



## A trap, neuter, and release program for feral cats on Prince Edward Island

Karen L. Gibson, Karen Keizer, Christine Golding

**Abstract** — A new program to address the feral cat population on Prince Edward Island was undertaken during the spring and summer of 2001. Feral cats from specific geographic areas were trapped, sedated, and tested for feline leukemia virus and feline immunodeficiency virus. Healthy cats were neutered, dewormed, vaccinated, tattooed, and released to their area of origin. A total of 185 cats and kittens were trapped and tested during a 14-week period; 158 cats and kittens as young as 6 weeks of age were neutered and released. Twenty-three adult cats were positive for feline leukemia virus, feline immunodeficiency virus, or both, and were euthanized.

**Résumé** — Programme de capture, de stérilisation et de remise en liberté des chats errants (harets) de l'Île-du-Prince-Édouard. Un nouveau programme s'adressant à la population féline errante de l'Île-du-Prince-Édouard a été entrepris au cours du printemps et de l'été 2001. Les chats errants provenant de régions géographiques spécifiques ont été capturés, calmés et testés pour le virus de la leucémie féline et pour le virus de l'immunodéficience féline. Les chats en santé ont été stérilisés, vermifugés, vaccinés, tatoués et remis en liberté dans leur région d'origine. Un total de 185 chats et chatons ont été capturés et testés au cours d'une période de 14 semaines; 158 chats et chatons, aussi jeunes que 6 semaines, ont été stérilisés et remis en liberté. Vingt-trois chats adultes étaient positifs au virus de la leucémie féline, au virus de l'immunodéficience féline, ou aux deux virus et ont été euthanasiés.

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### Introduction

Most communities have feral cat populations that are a source of problems and concern for community members, veterinarians, and animal control agencies. Feral cats are a subgroup of free-roaming cats: they have no owner, no dependable food source or home, and little, if any, human interaction. "Wild" cats, stray cats, and some "barn" cats fall into this group. These feral cats reproduce, compete with each other for scarce resources, transmit disease to other cats and humans, and impact the populations of small mammals and birds. The detrimental effect of feral cat populations on wildlife is estimated to be low (1); however, the information was gathered in urban areas, and the impact may be more significant in rural areas. Feral cat populations often grow to a point where they appear to reach a stable number; however, the population is not truly stable. The colonies

have high birth rates because the cats are sexually intact and have uncontrolled reproduction. They also have high death rates because of the harshness of their lives: fighting for mates, avoiding predators, competing for food, and regularly being exposed to agents of disease, such as feline panleukopenia, feline leukemia, and feline immunodeficiency viruses (1–7). The lives of feral cats may be short and difficult.

Feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV) are naturally occurring viral infections associated with the development of chronic diseases and neoplasia (8–11). Cats can become infected through contact with FeLV- or FIV-positive cats, primarily through fighting or bite wounds. Infected cats may have significantly shortened lifespans, and persistently shed virus in blood, saliva, and, in the case of FeLV, tears (8–11). Most epidemiologic studies of these potent immunocompromising diseases have focused on client-owned cat populations or populations of overtly sick animals, and results have varied depending on the geographic locale. The prevalence of FeLV and FIV infection in the feral cat population on Prince Edward Island (PEI) was not known.

When the problem of the feral cat population is addressed by a community, often the first course of action is removal and euthanasia. Eradication of feral cats in a particular area produces a vacuum phenomenon:

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population dynamics and territorial behavior encourage new animals to move into the unoccupied area, taking advantage of new territory and food sources (1,3–6). In 1999, 1600 cats were euthanized at the Prince Edward Island Humane Society (PEIHS); of this number, 75% were thought to be feral cats (personal communication, Heather Irving, Executive Director of the PEIHS, December, 2000). In spite of such high rates of euthanasia, the feral cat population on PEI continues to be a problem. A frequently applied alternative to depopulation is “trap, neuter, and release.”

Neutering of feral cats has been shown to decrease the birth rate within the population (3,5,7). One study, which involved neutering a population of 40 feral cats in a fixed geographical area, removed 32 fetuses during ovariohysterectomies performed over a 30-day period. These kittens would have been added to the colony had the neutering program not been in effect. At the 3-year census for that cat colony, 10 cats were dead or had been adopted, no new litters had been seen, and there were only 6 new cats (3). Similar trends have been seen for other feral cat neutering programs (4–7,12–16). Most feral populations are at capacity for available resources, so prevention of births results in either a decline in competition among cats and greater survivability or a general decrease in the population.

The California Veterinary Medical Association (CVMA) recently began a Feral Cat Altering Program (FCAP) with goals of reducing animal suffering and decreasing the number of euthanasias (4). The CVMA also believes it will strengthen ties between local communities, humane societies, and veterinarians. Through the FCAP, the public is encouraged to trap feral cats for neutering at local veterinary clinics; the veterinarian is reimbursed by the CVMA for costs associated with neutering. The goal of the CVMA program is to neuter 20 000 feral cats statewide every year for 3 y. There are several other community and governmental groups in North America (such as the Saskatoon Street Cat Rescue) that are involved in feral cat trap, neuter, and release programs (5–7,12–16).

