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CHARACTERISTICS OF FERAL CATS

Interactions with humans. Despite the status of cats as human companions, millions of unwanted cats are euthanized at animal shelters because homes cannot be found. The number of feral cats is unknown, but is suspected to make up 36–44% of the cat population in the US and perhaps more in other countries. Because upwards of 80% of the owned cat population is sterilized, feral cats are believed to be the single greatest source of cat overpopulation. In the US and in Italy, 8-12% of households feed cats they do not own. Although large cat colonies on public property, such as parks and institutions, often comprise the most visible and controversial cat populations, the vast majority of feral cats associated with humans live in small groups near their feeder’s homes. Caregivers report a strong bond with the feral cats they care for, even though they do not consider these cats to be their pets. Thus, the cooperation of caregivers is imperative if cat population control programs are to be effective.

Physical characteristics. In all programs that have reported data, a slight majority of cats entering spay/neuter programs are females. The first pregnancies of the breeding season appeared in January in the Northern hemisphere, and later in the spring almost half of the females were pregnant. A second smaller peak in the summer suggests second pregnancies for some females or first pregnancies for kittens from the previous year. Pyometra was diagnosed in 0.4% of females in one program. Two percent of male cats are cryptorchid. Although retained testicles are usually infertile, they are still capable of secreting testosterone, which contributes to objectionable territorial behavior, aggression, and urine odor. Thus, it is inappropriate to leave retained testicles in place. In a study of the body condition of feral cats, they were generally lean, but not emaciated at the time of sterilization. One year later cats were significantly fatter than they were at the time of neutering, indicating that feral cats, like their tame counterparts, accumulate fat following neutering. Only 0.4% of feral cats presented for sterilization were euthanatized for humane reasons.

Infectious diseases. The threat that feral cats pose to both feline and human public health is a topic of much debate. FeLV and FIV were present in approximately 4% of feral cats in the US, not substantially different than the rate reported for pet cats. The cost-benefit ratio of testing a large number of cats in order to detect the small percentage of seroreactors should be considered. Resources for treating feral cats are limited, and population control via mass sterilization should be the primary goal. For these reasons, and because sterilization reduces the behaviors most associated with viral transmission, most large programs for feral cats do not routinely test for FeLV and FIV. In Florida during the summer, 92% of cats presented for sterilization were infested with fleas, and 37% had ear mites. In California, 54% carried intestinal ascarids, compared with only 4% of 70 pet cats. Tapeworms and coccidia were found in 26% and 13% of feral cats, compared with 4% and 0% of pet cats, respectively. The same study identified a higher rate of seropositivity for Toxoplasma gondii in feral cats (20%) compared with pet cats (3%), which may reflect hunting by feral cats. Feral cats were less likely to have antibodies against coronavirus (4%) than were pet cats (59%). The feral cat behavior of burying feces may reduce the risk of coronavirus transmission compared to pet cats sharing a litter box in a multi-cat household. FeLV (0-1%) and FIV (3-5%) were uncommon in both groups of cats. Bartonella henselae (34%) was the most common infection identified in 553 feral cats in Florida. Mycoplasma haemominutum and M. haemofelis were present in 12% and 8% of cats, respectively. Other infections included coronavirus (18%), T. gondii (10%), FIV (5%), and FeLV (3%).

CONTROL OF FERAL CATS

The control of feral cats has emerged as one of the most controversial issues in animal control and welfare. Historically, feral cats have been largely ignored by both governmental and humane agencies. Individual "nuisance" cats may be removed, but few agencies have comprehensive programs designed to decrease the number of feral cats in their communities. Some animal welfarists believe the feral lifestyle is too fraught with risk and discomfort to be acceptable. Others believe that the lives of feral cats should be judged no differently than those of other species existing in a "wild" state. The growth of the "No Kill" movement has caused some leaders to re-examine traditional beliefs that killing large numbers of healthy animals to prevent potential suffering or as a method of population control can be compatible with the values of a humane society. Feral cats have been extirpated from several small uninhabited islands as a result of poisoning, hunting, trapping, and introduction of infectious feline diseases. Logistical barriers and opposition from citizens make such lethal strategies in populated areas unfeasible. Effective cat control programs must consider environmental safety, affordability, sustainability, and public aesthetics. Any realistic plan to control feral cats must recognize the magnitude of the feral cat population, the need to engage in continuous control
TRAP-NEUTER-RETURN

Trap-Neuter-Return (TNR) seeks to sterilize large numbers of feral cats and return them to their colonies. A TNR program in Florida was successful in reducing the feral cat population during an 11-year period. Before the initiation of the program, feral cats were considered by campus authorities to constitute a nuisance. Periodic trap and removal efforts were made when excessive cat numbers prompted complaints about noise and odor, but employees and students openly violated policies against feeding the cats and interfered with trapping efforts. The TNR program incorporated neutering, euthanasia of sick animals, and adoption of socialized cats. As a result of deaths, disappearances, and adoptions, the known maximum cat population of 68 decreased to 23 cats. Most cats still remaining on site had been present for > 6 years. Most cats that disappeared, died, or were euthanatized for debilitating conditions had been present for at least 3 years. In general, the cats were in adequate physical condition and only 4% were euthanatized for humane reasons. Newly arriving sexually intact cats periodically joined the colonies; their presence could have undermined the control program had they not been promptly captured and neutered. These results indicate that long-term reduction of feral cat numbers is feasible by TNR.

