



*Chapter 5*

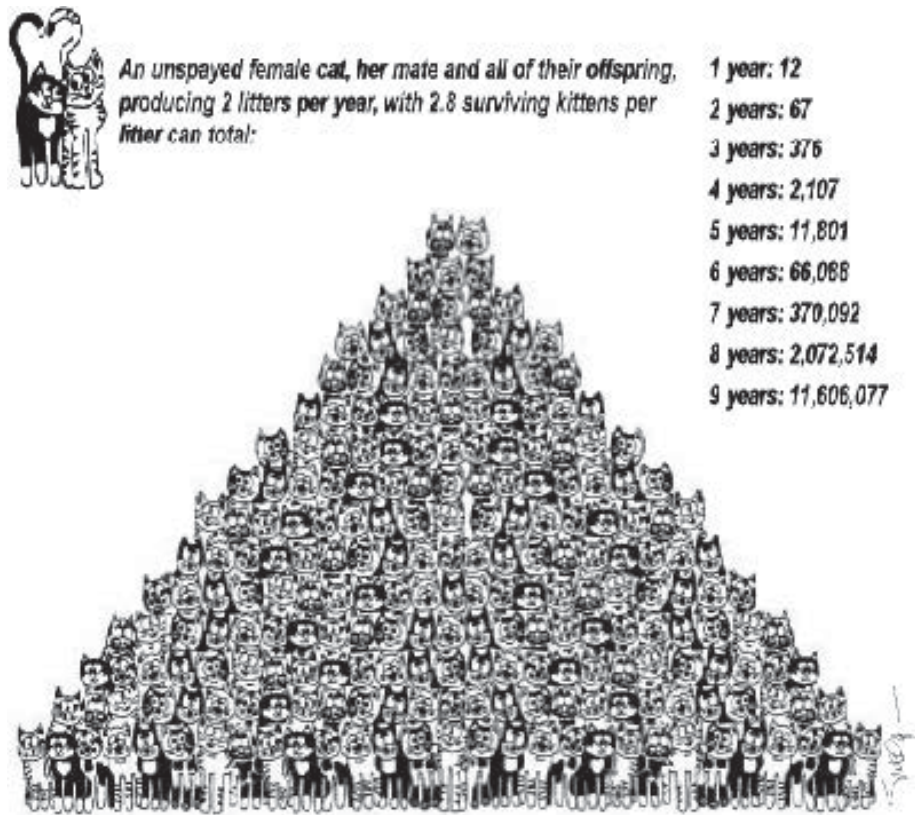
**SPAY / NEUTER:**

**IT'S NOT JUST ABOUT *WHETHER*, IT'S ALSO ABOUT *WHEN***

*“Continued emphasis on neutering pets, with special emphasis on prepuberal animals, will reduce the number of litters that arise before owners bring their animal for neutering. Similarly, neutering before puberty can reduce undesirable sex hormone-related behaviors that frequently lead to relinquishment. Veterinarians and their staff must actively combat myths regarding dog and cat husbandry, such as those surrounding the desirability of having a litter before neutering...”*

Janet M. Scarlett, D.V.M., M.D. Salman, Ph.D., John G. New, Jr, D.V.M., and Philip H. Kass, D.V.M. (2002). “The role of veterinary practitioners in reducing dog and cat relinquishments and euthanasias.” *Journal of the American Veterinary Medical Association* **220** (3), 310-311.

For years, spay/neuter programs have handed out Kitten or Puppy Pyramids showing two proud feline or canine parents and a mountain of their descendants like the one shown on the next page:



The Pyramid was based on our belief that pet overpopulation was driven by cats and dogs that had litter after litter, year after year, and the next generations of kittens and puppies did, too, until a single set of parents was responsible for tens of thousands of kittens or puppies during their lifetimes.

Given this reproductive potential, it seemed like we could never end pet overpopulation. To succeed, we would need to convince almost every pet caretaker to have his or her dogs and cats sterilized, no matter how resistant they were, and to subsidize whatever they couldn't afford to pay. If we failed very often, shelters would be doomed to take in many more kittens and puppies than they could ever find homes for.

We now know that the Kitten and Puppy Pyramids were more of a nightmare than a reality. If every intact household cat or dog had just one litter a year, 120 million puppies and kittens would be born in households in the United States every year. Only 12 million are.

Almost 20 years ago, researchers in Massachusetts discovered that local reproductive rates were not driven by dogs and cats who remained intact their entire lives. Just the reverse. Cats and dogs that remained intact throughout their lives accounted for less than 15% of all the litters of kittens and puppies born in the communities they studied. More than four out of every five litters

were born to female cats and dogs whose owners had them sterilized, but not until the animal had at least one litter. (More information about this study is shown in the Appendix of *Replacing Myth With Math* at Research Article # 12 on Pages 130-132.)

