

## Caregiver Perceptions of What Indoor Cats Do “For Fun”

Melissa R. Shyan-Norwalt

*Animal Behaviorist  
The Iams Company  
Lewisburg, Ohio*

In a survey conducted to determine enrichment activities for indoor cats in the caregivers' homes, 304 indoor-cat caregivers answered structured interviews about their cats' use of windows and other “fun activities.” The survey asked caregivers about durations of window use, what cats watched through the windows, and in what other fun activities cats freely participated. The results indicate that, of 577 cats, 84.3% looked out windows a total of 5 hr or less a day, that cats observed 14 different categories of outdoor stimuli, and that cats participated in 17 categories of “other” fun activities. These results suggest that cats use windows and sunlight much less often than the welfare community may expect but that caregivers (owners), when possible, should consider providing access to these.

Environmental enrichment for companion animals has become a growing movement in the nonhuman animal welfare community. One problem that often arises, however, is that the popular perception of what is “enriching and natural” represents only the human perception (anthropocentrism) of enrichment for a species and not actual enrichment for that species. Although almost everyone agrees that enrichment is important and appropriate, agreed-on definitions of what constitutes environmental enrichment have yet to be developed (Smith & Corrow, 2005). Almost all animal welfare advocates suggest that providing opportunities for species-typical behavior is desirable. Cats living in cat colonies in the laboratory in particular are targeted as they typically do not get to participate in home-like or “natural” outdoor activities. Determining what is enriching often is subject to intuitive speculation and, not as often, subject to scientific scrutiny.

For example, testing the belief that large pools are better than small for captive dolphins (the popular belief that “bigger is better”), Shyan, Merritt, Tenge, Barton, and Kohlmeier (2002) found that, contrary to anthropocentric expectations, a pod of captive dolphins almost exclusively chose smaller and shallower pools. Lines, Morgan, Markowitz, and Strong (1990) found—again, contrary to expectations—that captive, research macaques showed no improvement in behavior or modifications of heart rate in larger home cages than in smaller home cages. Lines, Clarke, Markowitz, and Ellman (1990) found that environmental enrichment, even when actively used by the macaques, did not modify amounts of normal or abnormal behavior or cortisol levels (a hormone commonly measured as an indication of stress). Thus, while avoiding the anthropocentric view, we are charged with the mission of providing appropriate enrichment for indoor, domestic cats living in research colonies, animal shelters, or private homes.

One way to provide enrichment is to allow animals to “choose” their environments or select from environmental-manipulation options. This type of enrichment—light, warmth, food type, and noise versus quiet—has been studied in domestic farm animals (Arave, 1996; Baldwin & Start, 1985; Morrison, Amyot, McMillan, Otten, & Pei, 1987), but little studied in cats. What choices should we provide? Overall (2005) suggested that a viable way to proceed is to study behavior, behavioral choices, and mental stimulation activities shown by animals in nonlaboratory environments and then apply this information to establishing enrichment practices for animals in the laboratory. The present study does this.

What do indoor cats do “for fun,” that is, when they can freely choose their activities? Do cats need, use, or prefer access to windows and to sunlight? Our inclination is to assume that they do, but there is no published evidence supporting—or refuting—this assumption. Sometimes, it is not possible to give cats access to direct sunlight or to stimulating window views because of structural restrictions and architectural limitations (windows on the north side of homes get little direct sunlight; windows in tall apartment buildings provide little visual stimulation). How do cats use windows? If visual stimulation is needed, then would false windows (e.g., aquariums, large-screen TVs) serve where stimulating window views are not possible?

One valuable aspect of windows may be access to sunlight, but it is unclear whether cats benefit physiologically from direct sunlight. Morris (1999) found that sunlight does not have any direct nutritional or metabolic value for domestic cats (cats do not use sunlight the way humans do, for processing Vitamin D). Domestic cats are very similar to their ancestors (Rochlitz, 2002). They tend to be nocturnal, although often they show great flexibility. They have good nocturnal and diurnal vision, and they have the capacity for color vision, although research suggests that they make little use of this capacity (Koch, 2000). Cats sleep in sunny spots, but this may be as much a factor of warmth as of sunlight (R. K. Anderson, personal communication, March 5, 2005).

