

Number of unowned free-roaming cats in a college community in the southern United States and characteristics of community residents who feed them

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Objective—To estimate the number of unowned free-roaming cats in a college community in the southern United States and identify the characteristics of community residents who feed these cats.

Design—Cross-sectional, random-digit telephone survey.

Sample Population—587 households in Alachua County, Florida, surveyed between March 1 and May 10, 1999.

Procedure—Telephone surveys were conducted, and respondents were asked questions about feeding of unowned free-roaming cats.

Results—70 (12%) households fed free-roaming cats; mean \pm SD number of free-roaming cats fed per household was 3.6 ± 1.9 . Households that fed free-roaming cats were more likely to own pet cats than were households that did not feed free-roaming cats; however, 30 of 70 (43%) households feeding free-roaming cats did not own cats or dogs. Although the percentage of pet cats that were neutered was high (90%), only 8 (11%) households that fed free-roaming cats attempted to have such cats neutered. The free-roaming cat population was estimated to represent approximately 44% of the population of cats in the county.

Conclusions and Clinical Relevance—Results suggest that unowned free-roaming cats may represent a substantial portion of the total cat population in a region. Public policies and education programs aimed at reducing cat overpopulation should include provisions for neutering unowned free-roaming cats, and efforts should target the general public, not only pet owners, because not all households that feed unowned free-roaming cats own pets. (*J Am Vet Med Assoc* 2003;223:202–205)

The popularity of domestic cats as household pets has steadily increased over the past several decades, so much so that cats have surpassed dogs as America's most common pet.¹ Despite the increasing number of cats maintained as household pets, millions of cats are admitted to animal shelters each year, and most of these are euthanatized because homes cannot be found.²

Unowned free-roaming cats place substantial financial, emotional, and health-related burdens on communities. In Alachua County, Florida, approxi-

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mately 5,000 to 6,000 cats are admitted to the county's municipal shelter annually.^a Cats represent more than a third of all animals admitted to the facility, which also accepts dogs, livestock, and wildlife. Approximately 75% of the cats are admitted as strays, and more than 75% of all cats that are admitted are eventually euthanatized because of a shortage of adopting homes. The cost to Alachua County taxpayers for animal control services approaches \$1 million each year.

Determining the number of unowned free-roaming cats is difficult, in part because of problems with defining the status of any given cat.^{3–7} The lines between loosely owned outdoor, stray, and feral cats are often blurred. Stray cats may be defined as homeless cats that have been abandoned or become lost but are still friendly toward humans. Feral cats are untamed and evasive; they either were born in the wild and lack socialization or were returned to the wild and became untrusting of humans. For the purposes of the present study, the term unowned free-roaming cats is used to denote stray and feral cats that are believed to be unowned.

Although considerable controversy exists over the true impact of unowned free-roaming cats on cat welfare, public health, and the environment, there is general agreement that a sizable problem exists.⁸ Efforts to control the unowned free-roaming cat population are hampered by a lack of information on the number and characteristics of such cats and the number and characteristics of people who feed them. Therefore, the purposes of the study reported here were to estimate the number of unowned free-roaming cats in a college community in the southern United States and identify the characteristics of community residents who feed these cats. For this study, we selected Alachua County, Florida, a suburban community in north-central Florida characterized by a large transient population of college students.

Materials and Methods

Study design—The study consisted of a cross-sectional, random-digit telephone survey conducted between March 1 and May 10, 1999. The study site was Alachua County, Florida. The county has an area of 878 square miles^b and, during 1999, had an estimated population of 216,249 persons residing in 84,963 households.^c The county population included 41,026 University of Florida^d and 11,768 Santa Fe Community College^e students (24% of the county population). At the time of the study, Alachua County had a single municipal animal control facility serving the community.

Telephone survey—Population-based data on pet ownership and household demographics were obtained through a structured interview administered by telephone to random-

ly selected households in the county. Households were selected by use of a computer program that generated a random sample of telephone numbers for telephone prefixes assigned to residential units in Alachua County.

Three students from the University of Florida College of Veterinary Medicine administered the survey. All calls were completed prior to the beginning of the summer break for the University of Florida and the Santa Fe Community College to ensure inclusion of the student community in the survey. For each telephone number, up to 5 calls were attempted at various times, including weekdays, evenings, and weekends, to contact potential respondents. Interviewers read from a prepared script and surveyed any adult at least 18 years old in the household who could provide information about pet ownership and household demographics. Detailed information was obtained for all dogs and cats that were currently residing in the household.

The survey consisted of 30 questions, including 2 questions about the type of residence (single-family detached housing vs attached dwelling) and 1 question about whether the respondent was a college student. Five questions determined the number and sex of dogs and cats, if any, owned by the household, and 16 questions covered the source, neutering status, reproductive history, and lifestyle (indoor vs outdoor) of each pet. Six questions concerned the current feeding and care of any unowned free-roaming cats. Depending on whether the household owned any pets, the interview took approximately 1 to 10 minutes to complete.

