

# CARING FOR FERAL CATS IN THE CLINIC

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Trap-neuter-return programs, which involve humanely trapping feral cats so that they can be vaccinated and spayed or neutered, are an effective method of controlling feral cat populations.



**A**lthough the veterinary community has played a major role in promoting and performing spaying and neutering of owned pets, services for feral cats have lagged. Feral cats and their offspring are victims of abandonment and accidental loss. Their plight is the result of pet owners allowing their cats to roam or failing to spay or neuter their cats before they produce even one litter. In 2000, the estimated number of feral cats in the United States approached 73 million.<sup>1</sup>

Feral cats are a subcategory of free-roaming cats that are not socialized to people, may be one or more generations removed from a home environment, and may live in a group, or colony, of similar cats. Other subcategories of free-roaming cats are strays, including previously owned cats that have been lost or abandoned and neighborhood cats fed by several people but truly cared for by none, and owned cats that are allowed to roam. Almost 40% of suburban and urban cat owners (and a much larger percentage of rural cat owners) allow their cats to roam some of the time.<sup>2</sup> These cats are at risk for becoming stray and feral and for having kittens that – if they survive (the mortality rate of feral kittens may be as high as 75%<sup>1,3</sup>) – will become feral without early socialization to humans. Feral and stray cats produce approximately 80% of the kittens born each year and are the most important source of cat overpopulation.<sup>1</sup>

## REDUCING FERAL CAT POPULATIONS

Although the sterilization rate for pet cats is high in the United States (82% to 91%<sup>1,2</sup>), many cats in some parts of the country have litters before they are sterilized for numerous reasons, including:

- The owners could not afford the procedure.
- The owners thought the cats were too young to get pregnant.
- The owners did not make sterilization a priority.
- The pets were indoor cats that escaped.
- The owners thought the cats could not become pregnant because they were still nursing kittens from a previous litter.

Sterilizing cats before they have even one litter can greatly reduce the number of homeless cats. However, any strategy will fall short if emigration

from the owned cat population continues. The AVMA's June 2005 position statement on free-roaming, owned cats "strongly encourages owners of domestic cats in urban and suburban areas to keep their cats indoors."

Currently, the management program known as *trap-neuter-return* (TNR) is considered the best strategy for reducing the feral cat population, and veterinarians and their staff play a critical role in its success. The goals of TNR are to maximize the quality of life for cats in an existing colony and to reduce or eliminate the colony through attrition. The second goal is achieved by ensuring that colony members that die are not replaced by new members, which can be accomplished by removing kittens and friendly adults (usually recently lost or abandoned stray cats) for possible placement in homes, euthanizing animals when their suffering cannot be alleviated, and regularly monitoring colonies for the arrival of new members.


## SOURCES OF CARE FOR FERAL CATS

Some veterinary professionals care for feral cats as a community service. Others get involved because they object to killing healthy animals or believe that methods used in the past, such as ignoring feral cats or trapping and removing them, are not effective or humane strategies for reducing the number of feral cats in their communities.

Courtesy of Bryan Kowitz/Neighborhood Cats

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Animal care and control agencies may respond to nuisance calls about cats that fight, yowl, spray, and reproduce by trapping a number of these cats. However, these agencies do not have the staff, time, or money to proactively trap and remove, shelter, and euthanize large numbers of feral cats. In most cases, feral cats brought to shelters by the public are deemed unadoptable; therefore, it is doubtful that volunteers could be enlisted to humanely trap these animals knowing the cats will be euthanized.

Many concerned citizens feed feral cats; however, they often do not understand the consequences of not doing more for these animals. If they do come to the realization that these cats need more care, they either cannot find the necessary services or they cannot afford them. Other concerned citizens learn about TNR and are willing to take on the expenses of surgery, vaccinations, food, and supplies and ongoing management of the feral cat colony. These caretakers become regular clients of local veterinary practices. In fact, many may already be well acquainted with veterinary clinics because they have pets of their own – households that feed free-roaming cats are 40% more likely to own at least one cat than households that do not feed such cats.<sup>4</sup>

### WORKING WITH FERAL CATS

It is important for the veterinarian and his or her staff to educate themselves about the plight of feral cats and how to work with them. In addition to obtaining information from resources such as Web sites, videos, books, workshops, and conferences, veterinary professionals can get practical experience by working with veterinarians and staff who provide services for feral cats or by participating in a feral cat clinic. Groups such as Neighborhood Cats (a nonprofit group in New York) and Operation Catnip (a nonprofit organization with chapters in Raleigh, North Carolina; Gainesville, Florida; and Richmond, Virginia) that specialize in manage-

ment of feral cats through TNR can also be good sources of information.

