond; many shelters are now communicating with their "shelter neighbors," sharing animals for adoption events and transferring dogs and cats as needed to increase adoptions. Shelters with better resources are working with less-well-equipped shelters to help save the lives of at-risk animals by providing them with the care needed to improve their medical and behavioral conditions and render them adoptable. The future will see further improvements in solving the logistics of matching supply with demand for shelter animals, attention to the public and animal health and safety issues, and improving the odds that animals entering shelters find positive outcomes.

TECHNOLOGY

Technology is playing an important role in developing many of the programs described above. This includes animal identification, data management, and other areas of shelter management. An expanding role for social media has provided new platforms for sheltering organizations to communicate with their communities and individual stakeholders and supporters.

Shelter Management Software

There is a wide range of shelter software available,[2] and every animal shelter should have the capability

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2. Available shelter software (*not* an exhaustive list . . .)

- ShelterBuddy: http://shelterbuddy.com/
- Chameleon: http://www.chameleonbeach.com/
- PetPoint: http://www.petpoint.com/
- Multiple Options Inc.: http://www.multiop.com/home.htm
- Adopt-A-Friend: http://www.adoptafriend.us/

of finding and utilizing software to manage their day-to-day operations. Software programs can also provide a wealth of data that can assist with guiding strategic and operational plans, as well as providing information that can be shared with a shelter's board of directors and community at large.

Things to consider:

- The size and scope of the shelter operation. Software providers vary in their ability to meet the needs of the wide range of animal welfare organizations. Make sure the company has experience with all aspects of the shelter's operations.
- The quality of customer service. Timely responses to requests for assistance, after-hours availability, and staff who understand the animal welfare field should all be considered before signing on the dotted line. Speak with shelters who are currently using the software programs being considered and be sure to connect with shelters other than the ones the company has provided as references; it is important to know how the software and the customer service work for a variety of agencies, and not just for one or two.
- Related to customer service, what level of training is provided, initially and on an on-going basis? How will training needs be met throughout the course of the shelter's relationship with the software provider? With turnover in shelters being fairly regular, ensuring new staff can be trained is of utmost importance.
- How does the software provider handle upgrades to the system? Are they included in the initial purchase price? Is additional training provided to ensure staff is able to use the improvements correctly? Are shelters involved in decisions affecting improvements and/or changes to the system?
- More and more software applications are web-based, and this is an important consideration for animal welfare organizations. Web-based applications allow for real-time access to the software for staff and volunteers, 24 hours a day, from anywhere as long as they have Internet access and login information. Web-based systems also ensure that a local disaster does not impact the shelter's ability to access their data—a vital factor when managing crises.
- Does the software allow for varying levels of access depending on the user's status? This can be especially helpful when senior staff want to have

access to, for example, certain financial reports, but do not want part-time staff and/or volunteers to have that same level of access.
- Determine who "owns" the shelter's data and how to get it back if a decision is made to change providers. Also, how quickly will the data be returned at the end of the relationship, and will there be a cost?
- Ask questions about how the software provider might be using the shelter's data, even in an aggregated form.
- Are there other strings attached? If so, how difficult is it to comply with the additional requirements?

Microchips

The United States does not have a nationally integrated microchip and database registration program for companion animals. There are currently three types of microchips distributed in the United States, based on the frequency at which they function: 125 kHz (encrypted and unencrypted), 134.2 kHz, and 128 kHz. The 134.2 kHz microchip is compliant with the International Standards Organization (ISO) standard used by most countries for companion animal identification, while the 125 kHz microchip has been most commonly used in the United States for the past two decades.

The availability of microchips that operate at different frequencies has been a problem in the past and has resulted in some microchipped animals not being identified. Some shelters resorted to scanning animals multiple times with different scanners able to read the different microchip frequencies. This resulted in the need for the development of "universal" scanners capable of reading microchips of all frequencies. By 2008, universal scanners able to detect and read microchips of all three frequencies were commercially available in the United States. A comparison of these scanners in both in vitro and in vivo applications showed that none of the available scanners was 100% sensitive for all microchips (Lord *et al.*, 2008a, 2008b). Sensitivity, in general, was highest for the 134.2 kHz microchips. Sensitivity was increased by following appropriate protocols, including making multiple passes over a pet, in different directions. The in vivo study included microchipping and scanning animals at six different animal shelters. The authors concluded that the odds of missing an implanted microchip increased with an

animal's weight (Lord *et al*., 2008b) and suggested that extra care be taken when scanning heavier animals. They also found that the metal in collars and tags could interfere with the reading and advised they be removed during scanning. This study also found that in rare cases (<2%) the implantation procedure failed, and a microchip could not be scanned for that pet, nor found via a radiograph. The authors advocate scanning a pet immediately following implantation to ensure that a functioning microchip was properly implanted, and performing multiple scans during the animal's stay and just before leaving the shelter. They also strongly advocate following the manufacturer's protocol for equipment maintenance and usage (e.g., battery changes), scanning, and microchipping in order to achieve the best results.

The value of an effective microchipping identification system is borne out by research showing that RTO rates for strays with microchips was much higher than the overall rate of return (Lord *et al*., 2009). For the shelters in this study, the median RTO for stray dogs was 21.9% (range: 0–97.5%) whereas the median for microchipped pets was 52.2% (range: 0–100%). The improvement for cats was more dramatic, with a median of 1.8% (range: 0.1–86.2%) overall compared to a median RTO for microchipped stray cats of 38.5% (range: 0–100%). A critical variable in finding the owner of a microchipped pet was whether the owner was registered with either a database maintained by the animal shelter or with one of the available national microchip database registries. The authors point out that an effective microchip identification program for the recovery of lost pets relies on three integrated elements. The first two are associated with the technology of the microchips and the scanners. Successful detection and reading of an implanted microchip requires proper scanning procedure with a scanner capable of reading the currently used microchip frequencies. The third element is registration of the microchip in an accessible database, along with current and accurate contact information for the pet's owner. The American Animal Hospital Association (AAHA) offers a free microchip database service that can be accessed at http://www.petmicrochiplookup.org/.

CONCLUSIONS

As the number of surplus animals decline in some communities and regions, shelters are expanding services to meet other pet-related needs such as behavior training, boarding and day care, wellness and veterinary services, and emergency preparedness and response. Increasing pressure for professionalization from within and outside the field coupled with consistently strong rates of companion animal ownership will likely mean that animal shelters will play an increasingly prominent role in the social fabric of communities. Indeed, many organizations already operate state-of-the-art buildings and/or programs that make them destinations and favorite charities for local residents.

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