This paper describes a trap, test, vaccinate, neuter, and release program, designed to decrease the birth rate within the feral cat population and decrease the stressors in their lives, that was initiated with support from the Atlantic Veterinary College Sir James Dunn Animal Welfare Centre, and the consent of the PEIHS and PEI Veterinary Medical Association.

## Materials and methods

Community groups in Charlottetown, North Rustico, and Montague, PEI, expressed strong interest in humane alternative methods to deal with their feral cat populations. Specific cat colonies in identified areas of these communities were targeted. Between May and September 2001, live traps were placed within these areas. The traps were set in shaded areas, contained food and water, and were checked regularly. Trapped animals were transported to the Atlantic Veterinary College (AVC) by student employees and housed there temporarily. Community residents were notified through flyers placed in public places (shopping malls,

mail boxes) and newspaper announcements. The flyers and announcements briefly outlined the goals of the program and notified the public regarding the areas targeted for feral cat trapping. Community veterinarians and the PEIHS were notified directly in advance of the beginning of any animal handling to ensure they were aware of trapping locations and the animal identification system employed. The public was encouraged to put collars on their pet cats, or to keep their pets inside during weeks when feral cats were being trapped in their area.

The cats were fasted overnight, then sedated with ketamine (22 mg/kg; Ayerst Veterinary Laboratories, Wyeth-Ayerst Canada, Guelph, Ontario) and acepromazine (0.01 mg/kg; Ayerst Veterinary Laboratories) or butorphanol (0.05 mg/kg; Ayerst Veterinary Laboratories) administered IM, based on estimated body weight (BW). Use of a squeeze restraint cage and leather gloves proved invaluable. A blood sample for FeLV and FIV testing was drawn from each cat into a heparinized syringe, each cat was physically examined. An ELISA to detect FeLV antigen and FIV antibody simultaneously in whole blood (SNAP combo test; IDEXX Laboratories, Westbrook, Maine, USA) was used for the FeLV and FIV testing. Cats that were healthy and negative for FeLV and FIV had their anesthesia continued with isoflurane, either through endotracheal intubation or face mask. Cats were neutered by either ovariohysterectomy or castration, dependent on sex, using routine aseptic technique and buried absorbable suture materials. Lactated Ringer's solution was administered, IV or SC, to pregnant cats. Postoperative analgesic (butorphanol) was administered, IM or SC, as needed to those cats that were expected to be in pain (following ovariohysterectomies), cats that appeared to be in pain (based on behavior and vocalization), and cats that appeared to be anxious or excited during recovery from anesthesia. During anesthesia, the cat's left ear was tattooed for future identification with an alphanumeric code, which was an individual animal identifier and represented the area where the cat was trapped, and the cat was vaccinated in the right forelimb against infection by panleukopenia, calici, and rhinotracheitis viruses, and in the right rear limb against rabies virus. A feline leukemia vaccine was not given due to cost restrictions and our inability to define FeLV as a significant disease factor, prior to gathering the FeLV and FIV infection information. Cats were given ivermectin (0.2 mg/kg BW; Merial, Baie D'urfé, Quebec), SC, as a systemic parasiticide. The handling, sedation, testing, anesthetic induction and monitoring, vaccination, and tattooing were performed by AVC veterinary students, veterinary technicians, and veterinarians. Neutering was performed by AVC veterinary students and veterinarians. Many of these individuals were volunteers. Within 24 h of surgery, the cats were returned to the area of capture and released. Feral cats showing gross evidence of severe disease, such as anemia, emaciation, severe dehydration, severe upper respiratory infections, ascites, abdominal masses, peripheral lymphadenopathy, jaundice, or central nervous system disorders, were euthanized. Cats testing positive for FeLV, FIV, or both were euthanized. Data were collected as follows: age (estimated), weight, and sex of cats trapped; location where trapped; numbers in each colony or

group; FeLV and FIV status; and general physical condition of each cat. In the future, ear tattoos may provide an opportunity for gathering information on individual animal outcomes.

## Results

In a 14-wk time period, 185 cats and kittens were trapped and brought to the AVC for testing and treatment. The sexes were evenly represented, with 89 males and 96 females. Forty-six kittens, estimated age 6 to 12 wk, were included. Of these, 24 were male and 22 were female. Eleven pregnant cats were spayed, and a total of 41 fetuses were removed during the ovariohysterectomy. Fourteen female cats were trapped with either litters of nursing kittens or significant mammary development indicative of nursing litters. Three trapped adult male cats were found to have been neutered previously. One adult female cat was presumed to be a spayed abandoned pet: she was reportedly ownerless but was very friendly and well fed. One female cat was found to have a traumatic body wall hernia (prepubic tendon rupture), which was repaired during the ovariohysterectomy. Many cats had mild to moderate upper respiratory infections and external parasites, such as fleas and ear mites. When necessary, topical flea products were used and the animal's external ears were cleaned. In total, 69 castrations and 89 ovariohysterectomies were performed, 46 of which were prepubertal. One cat developed a small SC seroma several days postoperatively; she was recaptured and the seroma was explored and closed. There were no anesthetic or surgical deaths.