Regardless of how many feral sterilizations an individual veterinary practice provides, the effort will prove valuable as long as the procedures are performed on a consistent basis. Bryan Kortis, director of Neighborhood Cats, says, "In a community with a few hundred feral cats, a private veterinarian network with the capacity to sterilize even five cats a week will mean a substantial percentage of the population will be neutered within a year. Even in communities with much larger feral populations, the willingness of private veterinarians to handle a small number of cats on a consistent basis will allow the program to get under way while other efforts to increase spay/neuter capacity are pursued."<sup>a</sup>

Technicians can contribute greatly to the provision of services for feral cats. According to Julie Levy, DVM, PhD, DACVIM, "Technicians, acting as coordinators, can do all the client education (e.g., how to use traps, presurgical withholding of food, postsurgical care), control the work flow, do all the animal handling, and make it easy for veterinarians to provide services for feral cats."<sup>b</sup>

The veterinary practice's hands-on role in TNR generally begins when a client shows up with one or more trapped cats; however, advance planning is wise and makes working with feral cats easier and more rewarding. The staff should provide feral cat caretakers with written guidelines on humane methods of trapping feral cats, including when to withhold food and water, how to identify traps, and which traps are acceptable, as well as the practice's hours of operation, charges for routine and other procedures, payment plans, handling of unexpected findings (e.g., cryptorchidism, pyometra, illness, injury, pregnancy, positive FeLV/FIV

<sup>a</sup>Kortis B: Personal communication, Neighborhood Cats, New York, 2006.

<sup>b</sup>Levy JK: Personal communication, College of Veterinary Medicine, University of Florida, 2006. In addition, Dr. Levy is co-founder of the nonprofit organization Operation Catnip in Gainesville, Florida.

## Resources

### Programs

For a list of veterinarians in your area who care for feral cats, contact SPAY USA (800-248-SPAY; [www.spayusa.org](http://www.spayusa.org)) or Friends of Animals (800-321-PETS; [www.friendsofanimals.org](http://www.friendsofanimals.org)). Information on local voucher programs may be obtained from animal shelters and humane organizations serving your region.

### Publication

Slater MR: *Community Approaches to Feral Cats*. Washington, DC, Humane Society Press, 2002.

### Videotapes

*Left Lateral Flank Spay* – Available through the National Humane Education Society by calling 304-724-6558.

*Working with Feral Cats in Practice (Lemarr W, Griffin B)* – Order form can be obtained at [www.vetmed.auburn.edu/index.pl/educational\\_videos](http://www.vetmed.auburn.edu/index.pl/educational_videos); there is a \$15 donation fee.

### Web Sites

[www.alleycat.org](http://www.alleycat.org) – Information is provided on how to care for feral cats, how to start and organize a TNR program, and how to change public policy.

[www.azcats.org](http://www.azcats.org) – The site's resource center has downloadable literature, frequently asked questions, links to other TNR programs and animal rescue organizations, and low-cost spay/neuter information.

[www.humanesocietyu.org/workshops\\_and\\_classes/tnr.html](http://www.humanesocietyu.org/workshops_and_classes/tnr.html) – The site offers a self-paced online feral cat colony caretaker course.

[www.neighborhoodcats.org](http://www.neighborhoodcats.org) – Information that encompasses all aspects of managing a feral cat colony and implementing TNR can be downloaded.

[www.petsforlife.org](http://www.petsforlife.org) – Cat behavior tip sheets are provided in English, French, and Spanish for fosterers and adopters of feral cats.

[www.vetmed.auburn.edu/index.pl/clinic\\_forms](http://www.vetmed.auburn.edu/index.pl/clinic_forms) – Sample release forms are provided.

test results), and criteria for euthanasia (because a feral cat cannot be examined until anesthetized and often has an unknown health history [unless the same person has been caring for the cat for a long time]). Caretakers should sign an agreement/release form acknowledging that there may be increased risks of anesthetic and surgical complications.