Statistical analyses—Frequency distributions of categorical variables were compared with χ^2 tests. A value of $P < 0.05$ was considered significant.

Results

Response rate—The initial random-digit list of telephone numbers consisted of 1,733 numbers. Of these, 233 (13%) were nonworking numbers, and 299 (17%) were numbers that were not assigned to households, yielding 1,201 working residential numbers. An individual was successfully contacted at 826 (69%) of the 1,201 working residential numbers. The most frequent reasons why an individual was not successfully contacted at the remaining 375 numbers included no answer ($n = 218$ [18%]), answering machine (128 [11%]), and busy signal (29 [2%]). Twenty-three (3%) of the 826 individuals who were contacted were ineligible to participate because they were not a resident of Alachua County (eg, visitor, babysitter, or relative) or were < 18 years old. Of the 803 individuals who were contacted and eligible, 587 (73%) agreed to participate in the survey.

Characteristics of households feeding unowned free-roaming cats—Seventy of 587 (12%) households reported feeding at least 1 free-roaming cat that was not owned by that household. For households that fed such cats, mean \pm SD number of unowned free-roaming cats fed was 3.6 ± 1.9 . Percentage of households that fed unowned free-roaming cats did not vary significantly ($P = 0.7$) with type of housing, with 64% (45/70) of the households that fed such cats and 60% (310/517) of the households that did not feed such cats residing in single-family detached homes. Thirty-three percent (23/70) of the households that fed cats and 32% (163/517) of the households that did not feed cats consisted of college students; these percentages were not significantly ($P = 0.8$) different from each other.

Characteristics of owned pets—Of the 70 households that reported feeding unowned free-roaming cats, 30 (43%) did not own cats or dogs, 13 (19%) owned both cats and dogs, 15 (21%) owned only cats, and 12 (17%) owned only dogs. The 28 cat-owning households owned a total of 55 pet cats (mean \pm SD, 2.0 ± 1.8 cats/household). Fifty of the 55 (91%) pet cats were neutered; 31 (56%) had access to the outdoors. Four (7%) pet cats had had 1 or more litters of kittens.

Of the 517 households that did not feed unowned free-roaming cats, 271 (52%) did not own any pets, 65 (13%) owned both dogs and cats, 68 (13%) owned only cats, and 113 (22%) owned only dogs. The 133 cat-owning households owned a total of 259 pet cats (1.9 ± 1.6 pet cats/household). Two hundred twelve of the 259 (82%) pet cats were neutered; 153 (59%) had access to the outdoors. Thirty (12%) pet cats had had 1 or more litters of kittens.

Overall, households that fed unowned free-roaming cats were significantly ($P = 0.01$) more likely to own at least 1 pet cat (40%) than were households that did not feed such cats (26%). However, total numbers of pet cats and percentages of cats that were neutered, had access to the outdoors, and had had a litter were not significantly ($P \geq 0.1$) different between households that fed unowned free-roaming cats and those that did not.

Frequency and duration of feeding free-roaming cats—Twenty-five of 70 (36%) households reported feeding unowned free-roaming cats daily, 10 (14%) reported feeding such cats on a weekly basis, and 35 (50%) reported feeding such cats intermittently. Thirty-four of the 70 (49%) households shared feeding of the same cats with 1 or more neighbors that they were aware of. Thirty-seven (53%) had been feeding unowned free-roaming cats for ≤ 1 year; the remainder had been feeding the same cats for > 1 year.

Neutering of unowned free-roaming cats—When asked whether they had had any of the unowned free-roaming cats they were feeding neutered, only 8 (11%) of the 70 households indicated that they had. Households that had cats neutered were not significantly ($P \geq 0.3$) different from households that did not in regard to student status, type of housing, pet ownership, or percentage of pet cats that were neutered.

Discussion

Results of the present study suggest that feeding of unowned free-roaming cats was common both among households that owned pets (40/286 [14%]) and those that did not (30/301 [10%]). Mean number of cats fed by households that fed unowned free-roaming cats was 3.6. These findings for a county in north-central Florida were similar to results for studies performed in Santa Clara County, where 10% of households fed an average of 3.4 cats each,⁹ San Diego County, where 9% of households fed an average of 2.6 cats each,¹⁰ and Massachusetts, where 8% of households fed an average of 3.7 cats each.¹¹

In this study, there were no significant differences in regard to college student classification or housing

type between households that fed unowned free-roaming cats and households that did not. When pet-owning characteristics of the 2 groups were studied, it was discovered that although cat ownership was more prevalent among households that fed free-roaming cats, most such households (42/70) did not own pet cats. In fact, 30 of 70 (43%) households that fed free-roaming cats did not own any cats or dogs whatsoever, suggesting that they went out of their way to acquire and provide food, even when they did not own pets themselves. Percentages of pet cats that were neutered were high for households that fed free-roaming cats (91%) and households that did not (82%), indicating compliance with veterinary and animal welfare recommendations for neutering of pets not intended for breeding. This is consistent with previous reports^{9,12,f} in which 82 to 91% of pet cats were neutered, although not always before producing a litter of kittens.

