Pet Over-population and the 70% Rule

W. Marvin Mackie, D.V.M.

In a front-page article of *Animal People*, October 2002, editor Merritt Clifton mentioned the Fibonacci 70% Rule. His writing piqued my interest to the point that I asked him for further clarification, and then conducted some research of my own. This concept is amazingly insightful into the success or failure of pet over-population and it deserves to be understood by all who are decision makers in the effort to bring it under control. Leonardo Fibonacci, a pre-eminent mathematician of his time, created a formula in the early 1200s relating to agriculture productivity. Six centuries later, Louis Pasteur, while working on an early vaccine for disease prevention, used the model to predict that 70% of a susceptible population would have to be vaccinated in order to prevent an epidemic of almost any contagious disease. Fibonacci's 70% model is still recognized as valid by leading public health authorities such as the World Health Organization and the Center for Disease Control.

It is not a great leap to advance to the notion that pet sterilization is in effect "vaccinating" against the disease of over-population. Using this premise, we can say that 70% of the susceptible population (animals with outside privileges) in a defined demographic area must be sterile in order to affect the decrease in over-birthing which will then result in a population decrease within that area. The outcome at this 70% sterilization level is that the transmission odds (successful breeding encounters) of the remaining 30% are reduced to the point that births then occur at a rate only great enough to replace normal attrition.

Mr. Clifton cites data from two separate street dog sterilization programmes in India. One programme saw a drop in animal population at 64% sterilized and the second one at 68%. In November 1998, I took part in a massive sterilization effort on the native American land called the Flathead Nation in western Montana. It was a week-long three-town effort in which we volunteer veterinarians sterilized 1336 dogs and cats in six days. Actual census numbers are probably unknown but the following years' drop in shelter turn-ins was profound. Clifton also reported that in the US, animal control agencies reported a marked drop in the number of dog euthanasias in the late 1980s, soon after the sterilization percentage of owned dogs reached 67%. A rapid drop in cat euthanasias was noted when sterilization of owned cats reached 85%. The 'X' factor with cats lies in the number of local ferals (street cats). Feral dogs are not nearly as plentiful and therefore do not significantly impact the statistics.

If we follow the logical conclusions of the 70% Rule, which is broadly accepted by those who work in epidemiology, we arrive at some interesting answers. For instance, those working so diligently to control pet over-population in the greater Los Angeles and Orange County areas are confounded by the fact that, in spite of their tireless efforts, they have not seen the reduction in euthanasias they had hoped for. Unfortunately, the fertile pet population was so large at the onset and the densely-populated two-county area was so great that they were unable to sterilize the numbers required to reach the 70% mark. Mr. Clifton states emphatically that you must reach 70% or else you will FLUNK - there is no progress made with a 'B' or 'C' grade. Quoting Mr. Clifton, "Fall short of 70% and a sterilization project will get a big 'F' for fecund animals, fearful people fleeing dog packs, feline feces in gardens and children's sandboxes and frothing-at-the-mouth critics flinging allegations of fraud."

Clearly, the 70% rule applies to any circumscribed area. It can be an isolated town or community (e.g. the native American communities of the Flathead Nation) or the mere acreage of a feral cat colony. Generally, more affluent areas can and do reach 70% (or better) pet sterilization and the over-birthing problem ends in those areas. The more impoverished areas don't come close to 70% and the shelters serving those communities are the recipients of the hapless victims of too many births and too few homes. This plight is the major theme of Bob Christianson's book, *Save Our Strays*, CLC Publishing, 1996.

All too often, enthusiastic humane activists campaigning for pet control projects inadvertently over-promise results to those who are providing funding. When the government sources that provide 'start up' funds as a result of these promises cannot be shown any statistical improvement, they therefore conclude that their funding is not producing the desired results. What can truly make an impact on reduced birthing is to target a reasonable area and within a short period of time massively sterilize within it to achieve the 70% goal. If the sterilization is accomplished within one breeding cycle, the result will be immediately measurable. The money saved in reduced animal control and shelter overhead could easily support the major funding needed for the initial sterilization effort. When the 70% sterilization goal is attained, both the funding and the effort could be reduced to a maintenance-only level. A mobile spay/neuter unit visiting multiple sites one day each month is good for public relations, raises awareness in the community and is certainly 100% helpful to the individual family and their pet, but it cannot achieve the number of sterilizations required in any one area to significantly reduce over-birthing.

The standard mantra, or battle-cry, in the fight to curb over-population has been "spay or neuter your pet and save the lives of hundreds of innocent animals." Perhaps a more acceptable and understandable approach would be to educate the pet owner to the fact that in addition to the health and behavioural benefits, sterilization for their pet is quite analogous to a vaccination for the unwanted pregnancies that contribute to over-production and to the unintended deaths by euthanasia. Spay/neuter saves lives by eliminating killing.

I have presented this article on the Fibonacci 70% Rule in order to broaden your understanding of the task we face and to present a tangible way of evaluating our efforts toward our goal. Because there are so many variables in getting an accurate census of a given area, it may seem that 70% is difficult to determine.

For additional reading, I suggest the *Animal People News* website, *www.animalpeoplenews.org*, where you can benefit from Merritt Clifton's excellent editorials, and the *Best Friends Question and Answer forum, http://www.bestfriends.org/nmhp/forumarchive/qa20to24mc.html*, where Mr. Clifton succinctly and completely covers the issue in an answer to another interested reader.

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Dr. Mackie, the owner/director of two Animal Birth Control clinics in Los Angeles, has been a spay/neuter specialist since 1976 and is nationally recognized for his work in early-age sterilization. He offers an extensive surgical training programme and a widely distributed video on his procedure.
E-mail: *Spaydvm@aol.com.*