One complaint veterinarians often have about feral cat caretakers is that they believe their needs should take precedence over the normal day-to-day operations of the clinic. In fact, the caretaker is the one who must learn to accommodate the veterinarian's routine if he or she expects continual dis-

counted veterinary services. Like other clients, some caretakers may try to take advantage of a veterinarian's generosity and compassion. On the other hand, the veterinarian and his or her staff should understand that caretakers are taking personal responsibility and using their own funds to care for cats that would otherwise suffer and continue to reproduce. Practices may provide affordable services to caretakers by accepting vouchers or coupons for subsidized sterilization and, because feral cats may be difficult to trap during a particular time frame, accepting rain checks for subsidized procedures done outside the hours set aside for them.

## HANDLING FERAL CATS

Feral cats should not be handled unless they are under a surgical plane of anesthesia. They should be brought to the practice in individual traps covered with a sheet to minimize stress. Cardboard carriers are not acceptable because they allow cats to escape easily. Lobster boxes, laundry baskets, pillow cases, and bird cages are also unacceptable containers.

Most cages used in veterinary practices are not suitable for holding feral cats; therefore, if a feral cat needs to be placed in a hospital cage, it should be put in a feral cat den or handler,<sup>c</sup> which should then be placed in the cage. Without the covered, dark space the smaller box provides, the cat will not feel hidden and will remain frightened and stressed. The feral cat den is ideal because it has a round door that can be tipped open or shut through the bars of the cage; however, if this type of box is not available, the cat may be housed in a small, solid carrier before being placed in the cage. The door to the feral cat den or small carrier should always be shut through the bars of the cage before the cage door is opened so that the cat does not get out. If a suitable box or carrier cannot be obtained, part of the cage should have a towel or sheet draped over it so the cat feels that it can hide.

Any carrier, cage, or trap containing a feral cat should be identified to ensure the safety of staff and others who may come into contact with it, including clients, drug representatives, and service personnel. For example, a prominent warning reading "Do not approach, this cat bites!" may be attached to the container housing the cat.

All staff working with feral cats should be trained regarding safety. They should wear padded gloves, have protective titers against rabies virus, and handle only cats that are anesthetized.

<sup>c</sup>Feral cat dens (Animal Care Equipment & Services, Inc., Denver) and handlers (Tomahawk Trap Company, Tomahawk, WI) are small carriers with portholes. They are designed to provide a safe, quiet hiding place for cats.



▲ Ear tipping (surgically removing the tip of a feral cat's ear) is an essential method of marking a sterilized feral cat so that it can be identified in the future.

If transferring an awake feral cat to different housing is unavoidable, it should always be done in a closed room with a solid ceiling because cats can rapidly go through a suspended-tile ceiling. Although some staff members are adept at using gloves, towels, or thick blankets to catch fractious cats, this technique should not be used to restrain a feral cat because it is not only unsafe for staff but also very stressful for the cat. A more appropriate way to catch a feral cat is with a special net that staff members have been trained to use correctly. The net should have small mesh and should be closable once the cat is either in or under it. If the cat escapes to an inaccessible place, tuna in oil, sardines in oil, or mackerel should be placed in a humane trap, with water available outside the trap.

### ANESTHETIZING FERAL CATS

A quiet area should be prepared where a feral cat can be held in a trap before and after surgery. Providing a 15- to 30-minute "cool-off" period after the cat's arrival decreases stress and may provide for a smoother anesthetic induction.

### Anesthetic Agents

A cocktail known as TKX (tiletamine-zolazepam, ketamine, and xylazine) is one anesthetic agent commonly

used in feral cats. TKX is relatively inexpensive, requires only a small dose for anesthetic effect, is predictable, and causes few deaths. The agent is prepared by reconstituting one vial of dry Telazol (500 mg) with 4 ml of ketamine (100 mg/ml) and 1 ml of large-animal xylazine (100 mg/ml). TKX is administered IM in a dose of 0.25 ml/cat, with a maximum dose of 0.3 ml/cat; small kittens<sup>d</sup> may be given 0.1 to 0.15 ml. Vomiting is uncommon, recumbency usually occurs in 3 to 5 minutes,

and 30 to 60 minutes or more of anesthesia is provided. If reversal of the xylazine component is needed, yohimbine (2 mg/ml) 0.3 ml/cat may be administered IM or IV; another dose may be given after 30 minutes if results are inadequate. If additional anesthetic time is needed, isoflurane should be given via facemask. Some drawbacks to administering TKX are poor postoperative pain control, decreases in body temperature and blood pressure, and prolonged periods of sedation (i.e., cats may remain sedated until the following morning).<sup>5</sup> Use of a lower dose of TKX for immobilization and administration of gas anesthesia by mask may shorten the recovery time but may also increase the safety risks to personnel.