Later research has shown this to be true in other parts of the country as well. (For details, please see the discussion on Pages 92-95 of *Replacing Myth With Math*.) *The overwhelming majority of litters born to household pets do not come from owners who refuse to have their pets sterilized or just don't care. They come from pets whose owners take the trouble to have the pet spayed and usually pay the full cost, but not until after she has had a litter or two. "Spay delay" is driving our pet reproduction rates.*

**LESSON:** In most of the country, the number of litters born in households is determined more by the number of people who delay having their pets sterilized, than by the number who never do. "Spay delay" is driving the growth of pet populations in the United States.

**CONVENTIONAL WISDOM:** The growth of household cat and dog populations is mostly produced by cats and dogs that remain intact throughout their lives and have multiple litters.

**FACT:** In the United States, cats and dogs that remain intact throughout their lives account for less than one fifth of all litters born to household pets. More than four out of every five litters are born to pets that are sterilized after having had at least one litter.

**SOURCES:** Manning MM & Rowan AN (1992). Companion animal demographics and sterilization status: Results from a survey in four Massachusetts towns. *Anthrozoos* 5: (3): 197. (More information about this study is shown in the Appendix of *Replacing Myth With Math* at Research Article # 12 on Pages 130-132).

Pre-sterilization litter rates of cats and dogs sterilized through Spay Shuttle Program (Knoxville, Tennessee), 7/07-5/09. (See Pages 93-95, *Replacing Myth With Math*)

Reducing spay delay begins with understanding why so many people don't have their pets sterilized sooner, if they are going to have it done anyway. Do they delay on purpose, believing that their pet would benefit in some way by having a litter before being sterilized? Or do they just put it off until it is too late?

Often it's procrastination. When asked in a 2000 survey why they had not had their pet sterilized, many people said that they just hadn't gotten around to doing it yet. That was the most common reason given.

Many others delay on purpose. In a 2007 national survey of cat owners, more than 40% of those with intact cats said they hadn't gotten their cat sterilized because they believed she would be better off if she had a litter first. (More information about this study is shown in the Appendix of *Replacing Myth With Math* at Research Article # 16 on Pages 135-136.) It's not just cat owners who believe that. Many dog owners do, too. Slightly more than half of all the dog owners surveyed in 1996 either said they believed a dog would benefit by having a litter before being spayed or didn't know if she would benefit or not.

The belief that a pet would be better off if she had a litter before being sterilized is mistaken. Tragedy often follows. More than 100,000 cats and dogs die in the United States each year from mammary gland cancer. Needlessly.

Cancer is a scourge. Much of the time, we can't do much to protect ourselves or our pets from falling victim to it. There is one exception: A cat's risk of developing mammary cancer is reduced by more than 90% if she is spayed before her first estrus. By having a dog spayed before first estrus, a caretaker can almost fully protect her from mammary cancer. Yet in a 2009 survey, 29% of all pet caretakers said they thought it was inappropriate to spay a female pet before her first heat.

The widespread delay in having pets spayed not only takes a great toll in cancer victims, it also drives shelter overpopulation. More than 10,000,000 kittens and puppies are born in the United

**CONVENTIONAL WISDOM:** Most pet caretakers already know that the best time to have a female pet sterilized is before she first goes into heat.

**FACT:** Half of all dog and cat caretakers aren't aware of that. A 1996 national survey found that 51.2% of dog owners and 52.2% of cat owners either mistakenly believe a pet would benefit by having a litter before being spayed or don't know whether she would benefit or not.

**SOURCE:** New Jr. JC, Salman MD, King M, Scarlett JM, Kass PH, & Hutchinson JM (2000). Characteristics of shelter-relinquished animals and their owners compared with animals and their owners in U.S. pet-owning households. *J. Appl. Animal Welfare Sci.* 3 (3), 193.

**LESSON:** Many pet caretakers don't know that the health benefits from pet sterilization depend greatly on the age at which a female pet is sterilized. Their lack of knowledge contributes greatly to both pet mammary cancer rates and shelter overpopulation.

States each year to female pets that are eventually sterilized. Reducing the number of these “pre-sterilization litters” by only 35% would stabilize the size of the household dog and cat populations by bringing their birth rate into balance with the death rate. (The details are included in the discussion on Pages 94-95 of *Replacing Myth With Math*). In fact, the growth of these populations

can't be stopped without reducing the number of litters that household pets have before being sterilized. On average, household cats and dogs that have been spayed now have more than two kittens or puppies each before being sterilized, so even if we somehow manage to achieve a 100% sterilization rate but fail to reduce the rate at which pets give birth before their sterilization, there would still be more cats and dogs born each year than those that died.