Perhaps more than, or along with, sunlight, environmental enrichment—looking out a window at the stimulating world—is important. DeLuca and Kranda (1992) found that cats in a colony with an indoor window spent almost all their time sitting and watching activities in an outside hallway. Rochlitz (2002) recommended windows with deep ledges or raised, resting platforms to facilitate comfortable viewing. Of course, this is not a simplistic either–or question. There may be an interaction effect between sunlight and visual enrichment, with the combination providing the best psychological well-being. Although research has addressed social behaviors in cats (Barry & Crowell-Davis, 1999), spatial patterning of indoor cats (Bernstein & Strack, 1996), and activities of feral cat colonies (Turner & Bateson, 2000), no study has answered the critical question: Given free choice, what do indoor cats find enriching (window use, sunlight, other activities)? Such information would be useful for shelter design, research facility design, and homeowner considerations when planning for indoor cats.

One way to address this question is to query the caregivers of in-home, indoor cats regarding their cats' usual activities, when the cats are given the opportunity to choose. When given free choice, how much time do indoor cats spend looking out windows? How much time do they spend sleeping in the sun? In what other activities do these cats choose to participate? Knowing what cats choose, and how much time they spend on various activities, will provide a measure of the importance of these activities.

Querying cat caregivers, instead of using direct observations, has its potential drawbacks. Harbison, Slater, and Howe (2002) conducted telephone surveys to test caregiver knowledge and reliability over 1 to 2 years in reporting on cat activity levels and type of diet. They found (a) poor agreement between early and late surveys on activity level, appetite, body condition, type of treats, and table scraps; (b) moderate agreement on food brands, feeding frequency, and amount of time the cats spent outdoors; and (c) high agreement on whether the cats were indoor or outdoor (or both) and on whether food was dry or wet. They concluded that caregivers' perceptions can change over time and that current practices can influence early memories, which agrees with a large volume of eyewitness testimony research in human cognition literature (Garry & Loftus, 1994; Loftus, 1975).

However, caregiver surveys that ask present-time questions are less subject to these problems. In addition, for the same informational return, the alternative technique of direct observation is extremely time intensive and, in this case, less efficient. The amount of time required for cats to acclimate to an observer, to observe the cat accurately, and to observe a sufficient number of participants for meaningful information is extremely daunting. In this case, the caregivers, although untrained and potentially biased, can be considered the observers. The large number of human participants queried, however, should control for these potentially confounding factors.

To that end, cat caregivers were asked several questions in structured interview format. The goal of these questions was to determine caregivers' perceptions of how much time indoor cats actually made use of windows, how much time these cats slept or rested in the sun, and in what other fun activities their cats chose to participate.

## METHOD

### Participants

We did not contact or ask cat caregivers to participate in this study. Instead, in November and December 2004, cat caregivers contacting the Iams Consumer Care Center about other matters were asked if they were willing to take a short survey. Of these, 304 agreed to participate. Of those asked, 295 met the two criteria for participation: (a) They had at least one, indoor cat and (b) they spent most of their day with their cat(s). All participants were volunteers who verbally agreed to participate. Participants could refuse to answer any question and could withdraw at any point. Participants were anonymous; no names or other identifying information was collected.

### Apparatus and Materials

A six-item, structured interview questionnaire (see the Appendix) was presented by phone or email to participants. No demographic information was collected because of extreme time limitations for interviews: Consumers call the care center for help and information; I did not want to tax their patience by asking too many questions.

### Procedure

Each participant was asked each question one at a time. They were told the provided choices but also were encouraged to select the "other" choice as appropriate. Participants were encouraged to expand their answers in regard to those choices and to provide detailed information for the "other" category.

## RESULTS

### Number of Indoor Cats Kept by Caregivers

Data first were analyzed to determine how many cats each of the 295 caregivers kept. Answers ranged from 1 to 40 cats (see Figure 1). Almost all caregivers kept 1 or 2 cats ( $N = 305$ ,  $M = 2.8$ ). These percentages differ only slightly from other published data:  $N = 438$ ,  $M = 2.4$  (American Pet Products Manufacturers Association, Inc., 2006).

