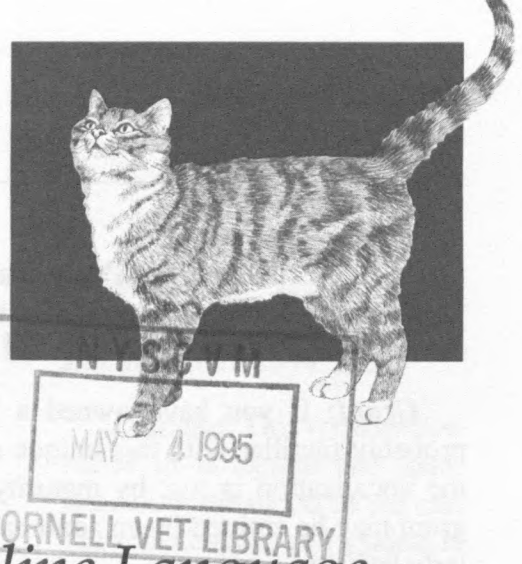


Perspectives On Cats

A Newsletter for Cat Fanciers
From The Cornell Feline Health Center

Spring 1995



The Cat's Meow: A Lesson in Feline Language

For centuries man has pondered the ability of cats to communicate with people and the ability of people to understand the nuances of cat language. This type of study is called zoosemiotics. Zoosemioticians study the form, content and context of animal communications. Historically, it could be said that Montaigne (1533-1592), Dupont de Nemours (1739-1817) and Chateaubriand (1768-1848) were the forefathers of zoosemiotics.

Montaigne stated that, "It is manifestly evident that there is among cats a full and entire communication, and that they understand each other."

Dupont de Nemours tried to penetrate the mysteries of animal language. He commented that, "Those who utter sounds attach significance to them; their fellows do the same, and those sounds originally

inspired by passion and repeated under similar recurrent circumstances, become the abiding expressions of the passions that gave rise to them."

It was Dupont de Nemours research into animal language that caught the interest of Chateaubriand. According to Chateaubriand, "The cat has the same vowels as pronounced by the dog, and with the addition of six consonants—m, n, g, h, v, and f. Consequently, the cat has a greater number of words than the dog." Alphonse Leon Grimaldi, a nineteenth century French professor, concurred with Chateaubriand's observation, since he claimed that cats had a language that contained about 600 words. Even Darwin stated that some animals have the power of language, even if only rudimentary when compared to human language.

These historical accounts are intriguing, but what does the modern literature say about cat language? Do we know anything about cat communication, or are we merely imposing anthropomorphologic qualities on cats?

M-E-I-O-U

Extensive observations of feline vocalization patterns were made by Moelk in the 1940s. Moelk described three different vocal patterns based on how the sound was produced: murmur patterns, vowel patterns, and strained intensity patterns. Within each category, various distinctive sounds can occur. Typically the vowels used are *a*, *e*, *o*, and *u*. The consonants are *g*, *h*, *m*, *n*, *r*, *t*, and *s*. Table 1 provides a phonetic listing of cat vocalizations.

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Murmur Patterns

These vocalizations are produced when the mouth is in the closed position.

Grunt: If you have owned a kitten, you are probably familiar with this unique sound. Usually, the vocalization is lost by maturity, however, the grunt may be emitted by an adult cat if it is particularly baffled.

Purr: This sound is the most endearing and magical of all the sounds created by the cat. Over the centuries many theories, from mythical to scientific, have been purported to explain this unique sound. Currently, the theories used to explain the purring phenomenon are based on aerodynamic or hemodynamic concepts.

The aerodynamic theory is based on the activation of the laryngeal muscles by partial closure of the glottis (the elongated space between the vocal cords)

and increased bursts of pressure across this area for 20- to 30-milliseconds. The increased buildup of pressure creates the vibrations associated with the purr.

The hemodynamic theory suggests that the vibration is caused when the vena cava (primary vein) is constricted by the contraction of the diaphragm. This constriction causes turbulence in the blood that is resonated and amplified through the bronchial tubes and the trachea to the sinus cavities in the head.

The purr is usually considered a contented communication and occurs in the presence of other cats and humans. The purr is also used to help in feline social bonding. A queen will purr during parturition; the sound guides the newly born kittens to stay close to the queen. Kittens begin to purr within two days of birth. A kitten will purr loudly during nursing. It is thought that the loud purring is a stimulus for its littermates to also partake of nourishment.