All cats testing positive for FeLV or FIV were adults. Overall, 23 cats (12.5%) were positive for FeLV, FIV, or both: 5 males and 4 females were positive for FeLV, 9 males and 2 females were positive for FIV, and 3 males were positive for both FeLV and FIV. Often the cats testing positive for either viral disease had visible evidence of previous fights, such as scars, lacerations, or bite wounds. Geographic variability in the prevalence of FeLV or FIV infection was noted. One colony had 17% of cats that tested positive for one or both viruses, while 2 other widely separated colonies had no cats with positive tests. Excluding kittens under the age of 12 wk, in the adult male feral cat population, the prevalence of FeLV only was 7.7% (5/65), and FIV only was 13.8% (9/65). In the adult female feral cat population, the prevalence of FeLV only was 5.4% (4/74), and FIV only was 2.7% (2/74). The prevalence of concurrent FeLV and FIV in adult males was 4.6% (3/65); no concurrent FeLV and FIV infection was noted in adult females. In adult animals, 16.5% (23/139) were positive for FeLV, FIV, or both. When only adult males were considered, 26% (17/65) were positive for FeLV, FIV, or both.

## Discussion

Although feral cats survive with little or no help from humans, they still impact our communities and our pets. Society is becoming increasingly resistant to mass euthanasia of excess or unwanted companion animals (1,4–7,12–16); trap, neuter, and release programs are a workable and acceptable alternative to eradication programs. This method of dealing with feral cat populations

accepts that animals will occupy an area where there are available resources and works with community members towards positive solutions. It attempts to control the reproduction, improve the health, and reduce the negative impact of these cats on the humans, domestic animals, and wildlife with whom they come into contact.

Feral cats share limited resources amongst each other, leading to stress and disease. Reducing the birth rate decreases competition for food, shelter, and territory. Animal stress is reduced with less fighting for mates, and this may also reduce disease transmission. Vaccination provides an increased resistance to common feline viral infectious diseases, improving overall health and welfare. Information gathered from FeLV and FIV testing has allowed us to estimate the prevalence of infection with these viruses in the PEI feral cat population and consider the importance of this population as a reservoir and source of disease transmission.

Cats infected with FeLV have increased rates of infectious and neoplastic diseases when compared with uninfected cats. These illnesses include chronic respiratory tract infections, abscesses, feline infectious peritonitis, hemobartellosis, lymphosarcoma, and myeloproliferative disease (10). Cats infected with FIV commonly develop cellulitis, neutropenia, anemia, lymphadenopathy, and neoplasia more commonly than do uninfected cats (8,9,11). Recent epidemiologic studies have identified prevalence of infection for FeLV as 4% to 35% (5–9,17–21) and for FIV as 2.2% to 24% (9,18,19,21,22). The extreme variation in reported prevalence is dependent on the population tested (sick vs healthy), the source (feral, cattery, or pet), and the geographic location of the study (California, Texas, North Carolina, etc.). Lower disease prevalence has tended to be associated with younger, female, owned indoor cats. The only survey centered in the Maritimes found that the prevalence of infection with FIV was 7.6%; however, health status and other background information were missing in over 20% of the samples submitted (23). Fewer than half of the blood samples were tested concurrently for the presence of FeLV. In contrast with other studies, no difference in FIV status was detected between sick and healthy cats (23). A correlation between FeLV and FIV infection may exist: in 1 report, FeLV-positive cats were 4 times more likely to be FIV-positive than were FeLV-negative cats (22).

Student involvement with this program has increased their awareness of animal welfare issues regarding feral cats and provided them with additional veterinary experience, as has occurred at other veterinary colleges (Texas A & M University College of Veterinary Medicine, Western College of Veterinary Medicine in Saskatoon). The newspaper articles and flyers distributed enabled the public to be better informed about feral and stray cat population problems, perhaps allowing them to make improved decisions about their own cats. General education on this issue may encourage people to neuter their pets, provide them with collars and tags, and vaccinate them. The information derived from FeLV and FIV testing of these feral cats may improve decision making regarding the cost effectiveness of routine or selected FeLV and FIV testing by animal shelters and veterinarians.



This program introduced a novel method of addressing the feral cat population on PEI. By neutering these cats, the population may stabilize. With a lowered birth rate and vaccination against the agents of common infectious feline diseases, there will be reduced competition and improvements in the health and population dynamics of the feral cats. If this program can be continued, it may ultimately lead to a decrease in overpopulation, disease, and death among cats on PEI. *CVJ*

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