**LESSON:** It won't be possible to stop the growth of the household cat and dog populations in the United States without reducing the number of cats or dogs that have a litter before being sterilized.

It's tragic that so many pet owners increase the risk that their pet will develop cancer later in life by allowing them to go into heat before being sterilized. In this tragedy, though, is opportunity. A national public information and awareness campaign about the death toll that results from spay delay can save hundreds of thousands of lives every year by reducing both mammary cancer rates and shelter overpopulation. This could be undertaken without much of the delay and expense that other shelter overpopulation programs require because the target audience is “low-hanging fruit”: people who do not need to be convinced to have their pets sterilized (they are eventually going to anyway) and, in most cases, do not need financial help to afford it. Unlike broader public information and awareness initiatives, a program about the health risks that accompany spay delay could focus on a single mistaken idea and its effectiveness could be reliably measured through periodic surveys.

Many kittens and puppies already get a series of immunizations. This provides a perfect opportunity to incorporate timely sterilization as part of a package of kitten or puppy wellness services, a Sterilize When You Immunize Program. If the last immunization in the series is scheduled to take place when the kitten or puppy is sixteen weeks old, sterilization can be routinely scheduled to occur four weeks later, at twenty weeks. That way, it will be done after the animal is fully immunized but probably before she first goes into heat.

**CONVENTIONAL WISDOM:** Sterilizing 70% of a population of dogs or cats will stabilize the size of the population.

**FACT:** It's more complicated than that. Their average age at which dogs or cats are sterilized greatly affects reproductive rates, too. A study of owned dogs in an Italian province found that if dogs were spayed at three years of age, 55% of the females would have to be sterilized to keep a stable population, but if the average age of sterilization was reduced to less than a year old, a sterilization rate as low as 26% could halt population growth.

Another study found that 91% of the females in a feral cat population would need to be sterilized to keep a stable population if cats were spayed when they were a year old but if females younger than that were spayed, too, a sterilization rate of about 71% would stabilize the population.

**SOURCES:** DiNardo A, Candelaro I, Budke CM, & Slater MR (2007). Modeling the effect of sterilization rate on owned dog population size in central Italy. *Prev. Vet. Med.* 82: 308-313.

Budke CM & Slater MR (2009). Utilization of matrix population models to assess a 3-year single treatment nonsurgical contraception program versus surgical sterilization in feral cat populations. *J. Appl. Animal Welfare Sci.* 12 (4) 277-292.

Caretakers have their young pets immunized because they want to protect them from serious health threats but many fail to realize that in the United States, the risk a pet will die of mammary cancer far exceeds that of rabies, distemper, and all the other diseases against which they are being immunized. They may also not know that feline and canine mammary cancer are almost entirely preventable but that unlike immunizations—which usually are equally effective if given later in life—the protective benefit of spaying drops quickly and is lost altogether if the delay is too great.

Just learning this information would prompt many pet caretakers to have their pets sterilized along with the juvenile immunization series. Others may be persuaded by learning that the complication rate is lower when young animals are sterilized and that their recovery is faster and easier.

It may take financial incentives to prompt other caretakers to have their cats and dogs sterilized at the optimal time. A reasonable fee reduction for pets sterilized at five months of age or younger is justified by the increased time and supplies needed to sterilize an older pet in much the same way that a clinic's fee schedule often reflects the increased cost of labor and materials needed to sterilize a large dog or a pregnant animal.

### **GETTING TO ZERO: THE ROLE OF PEDIATRIC STERILIZATION**

The development of safe techniques for the sterilization of juvenile cats and dogs now allows shelters to accomplish the critically important goal of sterilizing all cats and dogs before they are placed in new homes.

For kittens and puppies living in homes, sterilization is best incorporated into the standard juvenile immunization protocol, as discussed above. Data from large-scale pet sterilization programs consistently show that very few kittens and puppies go into heat before they are five months old. As a result, sterilization at 20 weeks or so allows them to complete their immunization series and still be sterilized before their first estrus.

Spay/neuter programs may also want to offer Beat the Heat discounts for feline spays performed in the fall or early winter. Due to the seasonal nature of feline estrus—in which pregnancy rates in North America peak in March and April—most kittens born in peak kitten season will be approaching five months of age in November or December. Feline spays performed during the summertime, on the other hand, are much more likely to have been performed on an adult cat who has already had a litter earlier that year.