

Search and identification methods that owners use to find a lost cat

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Objective—To characterize the process by which owners search for lost cats and identify factors associated with time to recovery.

Design—Cross-sectional study.

Sample Population—Owners of 138 cats lost in Montgomery County, Ohio, between June 1 and September 30, 2005.

Procedures—A telephone survey was conducted.

Results—73 of the 138 (53%) cats were recovered; median time to recovery was 5 days (range, 0.5 to 81 days). Most cats (48 [66%]) that were recovered returned home on their own or were found in the neighborhood (5 [7%]); most other cats were recovered through posting of neighborhood signs (8 [11%]) or calling or visiting an animal agency (5 [7%]). The highest success rate for any of the search methods that were used was only 12% (posting neighborhood signs). Only 26 of the 138 (19%) cats had some type of identification at the time they were lost (ie, identification tag, rabies tag, or microchip). Owners allowed 82 (59%) cats to spend at least some time outdoors. The percentage of sexually intact cats recovered by their owners (4/16 [25%]) was significantly lower than the percentage of neutered cats recovered (69/122 [57%]).

Conclusions and Clinical Relevance—Results suggest that the percentage of lost cats recovered by their owners is low, possibly in part because of the lack of use of traditional identification methods and the general acceptance that cats may roam. Veterinarians can help educate owners about the importance of identification and the need to keep cats indoors. (*J Am Vet Med Assoc* 2007;230:217–220)

Cats have surpassed dogs as the most popular pet in the United States, with American households owning an estimated 72 million cats in 2002.¹ Even more so than dogs, cats that stray from their homes are at risk for injury and death. Given the emotional attachment that many owners have to their pets, having a cat stray from its home may be particularly stressful to the owner.

Various methods have been used to reunite stray cats with their owners (eg, identification tags and microchips) or to recover cats that have strayed (eg, placing an advertisement in the newspaper, posting signs in the neighborhood, and contacting local animal shelters). However, the effectiveness of these various methods in the recovery of lost cats has not been evaluated. The purposes of the study reported here, therefore, were to characterize the process by which owners search for lost cats and identify factors associated with time to recovery. The present study was performed at the same time as a similar study² of the methods owners use to search for lost dogs.

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Materials and Methods

Location of study—The study was conducted in Montgomery County, Ohio, in 2005. At the time of the study, the county had approximately 550,000 residents,³ of which 160,000 resided in the city of Dayton,⁴ and a single major newspaper, the *Dayton Daily News*. The state of Ohio did not have any laws governing the control of cats at the time of the study, although individual municipalities did have the power to establish their own laws regarding cats. Five of the local municipalities in Montgomery County at the time of the study contracted with the county dog warden agency to handle stray cats in the municipality. Minimum holding period specified by most of the municipalities was 3 days. Two nonprofit humane societies in the county also handled stray and owner-surrendered cats. Together, the Montgomery County dog warden agency and 2 humane societies handled approximately 6,500 cats in 2005. All 3 agencies scanned incoming cats for microchips and implanted microchips in cats adopted from the agency.

Study population, sampling frame, and study design—The general methods of the study were similar to those described for a parallel study involving lost dogs.² The study population consisted of a cohort of cats that had been identified as missing by their owners through placement of an advertisement in the lost-and-found portion of the classified section in the *Dayton Daily News* or through contact with 1 of the

county's 3 animal agencies between June 1, 2005, and September 30, 2005. A separate sampling frame was created for each of the 4 months in the study (ie, June, July, August, and September 2005). At the end of each month, a random-numbers table was used to select a simple random sample of 66% of the cats lost during that month for inclusion in the present study. A cross-sectional study incorporating a telephone survey was performed. A standardized survey method was used.⁵

Pilot study—A pilot study involving cats lost during May 2005 was performed to estimate the percentage of lost cats that would be recovered by their owners. This percentage was then used for sample size calculations.⁶ The pilot study was also used to test the reliability of the questionnaire. During the pilot study, owners of 9 of 49 cats lost during May 2005 were interviewed. Of the 9 cats that had been lost, 6 were recovered by their owners.