Another cocktail that may be used is KDT (ketamine, medetomidine, and butorphanol [Torbugesic, Wyeth]). This agent is prepared by combining 10 ml ketamine (100 mg/ml), 1.0 ml medetomidine (1 mg/ml), and 3 ml butorphanol (10 mg/ml) in an empty 15-ml vial. An average-sized cat requires 0.6 ml of KDT IM; slightly more or less may be given depending on the cat's weight. Reversal is accomplished with atipamezole hydrochloride (Antisedan,

<sup>d</sup>Kittens must be at least 3 months of age to go through many TNR programs because only then can they get a legally valid rabies vaccine.

## Tips for Caring for Trapped Feral Cats<sup>a</sup>

- For the safety of all concerned, feral cats should be left in their traps during their stay at the practice – whether it is for a day or several days. **Do not attempt to transfer a feral cat to a cage unless the cat is in an appropriate feral cat den or carrier.**
- **Feral cat traps should be 36 inches long and be covered with a light cotton sheet.** Contrary to misconceptions about this type of confinement being inhumane, feral cats prefer tight, dark spaces and become frightened in large, open ones. Therefore, the trap will help the cat feel more secure and hidden.
- **The trap should be cleaned and fresh food and water provided twice daily.** Use caution when performing these tasks.
- **To get a cat to move from one end of the trap to the other, remove the sheet from the end the cat needs to vacate.** This action should send the cat to the other end of the trap in search of cover. If it does not, poke the cat gently with a trap divider or dowel, or give the trap a little shake.
- **To confine a cat to one end of the trap, lower a divider through the bars from above and then a second divider right behind the first,** also from above. Two dividers should be used because an aggressive cat can push aside the tongs of a single divider and escape, especially if the divider is not inserted correctly. For an even greater margin of safety, lower one divider from the top and insert the second one horizontally through the trap from the side.
- While the cat is isolated in the rear of the trap, line the floor of the front end with newspaper using the trap door for access. Next, isolate the cat in the front of the trap and line the floor of the back end using the rear door for access. **Spreading newspaper on the floor of the trap is more effective than using regular cat litter and a pan,** which the cat will most likely use to create an even bigger mess.
- After isolating the cat at the clean end of the trap using dividers, **provide dishes with food and water at the other end.** Providing these items last will keep the cat from spilling them while the other end of the trap is being cleaned.

<sup>a</sup>Adapted from Neighborhood Cats: Information/How To. Accessed June 2006 at [www.neighborhoodcats.org](http://www.neighborhoodcats.org).

Pfizer Animal Health, 5 mg/ml) at a dose of 0.2 ml/cat IM. Use of this agent may require buprenorphine to be given postoperatively for pain control.

### How to Deliver Anesthesia

Because feral cats should never be handled while they are awake and because of the escape risks involved in transferring cats from one container to another, it is best to inject the anesthetic agent into the cat between the wires of the trap. To accomplish this task, the covered trap is placed on an examination table with the trap door

facing up. A long, slender wooden dowel is then passed into the trap toward the cat. When the cat backs away from the dowel and presses its hind end against the side of the cage, the intramuscular injection can be given. Trap dividers may be used instead of a dowel to confine the cat at one end of the trap.

### INITIAL ASSESSMENT AND PROCEDURES

#### Checking for Identification

On initial examination, cats should be scanned for microchips and checked

for tattoos to determine whether they are owned and may have been trapped inadvertently.<sup>b</sup> If the veterinarian finds a microchip or tattoo, he or she should attempt to reach the cat's owner (sometimes it is impossible to locate the owner even if the cat has a microchip). It is the responsibility of each veterinary professional to find out what the identification standards are in his or her area for a TNR program. If the policy is to tattoo the cat, the equipment must be sterilized after each use to prevent transmission of disease.

