

Evaluation of a Trap-Neuter-Return Management Program for Feral Cat Colonies: Population Dynamics, Home Ranges, and Potentially Zoonotic Diseases.

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Title: Evaluation of a Trap-Neuter-Return Management Program for Feral Cat Colonies: Population Dynamics, Home Ranges, and Potentially Zoonotic Diseases.

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Abstract: Management of feral cats is controversial, and alternatives to lethal control methods are gaining popularity. To evaluate the effectiveness of sterilization programs, nine feral cat colonies were divided into groups of three, managed either by spaying females and castrating males, spaying females and vasectomizing males, or leaving all cats intact. Colonies were followed intensively for four years, and intermittently for three additional years. Most cats were trapped in fewer than ten trap nights each. Breeding females produced a mean of 1.4 litters/year and 3 kittens/litter. Kitten mortality was 75% by 6 months of age. Feral and pet domestic cats had similar baseline health status and prevalences of FIV, FeLV, *Cryptosporidium*, *Giardia*, and *Toxocara cati*, but feral cats had higher prevalences of *Bartonella henselae* and *Toxoplasma gondii*. Castrated male and spayed female cats survived longer than intact male and female cats. Survival times of vasectomized males were equivalent to those of intact males. Control colonies decreased in size and remained stable in composition, while intact colonies increased in size and had high turnover. One neutered colony went extinct and several others had fewer than five cats at the end of the project. Home ranges of both intact and neutered cats were small, usually less than 1 ha. Vasectomized males had larger home ranges than either intact or castrated males, probably because they were searching for intact females. Community-level stakeholder meetings were successful in building consensus among groups, and a basic decision tree for feral cat management was developed. Computer simulation modeling using VORTEX software suggested that harvesting breeding colonies every one or two years at 50% to 100% can keep colonies small, but will not lead to long-term reductions in cat numbers. Models of neutered colonies suggested that 75% to 80% sterilization is necessary to cause population decrease and eventual extinction. The mean estimated time to extinction of 12.8 years fits well with ongoing observations of steady decline in sterilized colonies.

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