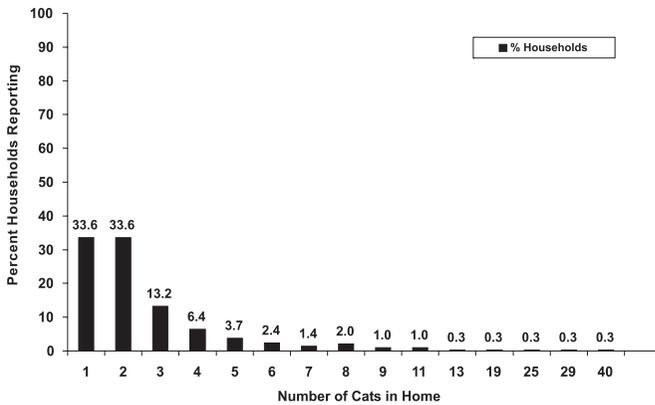


FIGURE 1 Number of indoor cats caregivers reported having.

### Number of Hours Indoor Cats Used Windows

Of 295 participants, 209 answered the question about how much time their cats chose to spend looking out windows in a quantifiable way (20 min/day, 4 hr/day). The other 86 caregivers gave answers that were qualitative answers (“when the sun comes up”); duration answers that were not specific (“a few hours a day”); or no answer, leaving this question blank. Because these types of answers were unquantifiable, they were not included in the analysis. (However, 86 caregivers’ answers to the other survey questions were included in other analyses.) In total, caretakers reported on window use for 577 cats. Caregivers who indicated that their different cats used the windows different amounts of time had their answers averaged across their cats.

Very few caregivers indicated that their indoor cats used windows continuously. Almost all (84%) reported that their cats use windows for 5 hr or fewer a day (see Figure 2). There was no correlation between number of cats in a household and number of hours using windows,  $r^2_{adj}(1, 204) = .003, p > .05$ . Analysis of variance was used to compare numbers of cats to hours spent in windows for one-, two-, three-, four-, five-, and six-plus cat(s) households; this, too, was not significant,  $F(5, 200) = 1.70, p > .05$ .

### Caregivers’ Perceptions of What Indoor Cats Watch Through Windows

Caregivers were asked to report what their cats watched outside when looking through windows. They were given seven choices plus an “other” choice (see Appendix). The number of caregivers who answered this question totaled 295. In addition to choosing from the options provided, 33% gave different, detailed answers in response to the “other” option. All answers fit into 14 different cate-

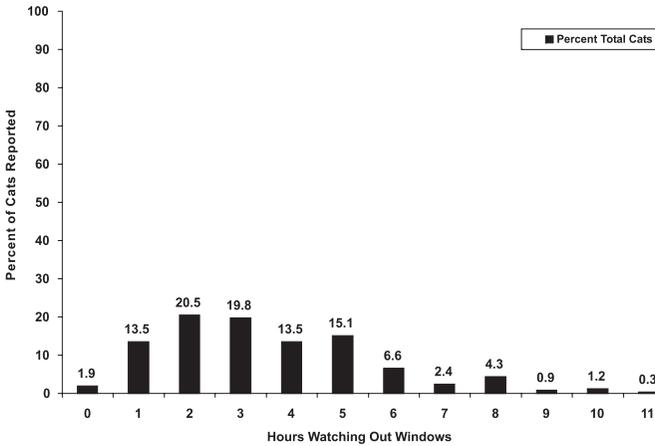


FIGURE 2 Caregivers' perceptions of duration of window use by their indoor cats.

gories of what their cats watched, including a “Looks at Nothing” category (see Table 1). The number of items caregivers described as being watched by their cats ranged from 0 (*looks at nothing*) to 9 ( $M = 3.4$  items/cat). Accounting for what cats viewed from windows, the seven items most reported were (a) birds, (b) small wildlife, (c) foliage, (d) other cats, (e) people, (f) vehicles, and (g) insects/reptiles (see Figure 3).

### Caregivers' Perceptions of What Else Indoor Cats Do For Fun

Caregivers were queried as to other fun activities in which their cats participated. They were given three choices, plus an “other” choice (see Table 1). Of the 295 participants, 282 provided answers to this question. In addition to choosing from the options provided, 69% provided different, specific answers in response to the “other” option. All answers fell into 16 distinct categories and 1 “other” category, a combination of unique activities reported only once across all questionnaires (see Table 3). The number of different activities ranged from 1 to 6 ( $M = 2.4$ /cat). There was no correlation between number of cats in the households and number of different activities ( $r_{adj}^2 = .05, p > .05$ ). The three activities most frequently reported (see Figure 4) were cats played with toys, caregivers petted/cuddled/groomed the cats, and cats played with their caregivers (the three choices provided). Categories are not mutually exclusive. For example, caregivers who reported that cats played with toys also reported that the cats played with furry toy mice and bottlecaps. Caregivers who reported that cats played with their caregivers also volunteered information about what types of interactive toys they used.