Telephone questionnaire—Owners were asked a series of questions related to recovery of their cat, characteristics of the cat, methods of identification on the cat at the time it was lost, methods used to search for the cat, and other miscellaneous information, including whether the cat typically lived strictly indoors.^a All data were tracked with standard database software.^b The survey was given exempt approval status by The Ohio State University Institutional Review Board.

Statistical analysis—Medians and ranges were calculated for responses that consisted of continuous data, and proportions were calculated for responses that consisted of categorical data. Comparisons were made between the dichotomous outcome of recovery of the cat and dichotomous categories for sex and presence of identification on the cat at the time it was lost by means of a χ^2 test. The Student *t* test was used to compare mean number of days lost between cats that returned home on their own and cats recovered by any other method. For each of the search and identification methods, the success rate was calculated as the number of cats recovered by use of that method divided by the number of owners who used that search method or by the number of cats with the corresponding identification method. Cats that returned home on their own and cats for which the recovery method was listed as other were excluded from calculation of success rates. For all analyses, values of $P \leq 0.05$ were considered significant. Standard statistical software was used.^c

One of the initial objectives of the study was to examine factors associated with time to recovery of lost cats. Because of the sparse data for cats that were recovered by owners using a particular search method or because the cat had a particular identification method, this analysis was not performed.

Results

During the study period, 264 cats were identified as lost, and owners of 177 of these cats were randomly selected for possible inclusion in the study. Of those, 161 owners were determined to be eligible for the study, and 138 (86%) agreed to complete a telephone interview.

Recovery of cats—Of the 138 lost cats included in the study, 73 (53%) were recovered. Median time to recovery for cats that were recovered was 5 days (range, 0.5 to 81 days). Recovery methods categorized by time the cat has been lost were summarized (Table 1). Forty-eight of the 73 (66%) cats that were recovered returned home on their own, 21 (29%) were found < 1 mile from home, 2 (3%) were found 1 to 5 miles from home, and 2 (3%) were found > 5 miles from home.

Cat characteristics—Of the 138 cats that were lost, 80 (58%) were male and 58 (42%) were female. Only 9 (7%) were purebred. Overall, 122 (88%) of the cats were neutered, and 16 (12%) were sexually intact, with comparable percentages for males and females. The percentage of sexually intact cats recovered by their owners (4/16 [25%]) was significantly ($P = 0.02$) lower than the percentage of neutered cats recovered by their owners (69/122 [57%]). Fifty-six of the 138 (41%) cats reportedly were housed strictly indoors and not typically allowed outside. Eighteen of the 138 (13%) cats were ≤ 1 year old, 52 (38%) were > 1 but < 5 years old, and 68 (49%) were ≥ 5 years old. Twenty-seven (20%) cats had been owned ≤ 1 year, 54 (39%) had been owned > 1 but < 5 years, and 57 (41%) had been owned ≥ 5 years. Owners reported that 107 (78%) cats had never been lost previously, 24 (17%) had been lost 1 to 5 times previously, and 7 (5%) had been lost > 5 times previously.

Identification and search methods—Fourteen of the 138 (10%) cats were reportedly wearing a personal identification tag at the time they were lost, 8 (6%)

Table 1—Methods by which 73 cats lost in Montgomery County, Ohio, between June 1 and September 30, 2005, were recovered by their owners.

Recovery method	Time cat was lost (d)			Total
	≤ 3	> 3 but ≤ 7	> 7	
Came home on own	16 (59)	21 (78)	11 (58)	48 (66)
Rabies tag	0 (0)	0 (0)	1 (5)	1 (1)
Neighborhood signs	3 (11)	3 (11)	2 (11)	8 (11)
Newspaper advertisement	0 (0)	1 (4)	1 (5)	2 (3)
Call or visit to animal agency	4 (15)	1 (4)	0 (0)	5 (7)
Found in neighborhood*	2 (7)	1 (4)	2 (11)	5 (7)
Other	2 (7)	0 (0)	2 (11)	4 (5)
Total	27 (100)	27 (100)	19 (100)	73 (100)

Values are given as number of cats (%).
*Includes cats recovered as a result of being found in the woods, in a drain, in a neighbor's attic, and by driving in the neighborhood.

