



## Fact Sheet

# KEY SCIENTIFIC STUDIES ON TRAP-NEUTER-RETURN

Scientific studies show that Trap-Neuter-Return, also known as TNR, is the humane and effective approach for managing feral cats. Trap-Neuter-Return improves the lives of feral cats, improves their relationships with the people who live near them, and decreases the size of colonies over time. These studies have been conducted in multiple countries, and have been published in a variety of peer-reviewed scientific journals.

### Cats benefit from Trap-Neuter-Return for their entire lives.

Studies show that after neutering, cats become healthier and gain weight. Outdoor cats in managed colonies even live longer thanks to TNR. One study of a TNR program found that at the end of a 10-year period, 83% of the cats in the managed colonies had been residing in those colonies for more than six years—indicating a lifespan comparable to the 7.1-year lifespan of pet cats.

Neutered cats also roam less and do not fight over mates. Studies have found that after neutering, cats in managed colonies were less aggressive and more affectionate towards each other.

### By eliminating mating behaviors, Trap-Neuter-Return makes cats better neighbors.

Neutered cats make less noise, for example, and fight less. One study found that calls to animal control about cats decreased after a TNR program was implemented—even though the human population increased.

### Multiple long-term studies of Trap-Neuter-Return have shown that the size of managed colonies decreases over time.

One study found a 66% decrease in the populations of managed colonies over 11 years, while another study of a TNR program over a 10-year period documented colony size decreases of 16 to 32%.

### Studies

**Finkler, Hilit, Erez Hatna, and Joseph Terkel.** “The impact of anthropogenic factors on the behavior, reproduction, management and welfare of urban, free-roaming cat populations.” *Anthrozoös* 24, no. 1 (2011):31-49.

The research in this article indicates that TNR and colony care improves cat's lives by reducing their stress levels. While looking at the correlation between the level of care provided by cat caregivers and the economic status of the area in which the cats live, the authors observed that neutered male cats were less aggressive than intact males. By testing the levels of stress hormone in their hair, they confirmed the neutered cats' lower stress levels. They also found that spayed female cats living in well-maintained colonies experienced less stress than those living in colonies that received less care.

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**Finkler, Hilit, Idit Gunther, and Joseph Terkel.** “Behavioral differences between urban feeding groups of neutered and sexually intact free-roaming cats following a trap-neuter-return procedure.” *Journal of the American Veterinary Medical Association* 238, no. 9 (2011):1141-1149.

Researchers compared data from four feral cat colonies: two that were cared for through Trap-Neuter-Return programs and two that were not and demonstrated that TNR reduces the behaviors associated with mating and can therefore address community concerns. They found that cats in the TNR colonies were less aggressive on the whole and that the neutered males were rarely aggressive towards each other at all, resulting in less yowling, fighting, and potential for injury than males in the intact colonies.

**Hughes, Kathy L. and Margaret R. Slater.** “Implementation of a Feral Cat Management Program on a University Campus.” *Journal of Applied Animal Welfare Science* 5, no. 1 (2002): 15-28.

Hughes and Slater document the success of a new Trap, Test, Vaccinate, Alter (spay or neuter), Return, and Monitor (TTVARM, a.k.a. TNR) program on the campus of Texas A&M University, looking at the changes between the implementation year and the year that followed. In the first year, 123 cats were trapped, compared to 35 in the second. Over the course of the program, 32 cats and kittens were adopted. In the second year, only three kittens were found, and the researchers assume that these were lost or abandoned, as no litters or nursing mothers were seen in that year. The program illustrated how a well-managed TNR program can stabilize a population of cats.

[http://www.societyandanimalsforum.org/jaaws/full\\_articles/5.1/hughes.pdf](http://www.societyandanimalsforum.org/jaaws/full_articles/5.1/hughes.pdf)

**Hughes, Kathy L., Margaret R. Slater, and Linda Haller.** “The Effects of Implementing a Feral Cat Spay/Neuter Program in a Florida County Animal Control Service.” *Journal of Applied Animal Welfare Science* 5 (2002): 285-289.

The authors analyzed data from a feral cat spay/neuter program that included a volunteer-based program to care for feral cat colonies in Orange County, Florida, against the population of the county for the six years before the program began and the first six years of the program. They found that

both the number of calls to animal control about cats and the number of cats killed by animal control decreased in the six years after these programs were initiated, even while the human population grew significantly. In addition, they reported that the morale of those involved improved, and the residents who participated in the program felt empowered to make a positive impact on the lives of feral cats in their neighborhoods.

[http://www.societyandanimalsforum.org/jaaws/full\\_articles/5.4/hughes.pdf](http://www.societyandanimalsforum.org/jaaws/full_articles/5.4/hughes.pdf)

**Levy, Julie K., David W. Gale, and Leslie A. Gale.** “Evaluation of the Effect of a Long-Term Trap-Neuter-Return and Adoption Program on a Free-Roaming Cat Population.” *Journal of the American Veterinary Medical Association* 222, no. 1 (2003): 42-46.

This study tracks a TNR program on a Florida college campus over the course of 11 years to determine the characteristics of cats involved and to document the effectiveness of the program at controlling the population of cats on the campus. Kittens and tame cats were adopted out, and new cats were trapped and neutered. At the end of the study, the population had decreased by 66%, and over 80% of the cats had been residents for more than six years—a duration comparable to the mean lifespan of 7.1 years for pet cats.

[http://www.avma.org/avmacollections/feral\\_cats/javma\\_222\\_1\\_42.pdf](http://www.avma.org/avmacollections/feral_cats/javma_222_1_42.pdf)



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**Natoli, Eugenia, et. al.** “Management of Feral Domestic Cats in the Urban Environment of Rome (Italy).” *Preventative Veterinary Medicine* 77 (2006): 180-185.

This study documents the cat population over 10 years in a well-established Trap-Neuter-Return program in Rome, Italy, and determines that a long-term TNR program significantly reduces feral cat colony size. Colony size consistently decreased over the time period, ranging from a 16% decline in colonies neutered three years into the program to a 32%

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decrease in colonies neutered six years into the program. Also, as the program became more visible, the number of registered feral cat colonies increased from 76 to 965. The authors caution that community education is crucial to preventing intact pet cats from joining the stray and feral cat population. [http://www.kiccc.org.au/pics/Study\\_FeralCatsRome2006.pdf](http://www.kiccc.org.au/pics/Study_FeralCatsRome2006.pdf)

**Neville, P.F. and J. Remfry.** “Effect of Neutering on Two Groups of Feral Cats.” *The Veterinary Record* 114 (1984): 447-450.

Researchers studied two colonies in Regent’s Park, London, to determine whether neutering had any negative effects either on the social structure of the colony or on the individual cats. No negative health effects were observed, and the colony’s social structure seemed to strengthen after the cats were neutered. Cats were seen to spend more time in groups, show fewer aggressive behaviors toward each other, and fight less. <http://veterinaryrecord.bvapublications.com/cgi/content/abstract/114/18/447>

**Scott, Karen C., Julie K. Levy, and Shawn P. Gorman.** “Body Condition of Feral Cats and the Effect of Neutering.” *Journal of Applied Animal Welfare Science* 5, no. 3 (2002): 203-213.

This study examines the effects of neutering on feral cat health by measuring the body condition of feral cats upon trapping, then measuring it again for 14 cats who were trapped again one year later. The cats who were trapped initially were lean but not emaciated, and the cats trapped one year after neutering showed significant increases in weight and improvements in body condition. In addition, caregivers reported that the cats had a decreased tendency to roam after being neutered.

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