Trap-neuter-return (TNR) is a management technique in which community cats are humanely trapped, evaluated, spayed or neutered by a licensed veterinarian, ear-tipped to show they’ve been sterilized, vaccinated against rabies and distemper,* and then returned to their original habitat. Targeted TNR (i.e., maximizing the number of cats sterilized at the colony or neighborhood level) offers several benefits over the inefficient approaches that have been used for generations, such as complaint-driven impoundment, which is often followed by lethal injection. These benefits include:

- Reduced shelter intake of cats and kittens
- Reduced shelter deaths of cats and kittens
- Stabilized and (over time) reduced community cat populations
- Reduced number of nuisance complaints

It’s important to recognize that each of the examples cited below is a success in its own way. The studies in Alachua County, Florida, and San Jose, California, focus on decreased intake and shelter deaths, rather than reduced community cat populations (a much more difficult metric to quantify). From an animal welfare perspective, such examples are compelling, but might mean little to stakeholders whose most important (perhaps only) measure of success is population reduction.

*Not all TNR programs include a vaccination component. Rabies in cats is a rare event, so this step is optional in some programs. Vaccination is considered best practice, however.

**Published case studies**

**2006–2007: Alachua County, Florida**
Researchers documented a 66 percent decrease in shelter intake of cats from a “target” zip code of focused TNR efforts, compared with a 12 percent decrease from the rest of the county. Shelter deaths for cats coming from the target area decreased by 95 percent over the same period, compared with a 30 percent decrease observed in the rest of the county.¹

**1998–2005: Randolph County, North Carolina**
A 36 percent average decrease in population among six sterilized colonies was observed in the first two years. Three unsterilized colonies experienced an average 47 percent increase over the same period.² A four-year follow-up census found that one colony had been reduced from 10 cats to none. At seven years, another colony originally containing 10 cats had been reduced to one cat.³
2000–2001: Rome, Italy
A survey of caretakers (caring for 103 cat colonies) revealed a 22 percent decrease overall in the number of cats, despite a 21 percent rate of “cat immigration.” Although some colonies experienced initial increases, the numbers began to decrease significantly after three years of TNR. “Colonies neutered three, four, five or six years before the survey showed progressive decreases of 16, 29, 28 and 32 percent, respectively.”

2010–2013: San Jose, California
Four years after implementing its return-to-field program, San Jose Animal Care and Services observed a 29 percent decrease in feline intake and a decrease in shelter killing from over 70 percent of intakes in 2009 to 23 percent in 2014.”

1991–2002: University of Central Florida (Orlando, Florida)
A campus TNR program led to the adoption of nearly half (47 percent) of the 155 cats living on campus over an 11-year observation period. In 2002, just 23 cats remained on campus. (Some critics of TNR suggest that the large number of adoptions documented in this study are somehow “cheating” or misrepresenting TNR’s effectiveness. But such critiques fail to acknowledge the obvious: Without the TNR program, these kittens would likely have remained intact and soon would have been contributing to the local population.)

1992–2009: Newburyport, Massachusetts
After many years of TNR efforts, the last of the famous “wharf cats” died in December 2009. According to both Alley Cat Allies and the local paper, this colony once included something like 300 cats. (A 1996 story in the Boston Herald describes “an estimated 200 wild, roaming cats.”)

Community Cats Projects
The Community Cats Projects are partnerships of Best Friends, PetSmart Charities® and municipalities. PetSmart Charities has donated more than $3.6 million to fund this initiative. These high-volume, three-year programs focus on specific zip codes and neighborhoods (generally those known to be the source of highest shelter intake) and have proven highly successful at reducing both shelter intake and shelter deaths of cats and kittens.

2012–2015: Albuquerque, New Mexico
Following the implementation of a large-scale, targeted TNR/return-to-field program, feline intake to Albuquerque’s shelter system had decreased by 38 percent. The number of shelter deaths decreased by 82 percent, from more than 3,500 in 2011 to 632 in 2014. And over the three years of the program, intake of kittens under eight weeks of age dropped by approximately one third — a strong indication that the program was reducing the breeding population of community cats.

2012–2015: San Antonio, Texas
Following the implementation of a large-scale, targeted TNR/return-to-field program, shelter deaths for cats and kittens decreased by 77 percent.
2012–2014: Baltimore, Maryland
At the end of a three-year large-scale, targeted TNR/return-to-field program, 39 percent fewer kittens under four months of age were entering the Baltimore Animal Rescue and Care Shelter. Again, this is a strong indicator that the number of outdoor cats breeding in the community is being reduced significantly.

2014–2017: Pima County, Arizona
At the end of program year two (July 2015 – June 2016) of a three-year large-scale, targeted TNR/return-to-field program, the Pima Animal Care Center’s feline save rate has increased dramatically — from 56 percent in 2013 to 91 percent in June 2016.

Reviews and related studies

• A 2008 review of the literature on feral cats and feral cat control, including several studies of TNR, emphasizes the importance of context in effective management: “When considering feral cats, one solution does not fit all situations because all situations are different.”

Robertson concluded, “there is scientific evidence that TNR under certain conditions can control the feral cat population, and is a viable, humane alternative to other methods previously used,” and recommends “continued and increased funding (by private welfare organizations and by municipal and government agencies) … for long-term success.”

• Although the campus of the University of KwaZulu-Natal’s Howard College (Durban, South Africa) is recognized as an “urban conservancy” (i.e., “urban areas interspersed with conservation-sensitive natural bush habitat and a nature reserve on the northern border”), researchers “suggested that to control the feral cat population effectively in this urban conservancy, a suitable and ongoing sterilization programme, which is run in conjunction with a feral cat feeding programme, needs to be implemented.” Removal, on the other hand, would likely create the “vacuum effect,” which means other cats move into the now-available area. The researchers say that “the ‘vacuum effect’ would encourage subsequent reinvasion of there. It may be more costly both financially in the long-term and in terms of effects on the indigenous wildlife populations if immigration of new, unsterilized cats were to take up residency on the campus.”

• Beginning in 2001, hysterectomy has been used to control the population of feral cats at the Rio de Janeiro zoo. “Between 2001 and 2004, the estimated population became stable, showing a trend to decrease.” Over the next four years, estimated population numbers dropped 58 percent, from 40 cats in 2004 to 17 cats in 2008. This is in contrast to the failure of prior trap and kill efforts to eradicate the cats: “Before we started this work in 2001, the population of cats of the RIOZOO suffered constant interventions but with out a pre-established methodology and only with the simple objective of eliminating the population. Therefore, the population of cats fluctuated, the animals showed weak social relations and behavioral interactions reflected by weak individual territorial defense, and this probably opened the way for high migration rates.”
Using sophisticated population modeling, researchers with the Alliance for Contraception in Cats & Dogs have shown that “successful population management under conditions of demographic connectivity” could be achieved by sterilizing 30 percent of a given population every six months.14 (While the same modeling showed that comparable success could be achieved by “removing just 20 percent of the cats every six months, the authors acknowledge that “economic, social and other considerations also will factor prominently into the final choice(s) among multiple management options.” Chief among these social considerations is TNR’s broad public support.15-18)

**Literature cited**


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