### Ear Tipping

During preparation for surgery, the tip of the cat's ear (usually the left ear) should be surgically removed (this practice is known as *ear tipping*). The silhouette of a tipped ear can be seen from a distance and is the recognized symbol of a sterilized feral cat. When choosing which ear to tip, the local standard should be followed; for example, in California and Oregon, the right ear is tipped.

Ear tipping is important because an ear-tipped cat that is retrapped can be released immediately. Dr. Levy tips the ear of every cat brought to her feral cat clinic, even if there are plans to find a home for the cat.<sup>b</sup> In her experience, such plans often fall through and the cat returns to the outside world without a tipped ear. On the other hand, Dr. Levy has never had a tipped ear interfere with an adoption.

Ear tipping is performed as follows:

- Swab the ear with antiseptic, and place a straight hemostat across the pinna.
- Using sterile sharp scissors or a laser, remove the top ¼ inch of the pinna in a straight line. Removing too much of the pinna results in an ear that looks cropped, which may be undesirable to the caretaker; removing too little makes identification from a distance difficult.
- Keep the hemostat in place for a few minutes to allow time for clotting.

Oozing of blood from the pinna can be controlled with styptic powder or surgical glue. Notching should not be substituted for tipping because notched ears may resemble ears tattered by fighting.

If it is apparent that the cat is a stray, Dr. Levy still tips the cat's ear.<sup>b</sup> In the handful of cases in which an owner did appear later and complained about the ear tipping, the program (in this case, Operation Catnip) was protected because local ordinances require all cats to wear a rabies tag and to remain on their owner's property.

## SPAYING AND NEUTERING

A long-lasting antibiotic, such as penicillin G benzathine–penicillin G procaine, may be given subcutaneously before surgery. An eye lubricant that does not contain an antibiotic should be applied to the eyes to protect them and prevent them from drying out.

### Spaying

Ideally, feral cats should be spayed only by an experienced surgeon capable of sterilizing the patient in a short time. Ventral midline or left lateral flank incisions should be small. Intradermal sutures should be used instead of skin sutures so that the cat does not pull them out. Dissolvable sutures may be used internally, and surgical skin glue may be used externally. Another option is to use 5-0 stainless-steel wire to close the linea. The wire is easy to use, will not untie, and causes little tissue reaction. Cats are less likely to disrupt these incisions, whereas gut sutures in the subcutaneous layer may cause inflammation and encourage chewing.

A left lateral flank approach allows the caretaker to monitor the cat's incision from a distance, and, if dehiscence occurs, evisceration is less likely. A major disadvantage of this approach, however, is the inability to explore the abdomen if intraoperative complications occur or if confirmation of a previous spaying is needed. Although a flank approach is appropriate for lactating queens, it is not

recommended for pregnant cats because this approach is too small. For these cats, the ventral midline approach should be used.

According to Dr. Levy, half of all female feral cats will be pregnant in the spring.<sup>6</sup> Therefore, the practice should schedule longer surgery times during this season so that staff will have time to deal with a pregnancy if it is discovered during surgery. Cats that are pregnant or dehydrated should receive 100 to 150 ml of fluids SC. If kittens are near term, the uterus can be removed and injected with euthanasia solution. Euthanasia is selected for many reasons, including the large number of pregnant cats in the spring, the difficulties of fostering a feral mother cat while her kittens are being raised, and the poor chances of recapturing feral kittens if the pregnant mother is released. Because it is unlikely that the staff will be able to contact the caretaker if a pregnancy is discovered during spaying, all caretakers should be provided with guidelines explaining the practice's policy with regard to pregnant cats and should sign a written agreement before leaving a cat for TNR.

### Neutering

Dr. Levy has found that 2% of male feral cats are cryptorchid.<sup>6</sup> These cats require surgery to remove the retained testicle because it can still produce testosterone, which contributes to objectionable behavior such as spraying and fighting. The technician preparing a cryptorchid cat for surgery should attempt to determine if the retained testicle(s) is palpable in the inguinal or abdominal region. Inguinal testicles can be retrieved via a small skin incision. Cats with abdominal testicles, however, need to be prepared as for a spay (extending the prepared area to include the inguinal and scrotal area). It should be noted that bilateral cryptorchid cats look like neutered cats. The penis can be exteriorized to look for penile spines, which regress in neutered cats but are present in cats with a source of testosterone.