TABLE 1  
 “Cat Sees” Categories That Combined Items/Animals/Objects Because of Similarity of Type

Category	Includes
Birds	Birds, ducks, geese, swans, birds on feeder, quail, pigeons
Small wildlife	Raccoons, squirrels, skunks, armadillos, opossums, rabbits, chipmunks, gophers, mice, “small animals”
Foliage	Trees, grass, gardens, flowers, blowing leaves, falling leaves, leaves
Other cats	Strays, neighbors’ cats, family cats allowed outdoors
People	Caregivers, kids, gardeners, people, mailcarriers
Vehicles	Cars, buses, trucks, boats
Insects/reptiles	Insects, bugs, lady bugs, butterflies, spiders, frogs, lizards, snakes
Canines	Dogs, coyotes
Any movement	Anything moving, anything he hears, wind, window awning, wind chimes
Large animals	Cows, donkeys, alpacas, deer, bear
Precipitation	Rain, snow, snowflakes
Buildings	Building next door, parking garage, house deck, parking lot
Sun	Sun
Nothing/space	Stares at nothing, stares into space

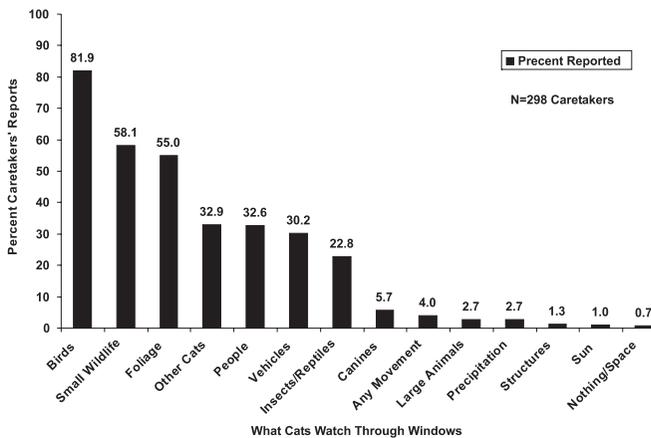


FIGURE 3 What caregivers report indoor cats see when looking out windows. The percentage reported is out of 100% for each individual category, rather than all categories summing to 100%.

TABLE 2  
 “Cat Does for Fun” Activities That Combine Because of Similarity of Type

Category	Includes
Pet/groom/cuddle	Caretaker pets, grooms, cuddles; cat sits on lap, lays next to caretaker
Play with toys	Rolling toys, plastic rings, bottle caps, toy mice, balls, balled paper, and so forth
Play with humans	Interactive play: wrestling, laser light, string, cat-dancer, feathers, and so forth
Chase/play other cats	Not fighting, chase or play with other cat(s) in household
Play with miscellaneous	Sponge, hair band, wrapper, sock, clothes, ear plugs, brush, slinky, and so forth
Play with box/sack	Hide in box or bag, play in box or bag, sit in box or bag, and so forth
Play with dog	Play with dog(s) indoors
Run around	Run around, run up/down stairs, race around patio, spin
Play with water	Play in sink, play with water in tub, play with water bowl
Use catnip	Use catnip, play with catnip toy
Sleep/Sit/Rest	Sleep, sit on newspaper, sleep on pillow
Use cat furniture	Climb, sit on kitty condo, use scratching post, sit on post, and so forth
Watch TV/Fish/and so forth	Watch TV, watch fish tank, watch indoor birds
Rest in sun	Sleep in sun, bask in sun, enjoy sun, sleep in basket by sunny window
Sleep on warm object	Sleep on computer, on toaster, lay by heater
Eat/drink	Likes to eat, eats, drinks from fountain
Other	Explore, help cook, steal food, eat grass or paper, keeps occupied, fight