Table 2—Search methods used by owners of 138 cats that were lost in Montgomery County, Ohio, between June 1 and September 30, 2005.

Search method	Cat recovered (d)			Cat not recovered (n = 65)	Total (n = 138)
	≤ 3 (n = 27)	> 3 but ≤ 7 (n = 27)	> 7 (n = 19)		
Advertised in newspaper	1 (4)	4 (15)	7 (37)	13 (20)	25 (18)
Read newspaper	5 (19)	11 (41)	14 (74)	29 (45)	59 (43)
Searched Web sites	0 (0)	1 (4)	5 (26)	10 (15)	16 (12)
Called animal agency	23 (85)	24 (89)	17 (90)	58 (89)	122 (88)
Visited animal agency	19 (70)	24 (89)	17 (90)	58 (89)	118 (86)
Posted neighborhood signs	13 (48)	12 (44)	11 (58)	29 (45)	65 (47)
Other*	1 (4)	2 (7)	4 (21)	6 (9)	13 (9)

Values are given as number of owners (%).
*Other included contacting veterinarians, calling the police, and sending e-mail to neighbors.

were wearing a rabies tag, and 10 (7%) had a microchip. Overall, 19 (14%) cats were wearing 1 or both types of tags, and 26 (19%) had some form of identification at the time they were lost. Sixteen of the 73 (22%) cats that were recovered had some form of identification when lost, compared with 10 of the 55 (15%) cats that were not recovered. These percentages were not significantly ($P = 0.33$) different. The success rate for a tag, defined as the percentage of cats wearing a tag (identification tag, rabies tag, or both) that were recovered on the basis of the tag, was 5% (1/19 cats).

Search methods used by owners were categorized on the basis of time the cat had been lost (Table 2), except that searching for the cat by walking around the neighborhood or talking to neighbors was not listed because all owners reported using this method. Mean number of days lost for cats that returned home on their own was not significantly ($P = 0.07$) different from mean number of days lost for cats recovered by one of the search methods. The cat was recovered by 8 of 65 (12%) owners who posted signs in the neighborhood, 2 of 25 (8%) owners who placed an advertisement in the newspaper, 5 of 138 (4%) owners who either called or visited an animal agency, and 5 of 138 (4%) owners who searched for the cat by walking around the neighborhood or talking to neighbors.

Median time to call or visit an animal agency was 3 days (range, 0 to 21 days). For owners who visited an animal agency more than once, median time between visits was 8 days (range, 0.5 to 57 days).

Other characteristics—Twenty-six of the 138 (19%) owners offered a reward for the return of their cat. Nine (7%) owners believed their cat was stolen. There were no significant differences in the frequencies with which various search methods were used between owners who believed their cats were stolen and owners who did not.

Discussion

Results of the present study suggest that the percentage of lost cats that are recovered is somewhat low (73/138 [53%]) and that traditional search and identification methods are somewhat ineffective. In contrast to the situation with lost dogs,² the percentage of cats recovered by calling or visiting an animal agency (5/73 [7%]) was low, as was the success rate for calling or visiting an animal agency (4%). These results may, in part,

be due to the fact that no animal control laws related to cats existed at the county level in Ohio at the time of the study and that no identification was required for cats. There is tremendous debate as to whether cat licensing or mandatory identification is effective in reducing the cat overpopulation problem and whether owners of cats would comply with such laws. At the time of the study, the return-to-owner rate for cats handled by animal agencies in Montgomery County was only 1.5%. In areas with comprehensive ordinances, such as San Mateo County, California, where identification and licensing of cats is required, this rate has increased from 3% prior to the enactment of these ordinances to 4.5%.⁷ In Honolulu, where cats are required to be identified but not licensed, the return-to-owner rate for cats handled by the Hawaiian Humane Society is 5.2%.^{8,9} Importantly, even these values are still well below the return-to-owner rate for dogs handled by animal agencies in Ohio, which is 16%.¹⁰