When adult cats cross paths, it is not unusual to hear the more submissive cat purr in the presence of the more dominant cat. The sound pattern changes from the characteristic “hrn-rhn” to a “mhrn” and is considered a friendly feline greeting. Female cats are known to purr during courtship and mating. There are reports that some cats purr when in pain or before dying.

Call: This is a low throaty sound usually emitted by a cat when it is trying to coax another cat to come closer, such as in the case of a female cat signaling its readiness to mate. The call can be intensified from a coax to a command, as used by male cats to invite young males to fight.

Acknowledgment: This form of communication is a short murmur with a rapidly falling intonation. In most instances, the sound occurs when a cat anticipates receiving a treat from its owner. Kittens are about 12 weeks old before they can vocalize this murmur pattern.

Perspectives On Cats

A Newsletter for Cat Fanciers
From The Cornell Feline Health Center

The ultimate purpose of the Cornell Feline Health Center is to improve the health of cats everywhere, by developing methods to prevent or cure feline diseases, and by providing continuing education to veterinarians and cat owners. All contributions are tax-deductible.

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Table 1. Phonetics of Feline Vocalizations

Categories:	Phonetics:
<u>Murmur Patterns</u>	
Grunt	
Purr	'hrn-rhn-'hrn-rhn...
<i>a. Greeting</i>	'mhrn
Call	ə mhrn
Acknowledgment	'mhrn
<u>Vowel Patterns</u>	
Demand	'mrhn-a' :oü
<i>a. Whisper</i>	'mrhn-ē'
<i>b. Begging Demand</i>	'mhrn-äoü:?
Bewilderment	'mäoü:?
<i>a. Worry</i>	'ma oü:?
Complaint	'mhn-ä:oü
Mating Cry (mild)	'mhrn-ä:oü
Anger Wail	ä:oü
<u>Strained Intensity Patterns</u>	
Growl	grr...
Snarl	'a:o
Hiss	'ssss...
<i>a. Spit</i>	fft!
Caterwaul	'œ-œ' :ə
Scream	a!
Refusal	'a'z 'a'z' a
<p>Key: <u>Vowels:</u> ä as in father; a as in cat; ə as in banana; o as in go; œ as in French <i>eux</i>; ü as in pool;</p> <p style="text-align: center;"><u>Other:</u></p> : indicates prolongation of sound; / indicates stress-accent; ? indicates rising inflection; ! indicates abrupt, stress-accent ending <p> <u>Consonants:</u> f as in fan; h as in hunt; m as in mouse; n as in kitten; n as in sung; r as in rat; t as in bat; s as in snake</p> <p>~ indicates nasalization; ' indicates inhalation; z indicates discontinuity;</p>	

Vowel Patterns

These sounds are produced when the mouth is first opened and then gradually closed.

Demand: This vocalization varies in inflection and tone, indicating the mood of the cat. The most intense and loudest is properly named the "begging demand." This can be reduced in intensity and have a drawn out sound. Many owners are familiar with this vocalization when their cat is making a request (i.e. access to another room). Queens use this vocal pattern to call their kittens after she has caught prey. Another variation is the chirping sound accompanied by tail-flicking when a cat is wistfully eyeing prey. The least intense is known as the silent meow, in which there is mouth movement with little or no sound accompanying it.

Bewilderment: Kittens are capable of this vocal pattern after 79 days of age. The vowel pattern varies from the demand and typifies the "meow" sound most associated with cats. Worry is denoted by extending the beginning syllable.

Complaint: This pattern varies substantially in the beginning vowel sounds from the bewilderment sound. Cats expressing a vocal complaint usually are quieted simply by their owners' verbal response to their vocalizations.

Adapted from Moelk M: Am J Psych 57:184-205, (1944) and Beaver BV: Feline Behavior: A Guide for Veterinarians, p. 267, WB Saunders Co., Philadelphia PA, (1992).

Mating Cry: This is a distinctive two-syllable sound made by an intact female cat when it is in estrus (heat).

Anger Wail: This is a common form of communication in adult cats and kittens. Adult cats utilize it when playing rough or fighting. Kittens can vocalize this distress call as early as one day old. Kittens will wail during the queen's absence or littermate's absence.

Strained Intensity Patterns

These vocalizations indicate extreme emotional states, such as fighting or mating. Most of these sounds begin with consonants. The sounds are produced with the mouth open.