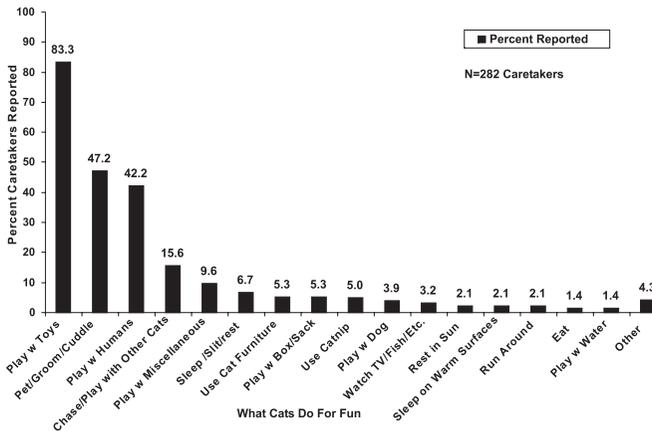


FIGURE 4 Caregivers’ perceptions of what indoor cats do for fun besides look out windows. The percentage reported is out of 100% for each individual category, rather than all categories summing to 100%.

## DISCUSSION

On the basis of caregivers' perceptions, almost all cats look out windows for 5 hr or less a day. A number of caregivers reported that this time is not continuous. The number of cats in the household does not affect the time cats spent looking out windows. Caregivers were consistent in reporting what cats looked at through windows—the most frequently reported things being birds and small animals. Caregivers with multicat households reported individual differences across their cats. Different caregivers with single cats had different reports, partially because of cat preferences, window location, geographic area (e.g., not all geographic areas contain armadillos or boats), and other opportunistic constraints. Caregivers were consistent in their reports of what else cats like to do for fun. Cats play with toys and play with their caregivers, and they like to be petted, and to sleep, more than any other activities.

Only six caregivers reported that their cats slept or rested in the sun. This may have been a warmth factor rather than a sunshine factor. Several other caregivers reported that their cats slept on top of computers, toasters, televisions, and other warmth-generating objects. This also is supported by Anderson's facility design, in which felines' resting locations were manipulated by turning on and off heating pads (R. K. Anderson, personal communication, March 5, 2005). In his project, felines learned to move from one spot to another on the basis of which heating pad was on. When the shifts occurred on a regular schedule, they even came to anticipate these changes.

What do these results say about indoor cats' choices regarding window use, sunlight, and types of activity? Cats do make use of the stimulation that window views provide, but the duration and amount of time are less than most people might expect. Although cats show individual differences, approximately 35.9% of cats looked out windows 2 hr or less a day, and 33.3% for 3 hr to 4 hr a day; only 30.8% watch for more than 4 hr a day. According to caregivers, cats receive environmental enrichment from what they see outside but make use of this in only limited amounts. Some cats choose to sleep in the sun. These numbers were quite small, and the nature of other sleeping locations reported imply that this may be more because of warmth than sunlight—supporting R. K. Anderson's (personal communication, March 5, 2005) findings. On the basis of these findings, one can conclude that window and sunlight access are not as critical to cats' well-being as might be expected.

## CONCLUSIONS

Designers planning new domestic cat sanctuaries, long- and short-term shelters, and cat colony facilities might incorporate these findings into their designs.

Managers planning to renovate or retrofit existing sanctuaries, shelters, and other cat colony facilities also will find these results useful. Whenever possible, windows should be included, but expectations that they will be in constant use are not likely to be met. When possible, access to windows and sunlight are recommended—cats do choose to make use of these, although there are clear individual differences. It may be that alternative stimulations—television; fish tanks (whether real or artificial); and heated, resting perches—can serve as good substitutes where logistics limit the feasibility of exterior window use. To address these questions further, several studies are in progress, focusing on the effects of presence and absence of windows on choice behavior in a cat colony, the effects of different types of internal lighting, and (as mentioned earlier) the effects and use of comparisons for artificial windows.

As Overall (2005) and others suggested, studying animals in an in-home, choice-filled environment can provide useful information for colony settings for laboratory animals. Moving from anthropocentric to systematically evaluated environmental enrichment only can increase our ability to provide optimum situations for research animals.

## ACKNOWLEDGMENT

I thank the enthusiastic people of the Iams Consumer Care who very patiently convinced consumers to answer the structured interviews/questionnaires that created this data set.