## Innovative Shelter Medicine Programs

In the first year of the University of Florida's new shelter medicine program, veterinary students spayed and neutered more than 200 feral cats. The shelter medicine program is a clinical rotation in which veterinary students learn about the special problems – including infectious diseases, abuse, and overpopulation – faced by animals in shelters and in the care of rescue groups. Students spend 3 days at the veterinary school; on the other 2 days, they travel to the Alachua County Animal Services shelter, where they perform spaying and neutering procedures on and administer heartworm treatment to rescued animals being prepared for adoption. As part of the shelter medicine program, students learn how to work safely with feral cats in TNR programs. When these students graduate, they will take their knowledge of feral cat medicine with them throughout the United States.

In addition to the program at the University of Florida, shelter medicine is also part of the curriculum at Cornell; University of California, Davis; Auburn; Iowa State; Oklahoma State; Ohio State; and the University of Pennsylvania. The University of Florida, Auburn, North Carolina State, Texas A&M, and the University of California, Davis, are among a handful of veterinary schools that sterilize feral cats from their campuses or for their communities.

## POSTSURGICAL TREATMENT

A broad-spectrum dewormer should be given and an external parasite control administered. In addition, a one-time application of an ear mite product may be applied. According to Dr. Levy, it is important to control fleas and internal parasites in kittens because they are more vulnerable to these organisms than are adults.<sup>b</sup> However, care must be taken when treating kittens with certain products because it can be tricky to properly dose such small amounts of drugs, and overdosing can result in toxicity.

Some practices administer an FVRCP (feline viral rhinotracheitis, calicivirus, panleukopenia) vaccine; others forgo this step to avoid further stressing the cat and because they feel the cat is unlikely to receive the booster recommended by the vaccine's manufacturer. However, a study by Dr. Levy<sup>1</sup> showed that cats that were retrapped 2 to 3 months after receiving a live-virus or inactivated FVRCP vaccine and an inactivated rabies vaccine had outstanding immune responses. Therefore, she believes that a cat that is vaccinated as an adult will have long-term protection against infection. Dr. Levy

strongly recommends vaccinating feral cats with an FVRCP vaccine as well as a rabies vaccine if the TNR program can afford it.<sup>b</sup> Vaccines should be given after surgery because an adverse reaction (e.g., anaphylaxis) will more likely be noticed when the animal is waking up rather than while it is under anesthesia.<sup>4</sup>

Any decayed teeth should be removed after surgery. Any wounds or ear and eye infections should also be treated. Drains should not be placed because recapturing the cat for drain removal is unlikely. Dissolvable sutures should be used to close any wounds.

Although NSAIDs have been gaining popularity for pain control in cats, these agents may predispose feral cats to acute renal failure if they are hypotensive from anesthesia, dehydrated, or debilitated. Narcotics (e.g., buprenorphine) provide the best postsurgical pain control in feral cats.

## TESTING FOR FeLV AND FIV

If the TNR program has the resources, feral cats may be tested for FeLV and FIV. The TNR program's policy on how to handle cats that test

positive should be explained in the agreement/release form. The incidence of these diseases in feral cats is only about 4%,<sup>1,7,8</sup> similar to that in the owned cat population. According to the American Association of Feline Practitioners 2004 position statement on free-roaming and abandoned cats, "Services can be prioritized when resources are limited. The largest feral cat programs offer only sterilization, ear-tipping, and rabies vaccination on the premise that effective cat control will also reduce the transmission of infectious diseases."

The health status of a feral cat should be determined after the cat has been anesthetized and examined thoroughly. Animals with injuries or illnesses that cannot be entirely treated at sterilization or during confinement afterward should be euthanized through an intravenous injection.

## CARING FOR KITTENS

Ideally, feral kittens younger than 8 weeks of age should be socialized and homed. Older feral kittens may bond to the person who tames them but be wary of others and therefore may require a special adopter. Feral cats and kittens usually get along with other cats and should be placed in homes in which another cat lives or be adopted in groups of two or more. Feral kittens that cannot be socialized due to lack of resources can be returned to the colony after sterilization.