Growl: A warning growl begins as a slow exhalation through the mouth and can be increased to almost a dog-bark quality with a sound frequency between 400 to 800 Hz. A queen uses the warning growl to scatter her kittens in time of danger. The more intense growl is used during cat fights.

Snarl: This is one of a few vocalizations that is made during inhalation. Usually the sound stops abruptly when compared to other vocalizations.

Hiss: This sound occurs when the cat is surprised or frightened. It is produced when air is exhaled through a small oral opening. Kittens are capable of this defensive vocalization at a very early age (i.e., before 10 days old). The spit is a more accentuated form of the hiss.

Caterwauling: This is the mating cry of the tomcat and is considered a highly modified form of the demand pattern. Sometimes associated with this cry is a parasympathetic response of drooling.

Scream: This is a high pitched sound emitted by the female cat as mating ends. Researchers believe that the vocalization is in response to vaginal stimulation by the tomcat's penile spines.

Refusal: This is a very low, almost rasping sound that is discontinuous. The cat voices the refusal when it is trying to withdraw from a situation that it has been forced into.

Summary

If you have owned cats for several years you are probably familiar with each of the above patterns. Certainly, some cats are known to be much more vocal, such as the Siamese breed, and others are less vocal. If your cat suddenly becomes vocal and it is not associated with mating, fighting or requesting, it could be a signal to a health problem. The best advice is to schedule your cat for a health exam with a veterinarian to rule out any insidious diseases or disorders. ■

(The next issue will feature how to interpret your cat's body language.)

Pet Ownership for Persons with AIDS

Tuskegee University's School of Veterinary Medicine has published a brochure that addresses the issue of pet ownership for people infected with HIV. The brochure advises how a person whose resistance is low from AIDS, cancer, or immunosuppressive medications (e.g., corticosteroids, chemotherapy) can select and safely care for a pet. Immunosuppressed people are encouraged to include veterinarians on their health-care teams. The brochure helps to dispel such misconceptions that pets in an HIV household will contract the virus and transmit it to other people.

For a free copy of the brochure, send a self-addressed, stamped business-sized envelope requesting "HIV/AIDS & Pet Ownership" to: Dr. Caroline B. Schaffer, School of Veterinary Medicine, Tuskegee University, Tuskegee, AL 36088. ■



Q. I recently lost my precious Bucky to feline AIDS. I have never heard of it, but now several people tell me that it is very prevalent. How is it spread? Is it very contagious? Is there any vaccine to protect against it?—J.D., New Jersey

A. Feline immunodeficiency virus (FIV) was first identified in the late 1980s, but it's been present in the feline population for much longer than that. The incidence of FIV is about 1.5 to 3 percent in the general cat population. However, the infection is much more prevalent in cats allowed outdoors because the primary method of virus transmission is by cat bite. It is unlikely for a cat to become infected with FIV in any way other than from a bite. Currently, there is no vaccine to protect cats against FIV. The best disease prevention methods are not allowing cats outdoor access and FIV test any cats before accepting them into the household.

Q. I have a 13-year-old, overweight (18 pound) cat that for the past two years, and more frequently this year, coughs once and several hours later has an asthma attack. My veterinarian has prescribed prednisone and amoxicillin. What I'm concerned with is the cause of my cat's breathing problem. Is it his weight? Is it an allergic condition? Also, how do I get his weight down?—M.B., New York

A. Bronchial asthma in cats is a frustrating disease. As with asthmatic people, cures are unlikely. The primary goal of therapy is to relieve the respiratory distress associated with asthma.

Excessive reactivity of the lower airways in the lungs causes the coughing and labored breathing. As a result, the airways constrict, become inflamed and swollen, and can even become plugged with secre-

tions. What triggers attacks usually can't be determined, but allergies are suspected in a few cats. Airborne irritants like kitty litter dust, perfume, smoke, aerosol sprays, dust, or pollen can initiate asthmatic attacks. If you can relate exposure to one of these types of substances with the occurrence of the attacks, then avoiding exposure can be helpful; unfortunately, it's not possible in most cases. Viral or bacterial bronchial infections are capable of triggering attacks in some individuals.

Chest radiographs are very useful in diagnosing asthma. Examination of bronchial secretions can also be helpful in determining the underlying cause. It is important to make sure that there are no problems in the back of the throat, larynx or upper airways because disorders in any of these areas can mimic asthma or bronchitis.