## REFERENCES

- American Pet Products Manufacturers Association, Inc. (2006). *2005–2006 APPMA national pet owner survey*. Greenwich, CT: Author.
- Arave, C. W. (1996). Assessing sensory capacity of animals using operant technology. *Journal of Animal Science*, *74*, 1996–2009.
- Baldwin, B. A., & Start, I. B. (1985) Illumination preferences in pigs. *Applied Animal Behavior Science*, *14*, 233.
- Barry, K. J., & Crowell-Davis, S. L. (1999). Gender differences in the social behaviour of the neutered indoor-only domestic cat. *Applied Animal Behaviour Science*, *64*, 193–211.
- Bernstein, P. L., & Strack, M. (1996). A game of cat and house: Spatial patterns and behaviour of 14 cats (*Felis catus*) in the home. *Anthrozoös*, *9*, 25–39.
- DeLuca, A. M., & Kranda, K. C. (1992). Environmental enrichment in a large animal facility. *Laboratory Animal*, *21*, 38–44.
- Garry, M., & Loftus, E. F. (1994). Pseudomemories without hypnosis. *International Journal of Clinical and Experimental Hypnosis*, *42*, 363–378.
- Harbison, J. L., Slater, M. R., & Howe, L. M. (2002). Repeatability and prediction from a telephone questionnaire measuring diet and activity level in cats. *Preventive Veterinary Medicine*, *55*, 79–94.

Koch, H. L. (2000). Monochromatic and polychromatic visual backgrounds influence the response of area 17 and 18 neurons after stimulation with stationary and moving light bars. *Revista Brasileira de Biologia*, 60, 329–336.

Lines, S. W., Clarke, A. S., Markowitz, H., & Ellman, G. (1990). Response of female rhesus macaques to an environmental enrichment apparatus. *Laboratory Animals*, 24, 213–220.

Lines, S. W., Morgan, K. N., Markowitz, H., & Strong, S. (1990). Increased cage size does not alter heat rate or behavior in female rhesus monkeys. *American Journal of Primatology*, 20, 107–114.

Loftus, E. F. (1975). Leading questions and the eyewitness report. *Cognitive Psychology*, 7, 560–572.

Morris, J. G. (1999). Ineffective Vitamin D deficiency in cats is reversed by an inhibitor of 7-dehydrocholesterol- $\Delta^7$ -reductase. *Journal of Nutrition*, 129, 903–908.

Morrison, W. D., Amyot, E., McMillan, I., Otten, L., & Pei, D. C. T. (1987). Effect of duration of reward upon operant heat demand of piglets receiving microwave or infrared heat. *Canadian Journal of Animal Science*, 67, 903.

Overall, K. L. (2005). Enrichment strategies for laboratory animals from the viewpoint of clinical veterinary behavioral medicine: Emphasis on cats and dogs. *National Research Council Journal, Institute of Laboratory Animal Resources*, 46, 202–215.

Rochlitz, I. (2002). Comfortable quarters for cats in research institutions. In V. Reinhardt & A. Reinhardt (Eds.), *Comfortable quarters for laboratory animals* (pp. 50–55). Washington, DC: Animal Welfare Institute.

Shyan, M. R., Merritt, D., Kohlmeier, N. M., Barton, K., & Tenge, J. (2002). Pool depth selections by Atlantic bottlenosed dolphins at one zoo. *Journal of Applied Animal Welfare Science*, 5, 215–226.

Smith, A. L., & Corrow, D. J. (2005). Modifications to husbandry and housing conditions of laboratory rodents for improved well-being. *National Research Council Journal, Institute of Laboratory Animal Resources*, 46, 140–147.

Turner, D. C., & Bateson, P. (Eds.). (2000). *The domestic cat: The biology of its behaviour* (2nd ed.). Cambridge, England: Cambridge University Press.

APPENDIX

Questionnaire Used to Determine Window Use and Other “Fun Activities” for Indoor Cats

*Criteria for Participation*

1. Are you with your cat most of the day?    Yes                    No                    If “Yes” continue. If “No” stop.
2. Do you have (an) indoor cat(s)?            If 100% indoor continue.                    If less than 100% stop.

*Cat Activity Questions*

3. How many cats do you have?                    1 2 3 4 5 6 7 8 9 10 11+ \_\_\_\_\_
4. We’re trying to find out how cats amuse themselves. How much time a day do you think your cat(s) spend(s) looking out the window: \_\_\_\_\_
5. What does (do) your cat(s) see outside? (Can circle more than one)  
     Birds    Squirrels    Insects    Trees    Other Cats    Roads/Cars    People    Other \_\_\_\_\_
6. What else does your cat like to do for fun?  
     Play with toys    Be petted                    Play with me                    Other answers \_\_\_\_\_