Prepubertal sterilization may be performed on kittens weighing at least 2 lb. It is important to check local and state laws before administering rabies vaccinations. Because of their high susceptibility to disease, kittens should be vaccinated against panleukopenia, herpesvirus, and calicivirus with live-virus vaccines, which provide faster immunity with a single vaccination than do inactivated vaccines.

## RECOVERY

After surgery, cats should be returned to their traps, which should be clean and have the bottom lined with paper to provide insulation and

protection. The traps should be placed on a thick plastic drop cloth to catch any waste that escapes from the traps, and the traps should be covered with a sheet to reduce stress. Cats are generally in sternal recumbency within 2 hours and may try to escape or bite; therefore, extreme caution must be used when feeding them or changing soiled newspaper. Timid cats may be encouraged to eat if their traps are positioned so that food and water bowls are near the wall. Feral cats should not be kept in a ward that routinely houses owned cats.

When they are fully conscious, cats that are not to be hospitalized overnight should be released with discharge instructions to their caretakers. The cats should be held in a warm, quiet, dry garage or other protected area until fully recovered (generally overnight). Recommended holding times for male cats vary from as soon as fully ambulatory to 48 hours; female cats may need 24 to 48 hours (or less for mothers nursing kittens). Cats frequently are not fully recovered until the following morning; however, caretakers should be encouraged to contact the practice if a cat is not fully conscious after a designated time. Cats should be fed a meal when they are fully awake and another one before their release. Since many cats are too scared to eat while in the trap, just releasing them is the best approach. Kittens should be fed when awake and should not be fasted more than 4 hours before surgery because they do not tolerate fasting well.

Feral cats should be returned to their original location as long as it is safe for them to live there (e.g., they should not be returned to a building that will be demolished or to an area that is being developed) and the potential negative impact on wildlife is minimal. Relocating colonies is a difficult process and should not be attempted unless absolutely necessary.

## CONCLUSION

It is important for veterinarians and their staff to not only learn how to work with feral cats and their caretak-

ers but also understand why they should. It is critical that communities provide adequately funded neutering assistance programs for low-income pet owners and feral cat colony caretakers and that animal shelters sterilize pets before they are adopted.

Client education and the veterinary community's participation in TNR programs are essential to reducing the number of cats in feral colonies. By educating cat owners about the reproductive capabilities of their pets, the importance of sterilizing their cats before they produce even one litter, the need to keep their cats indoors, and the importance of providing identification for their cats, the veterinary community can greatly prevent suffering and improve the quality of life for all cats.

## REFERENCES

1. Levy JK, Crawford PC: Humane strategies for controlling feral cat populations. *JAVMA* 225(9):1354-1360, 2004.
2. Levy JK, Woods JE, Turrick SL, Etheridge DL: Number of unowned free-roaming cats in a college community in the southern United States and characteristics of community residents who feed them. *JAVMA* 223(2):202-205, 2003.
3. Nutter FB, Levine JF, Stoskopf MK: Reproductive capacity of free-roaming domestic cats and kitten survival rate. *JAVMA* 225(9):1399-1402, 2004.
4. Levy JK, Fisher SM, Quest CM: Serological responses of feral cats to vaccination in trap-neuter-return programs. *J Vet Intern Med* 20:711, 2006.
5. Cistola AM, Golder FJ, Centonze LA, et al: Anesthetic and physiologic effects of tiletamine, zolazepam, ketamine, and xylazine combination (TKX) in feral cats undergoing surgical sterilization. *J Fel Med Surg* 6:297-303, 2004.
6. Scott KC, Levy JK, Crawford PC: Characteristics of free-roaming cats presented for sterilization. *JAVMA* 221:1136-1138, 2002.
7. Lee IT, Levy JK, Gorman SP, et al: Prevalence of feline leukemia virus infection and serum antibodies against feline immunodeficiency virus in unowned free-roaming cats. *JAVMA* 220(5):620-622, 2002.
8. Scott HM, Lachtara JL, Crawford PC: Seroprevalence of feline leukemia virus and feline immunodeficiency virus infection among cats in North America and risk factors for seropositivity. *JAVMA* 228:371-376, 2006. 