Long-term treatment generally involves a combination of cortisone-like medication, bronchodilating medication, and avoidance of any known allergens. Every cat responds slightly differently to medications, so some trial-and-error may be necessary to attain proper regulation. Prednisone or prednisolone are commonly used because the side effects are minimal in cats. However, it is important with any of these drugs to taper down to the lowest dose possible. Bronchodilators, like theophylline, aminophylline, or terbutaline are often used, and can help reduce the amount of cortisone needed to control the problem. Antibiotics are used if the veterinarian suspects that a bacterial infection is exacerbating the bronchial disease.

Sudden attacks of breathing difficulty are more difficult to handle. Hopefully with good overall control, these attacks will be less common, but unfortu-

(continued on page 7)

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Mail Bag (continued from page 5)

nately, there is little that you can do at home if breathing becomes very labored. The best advice in these circumstances is to quickly seek veterinary attention. Oxygen administration and injection of rapid-onset bronchodilators and cortisone-like drugs can be life saving. Ask your veterinarian, before your cat has another attack, how he/she wants you to handle it. Is your veterinarian on call at night? Is there an emergency clinic open at night?

Obesity is not causing the problem, but you should avoid having your cat lose weight rapidly because other complications can occur. Your veterinarian can help you determine how much to feed daily for slow weight reduction. Forcing your cat to exercise is unwise until your cat's lung problem is better controlled.

Q. One of my mother's cats has recently been diagnosed with feline infectious peritonitis (FIP). What precautions do I need to take when I visit my mother

to ensure that I do not bring this disease back to my cats? Also, what is the likelihood of my cats being infected with FIP while being boarded at my veterinarian's clinic?—A. R., Virginia

A. Coronaviruses, such as those that cause FIP, are not particularly hardy outside of the cat and the virus is easy to kill with most disinfectants. The best way to minimize the chance of your cats becoming infected is to remove and wash your clothing and wash your hands before you handle your cats. Those simple procedures should kill the viruses or reduce them to such low numbers that they would no longer pose a health risk to your cats.

It is unlikely that a cat would become infected with a coronavirus while boarding, provided the cat is housed in its own individual cage and proper disinfection of the cage, feeding utensils, and litter boxes are performed. Caretakers should wash their hands thoroughly or change rubber gloves between caring for each animal to prevent spreading infectious agents from one cat to the next. ■

Animal Instincts on the Air

Cornell University's College of Veterinary Medicine is producing a new daily radio program, "Animal Instincts", that can be heard on talk radio and national and international public radiostations. By the end of next year it is expected to be broadcast on up to 75 stations nationwide, and more than 100 Voice of America and public radio affiliates in Europe. The program is designed to educate listeners about a variety of health issues that affect companion animals and their owners, as well as wildlife and exotic animals. "Animal Instincts" is made possible by a grant from the Ralston Purina Company.

"Animal Instincts" features faculty from Cornell's Veterinary College who offer information and advice on a variety of topics concerning animal health, behavior, and social issues. Topics are diverse and include: signs of good pet health, why cats purr, sweet-toothed pets, dog dentistry, poisons and pets, spaying and neutering, feline overpopulation, ferrets as pocket pets, feeding a python, birds and lawn chemicals, homeopaths and horses, and common aquarium problems. At the end of each program, listeners are encouraged to visit their veterinarians regularly. ■

Book Bits—Zoonotic Diseases

Zoonotic diseases are diseases transmitted from pets to man. People are more likely to contract transmissible diseases from one another than they are from their pets. Nevertheless, there are some disease that are transmitted directly or indirectly by pets. This transmission is usually complex and generally requires close contact between susceptible people and animals or their excretions. Such contact often involves lack of common sense and gross violations of sound hygienic practice. Thus it is most common to see pet-borne zoonoses in children.

Responsible pet owners can participate in controlling zoonotic disease by vaccinating their pets for rabies, limiting excessive contact of infants and pregnant women with pets, handling pet feces in a hygienic manner, and supporting efforts to avoid the unrestricted presence of pets in parks, swimming areas, beaches, sandboxes, and gardens.—*From The Cornell Book of Cats by Mordecai Siegal and Cornell University. Copyright © 1989 by Mordecai Siegal and Cornell University. Reprinted by permission of Villard Books, a division of Random House, Inc.* ■



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