It is also likely that animal agencies play such a small role in recovery of lost cats because owners of lost cats do not contact them as quickly or as frequently as do owners of lost dogs. In contrast to the situation for lost dogs,² owners of lost cats in the present study waited a median of 3 days before calling or visiting an animal agency, with median time between visits to an agency being 8 days. Given that there was no mandatory holding period for stray cats at the time of the study, although most agencies held such cats for 3 days, and the infrequency of owner contacts, it is possible that at least some of the cats in the present study that were not recovered were euthanatized by one of the animal agencies. More frequent and earlier contact with animal agencies by owners of lost cats could increase the recovery rate.

Results of the present study support the commonly held belief that stray cats typically return home on their own. In this study, we found that 35% of all lost cats (48/138) and 66% of recovered cats (48/73) returned home on their own. It is still commonly accepted that owners allow their cats to spend time outdoors, and 82 of 138 (59%) owners in the present study reported that they allowed their cats to spend at least some time outdoors. In contrast, only 19 (14%) cats in the present study were wearing an identification or rabies tag at the time they were lost. It is our belief that many people who see a stray, healthy cat in their yard or neighborhood believe the cat may be owned and are hesitant to catch the cat or actively look for the owner. Cats also

tend to be more elusive than dogs, and it is often difficult to capture a stray cat, even if the cat is not feral. People who see a stray cat may be more likely to attempt to assist the cat if it is wearing identification tags, and tags help to distinguish owned cats from cats that are unowned or feral. In addition, it is difficult to distinguish cats because many look alike, and a tag helps in identifying a particular cat. Although we did not directly ask the question in our study, many people who were asked about identification reported they did not keep a tag on their cat because they believed their cat could be injured if wearing a collar or because their cat did not tolerate wearing a collar. If owners are unwilling to have their cats wear a collar and tag, microchips may become increasingly more important in cat identification. Further research is needed to better understand how the public perceives the importance of trying to assist healthy, stray cats and how visible identification might affect this process.

Of the 138 cats in the present study, 68 (49%) were ≥ 5 years old, 122 (88%) were neutered, and 107 (78%) had never been lost previously, suggesting that most lost cats were well cared for and mature. Owners included in the study were identified because they had contacted an animal agency or placed an advertisement in the newspaper. Despite the high percentage of lost cats that were neutered, we found that neutered cats were significantly more likely to be recovered than were sexually intact cats. These unrecovered, sexually intact cats may be further adding to the overpopulation problem, particularly if they become free-roaming in the community.

In the present study, the search method with the highest success rate was posting signs in the neighborhood, although the success rate for this method was only 12%, compared with a 27% success rate in a comparable study² of lost dogs. Only 7% of the lost cats in the present study were purebred, and it is generally more difficult to identify a cat by a description than with a picture. Unfortunately, we did not specifically ask whether owners included pictures on the signs they posted around the neighborhood, and more research is needed to investigate whether the type of sign affects the success of this method.

Similar to the implications of a parallel study² involving dogs, we believe the present study illustrates the importance of educating owners about providing identification for their cats. We also believe the present study points to the need to continue to encourage owners to keep their cats indoors. There are many national campaigns by groups such as the Humane Society of

the United States and the American Bird Conservancy to promote housing cats indoors.^{11,12} Veterinarians can play a key role in educating owners on the health and safety reasons for keeping cats indoors and the importance of identification. Given that 56 of the 138 (41%) cats in the present study reportedly were not allowed outdoors, it is important to educate owners of indoor-only cats on the importance of identification and the potential risk that these cats will escape and become lost. Veterinarians can also provide information on search methods. It appears from our study, however, that traditional search methods, such as advertising in the newspaper, are not as effective for cats as they are for dogs. Further research is needed to better understand the recovery process for cats.

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- a. Copies of the telephone survey are available from the corresponding author on request.
 - b. Microsoft Office Access 2003, Microsoft Corp, Redmond, Wash.
 - c. Stata, version 9.1, StataCorp, College Station, Tex.
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