A companion^l to the present study indicated that Alachua County residents owned an estimated 45,449 pet cats during 1999. Extrapolating findings in the present study to the entire county suggests that county residents fed approximately 36,398 unowned free-roaming cats. Thus, unowned free-roaming cats comprised approximately 44% of the local cat population. This is similar to findings in other communities in which unowned cats comprised at least 36 to 41% of the total cat population.^{9,10}

Although provision of food for unowned free-roaming cats was a common activity in the present study, few individuals who fed such cats took further action to have the cats neutered, possibly because of a lack of access to available resources or a lack of knowledge about such resources and the impact of uncontrolled reproduction on cat welfare, public health, and the environment.^{3,13-15} At this geographic latitude, free-roaming cats may produce more than 1 litter of kittens each year.¹⁶ Given the high percentage of pet cats that were neutered, unowned free-roaming cats likely represented the greatest source of cat overpopulation in the area. During 1999, 74% of the 4,827 cats admitted to the county animal control facility were classified as strays, and almost half were kittens.^a A total of 3,714 (77%) cats admitted to the facility were euthanatized; this represented 4.5% of the total estimated population of unowned free-roaming and pet cats.

The presence of large numbers of cats that are not vaccinated against rabies is a concern for public health officials. Rabies is endemic in Alachua County and diagnosed primarily in wildlife. From 1990 through 2000, rabies was confirmed in 112 animals in the county, including 72 raccoons, 26 bats, 7 foxes, 4 cats, 2 horses, and 1 dog.⁵ During 1999, when the present study was performed, 7 cases of rabies were reported,⁵ all in wildlife. Data from Alachua County Animal Services for the same year indicated that only 26% of owned cats were currently immunized against rabies as required by local ordinance.^a Assuming that none of the unowned free-roaming cats were immunized against rabies, this suggests that only approximately 14% (11,771/81,847) of the cats in the county were currently immunized. Although it has been shown that a single rabies immunization is likely to protect cats

against virulent challenge for at least 3 years,¹⁷ the low rate of vaccination in cats represented a substantial gap in rabies control.

Many (34/70) households that were feeding unowned free-roaming cats knew of at least 1 neighbor who was also feeding the same cats. This underscores the widespread nature of these activities and the openness with which they sometimes occur. Many individuals do not covertly harbor these animals or feed them in secrecy. It has been previously reported that individuals who feed unowned cats feel a protective bond for the cats they care for, even if the cats are too feral to be handled.¹⁸⁻²⁰ Individuals who feed unowned cats reported they would resist efforts to control the population of these cats by lethal means,¹⁸ and trap-neuter-return programs are becoming increasingly popular alternatives to trap and removal strategies for control of unowned cats.²¹⁻³² However, most trap-neuter-return programs are operated by private organizations capable of neutering at most a few hundred cats each year.^{5,i} Results of the present study suggest that the magnitude of the unowned free-roaming cat population is much larger than the capacity of many existing programs, and programs capable of neutering thousands of free-roaming cats within a community must be organized if there is to be a realistic expectation of decreasing the overall population.

A substantial proportion (30/70) of households in the present study that fed unowned free-roaming cats did not own any pet cats or dogs, suggesting that attempts to involve individuals who feed unowned cats in control strategies should extend beyond the pet-owning public typically served by veterinarians, animal control agencies, and animal welfare organizations. In this community, there were no distinguishing demographic characteristics coinciding with feeding of unowned cats that could be used to focus education campaigns. This is consistent with previous reports,¹⁸⁻²⁰ suggesting that feeding of free-roaming cats is a widespread activity that crosses many socioeconomic strata.

^aAlachua County Animal Services, Gainesville, Fla.

^bProvided by the United States Census Bureau, Geography Division, 2000.

^cProvided by the Bureau of Economic and Business Research, University of Florida, Gainesville, Fla.

^dSpring 1999 enrollment, University of Florida Registrar, Gainesville, Fla.

^eSpring 1999 enrollment, Santa Fe Community College Registrar, Gainesville, Fla.

^fLevy JK, University of Florida, Gainesville, Fla: Unpublished data, 1999.

^gAlachua County Department of Environmental Health, Gainesville, Fla.

^hLevy JK, Survey of infectious disease testing and sterilization practices by animal welfare organizations, University of Florida, Gainesville, Fla: Unpublished data, 2002.

ⁱRobinson B, Alley Cat Allies, Washington, DC: Personal communication, 2001.

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