Of critical importance to the success of TNR for feral cat control is creation of programs with enough capacity to sterilize large numbers of cats. Populations can be estimated at approximately 1 feral cat for every 2 households in a community. Given the fecundity of cats, programs must be capable of sterilizing thousands of feral cats in a community each year, not hundreds. Few existing programs have been able to reach this scale. Program organizers should focus on a “herd health” approach to feral control, and not treat feral cats the same as individual pets. Thus, organizers will be faced with difficult decisions about how to invest scarce resources for the maximum benefit. The largest TNR programs in the US have discontinued retrovirus testing, relocation programs, and cat taming efforts in favor of increasing the capacity to spay and neuter more cats. Several communities in the US have reached "No Kill" status through aggressive sterilization and adoption programs for dogs and cats. Each of these has also included feral cat TNR programs as part of a holistic approach to ending pet overpopulation.

VETERINARY PROCEDURES FOR STERILIZING FERAL CATS

Safety first. Feral cats have an uncanny ability to escape during handling, and can inflict serious injury during recapture attempts. The safest method for handling feral cats is to admit them only in wire humane traps. The traps are escape-proof, and anaesthetic is easily injected through the wire mesh. The traps should not be opened until the cats are recumbent. At the completion of surgery, the cats are returned to their traps before awakening. With this system, cats are never handled awake.

Admissions. Caregivers should be informed in advance how to safely capture and transport a feral cat. An agreement should be reached at the time of admission about how to proceed if unanticipated health problems are detected once the cat is anesthetized. Caregivers should not leave food in the traps, but it must be recognized that food is required to bait the traps, and that some cats may have eaten within a few hours of surgery.

Anesthesia and surgery. Injectable anesthetics are preferred for feral cats because they can be administered to cats still in their traps and there are no waste gases. A convenient cocktail is made of Telazol (tiletamine-zolazepam (dry 500 mg vial) reconstituted with 5.5 ml ketamine (100 mg/ml) and 1.25
ml xylazine (100 mg/ml). Since the feral cats cannot be safely handled for body weight measurements prior to anesthesia, a system has been developed for dosing average adult cats (2.5-4 kg) and kittens (1.5-2 kg). Although smaller kittens can be safely sterilized, the mass clinic is not an optimal environment for kittens less than 3 months of age (1.5 kg). Selecting this minimum age also assures that feral kittens undergoing sterilization can also receive a valid rabies vaccine at the time of surgery. "TKX" is dosed at 0.25 ml IM for average sized cats, 0.3 ml IM for large toms and advanced pregnancies, and 0.15 ml for kittens. In addition, buprenorphine (0.03 mg for adult cats, 0.015 mg for kittens) is given to all cats undergoing surgery for analgesia. This system has been used on more than 30,000 feral cats with a remarkable safety record of 3 deaths per 1,000 cats. Once asleep, cats are removed from their traps and identified. An antibiotic injection and eye lubricant are administered. Routine preparation for aseptic surgery is performed. Cats may be spayed by either a midline or left flank approach. The flank approach offers slightly increased surgical efficiency and reduced risk of evisceration should an incisional complication occur following release. It is ideal for lactating cats, but cats with advanced pregnancy are more easily spayed via a midline approach.

**Ear tipping.** Feral cats may interact with a variety of caregivers, veterinarians, and animal control personnel during their lives, so it is important is that a universal method of identifying sterilized animals is used. Ear tipping is the only fully reliable method and is recognized internationally. Tipping is preferred over notching, because notches may be confused with irregular pinnae caused by fight wounds, frost-bite, and ear mites, whereas the tipped ear creates an unmistakable characteristic silhouette. Tattoos and microchips may be used to identify individual cats, but this must be done in addition to ear tipping, because they cannot be read without handling the cat. Ear tipping is performed by clamping a haemostat across the pinna approximately 1 cm from the tip, then trimming off the ear tip. This results in an unmistakable silhouette easily observed from a distance.

**Vaccination and parasite control.** Rabies vaccines should be administered to all cats undergoing TNR if rabies is endemic in the region. Cats should also be vaccinated against panleukopenia, herpesvirus, and calicivirus. Feral cats are usually unavailable for booster vaccines, but still benefit from a single immunization given at the time of surgery. Feral cats are frequently returned to their original multi-cat environment, and the advantage of a single treatment for parasites is uncertain. Depopulating parasites in kittens, even transiently, may reduce the physical stress kittens experience following weaning.

**Recovery.** Prior to awakening, cats should be returned to their traps to recover in a quiet warm place and monitored until awake. All cats should be left in their traps overnight following surgery. If fully recovered the next day, they may be released to their colony. Even though complications are uncommon, procedures should be in place for the management of medical emergencies.

**References**
