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A Cat Is a Cat: Attachment to Community Cats Transcends Ownership Status

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Abstract

***Introduction*:** Despite the considerable recent interest in the human–animal bond, the relationship between community cat caregivers and the cats they care for has received relatively little attention. In addition, the instruments typically used to measure the human–animal bond contain questions specific to in-home interactions with pets or interactions representative of specific behavior traits of the animal (e.g. lap-sitting), effectively excluding community cat caregivers.
***Methods*:** Using a slightly modified version of the Comfort from Companion Animals Scale, we surveyed community cat caregivers in Jefferson County, Kentucky, to measure the degree to which they are attached to the cats in their care. Participants for the online survey were recruited via email from a nonprofit organization that provides sterilization and wellness care for community cats in the area.
***Results*:** Of the 329 individuals who participated in the survey, 295 (90.2%) indicated that they had provided food, water, or shelter to one or more community cats currently or within the recent past. These caregivers tend to identify as white, female, and middle-class. Levels of attachment to the cats in their care (mean: 39.6, standard deviation [SD]: 5.9) are nearly identical to those previously reported by cat owners (mean: 39.6, SD: 4.8). Monthly expenditures and other sacrifices made as part of their caregiving duties provide further evidence of the strong attachment these individuals feel for community cats.
***Conclusion*:** The fact that community cats are unowned in no way diminishes the strength of the bond caregivers feel. Such findings have clear policy implications – validating, for example, the common practice of returning healthy cats lacking identification (i.e. collar or microchip), regardless of perceived level of sociability, to where they were found, following sterilization and vaccination.

Keywords: *attachment*; *community cats*; *free-roaming cats*; *human–animal bond*; *trap-neuter-return*

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Supplementary material for this article can be accessed here.

As noted in their most recent 'free-roaming cat position statement', published in May 2023, the American Association of Feline Practitioners (AAFP) 'supports the humane management of free-roaming cats' in part because the organization recognizes the importance of 'free-roaming cat caregivers and their human–animal bond'.[1] This is particularly noteworthy because the AAFP's previous statement, published in 2012, made no mention of caregivers.[2] In recent years, the human–animal bond, particularly the interaction between humans and their companion animals, has garnered significant attention, even as research findings often challenge the perceived health benefits for humans.[3,a] Despite this increased attention, there remains an area within this sphere that requires further exploration: the relationship between caregivers and community cats (a term typically applied to unowned, free-roaming domestic cats).

Although cats and dogs enter U.S. shelters in roughly the same numbers, cats comprise 55% of healthy and treatable animals killed[b], and the majority of a shelter's feline admissions are typically classified as 'strays'.[4,5] Strategies to manage community cat populations, such as trap-neuter-return (TNR) and return to field (RTF), are

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b. BFAS. *The State of U.S. Animal Sheltering, 2022*. Best Friends Animal Society; 2023:5. https://network.bestfriends.org/sites/default/files/2023-06/National%20Shelter%20Data%20Set%202023_updated_6.12.2023.pdf. Accessed July 2, 2023.

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becoming increasingly common.[6,7] In the absence of such programs, these cats are among the most at risk of being killed, regardless of whether or not they have caregivers. Moreover, community cat caregivers are sometimes faced with legal barriers, as well as threats to their personal safety and that of the cats in their care.[c] For these reasons, a deeper understanding of community cat caregivers has become increasingly important.

Unfortunately, the existing body of literature tends to focus predominantly on relationships between humans and animals that cohabitate and/or are legally owned. Furthermore, the surveys typically used to measure the human–animal bond contain questions that are specific to in-home interactions with animals or interactions representative of specific behavior traits of the animal (e.g. lap-sitting). Consequently, the bond between unowned animals and their caregivers is often overlooked. This is evident in instruments such as the Lexington Pet Attachment Survey (LAPS)[8] and the more recent Family Bondedness Scale,[9] which often employ terms such as 'pet' and 'owner', effectively excluding community cat caregivers. However, previous research has shown that 10–26% of U.S. households provide resources such as food, water, and/or shelter for cats they do not own.[10–13] This phenomenon highlights a significant gap in our understanding of the relationships between unowned animals and their human providers.

The purpose of this research was two-fold. First, it advances a modification of a validated survey tool for future use in free-roaming animal attachment analysis and evaluates the attachment between a sample of community cat caregivers and the cats they care for. In addition, by focusing on the often-overlooked bond between community cats and their caregivers, the present study aims to shed light on an important aspect of human–animal interaction, with potential implications for both public policy and animal welfare.

Methods

We used an online survey for this cross-sectional study of caregivers' attachment to community cats, collecting information about factors such as length of caregiving, investment in caregiving, interaction level with the cats, and basic demographic data about the caregivers.

Recruitment

We used a combination of convenience and snowball sampling. The survey was conducted using Qualtrics (March–April 2023), distributed through an email list managed by Alley Cat Advocates (ACA), and was open for a 1-month period during March and April 2023. Recipients of the email were also asked to forward the survey to others who may be interested in completing it. ACA is a nonprofit organization in Louisville, Kentucky, that provides sterilization and wellness care for community cats in and around Jefferson County. ACA was identified as a partner for this research project due to its connections to the individuals who care for cats in the region. In addition, Jefferson County is somewhat unique in its approach to managing unowned cats. In 2012, the Louisville/Jefferson County Metro Government adopted an ordinance that identified TNR as the official method by which community cats would be managed in the Louisville Metro area and allocated government funding for that purpose. Moreover, Jefferson County has been studied previously as an example of successful, collaborative community cat management.[14]

Participation in the survey was entirely voluntary, and no incentives were provided. Respondents were free to quit the survey at any point and were able to skip any question that they did not want to answer. All responses were anonymous. The research protocol was reviewed and approved by the Institutional Review Board at Southern Utah University under the protocol number 28-022023b.

Survey structure

The survey consisted of four sections, the first asking respondents about their experiences with ACA's programs. The data obtained from this part of the survey are not included in this study, as they were for internal evaluation purposes by ACA. The second section of the survey used a slightly modified version of the Comfort from Companion Animals Scale (hereafter CCAS-mod) originally developed and tested by Zasloff[15] in 1992. This original CCAS instrument, which includes 11 Likert-scale items, was designed in response to previous surveys

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showing levels of attachment associated with cat ownership lower than with dog ownership. Zasloff hypothesized that this was a result of functional biases in the types of questions traditionally asked on surveys such as the LAPS[8] and specifically designed the CCAS to interrogate the emotional aspects of the bond with pets that were independent of confounding species-specific behavior traits.[15] This survey instrument was evaluated for internal validity by Zasloff.[15] Construct validity was evaluated[16] as a function of correlation with the LAPS[8] (correlation coefficient −0.68, $P < 0.05$), and reliability was found to be good (Cronbach's alpha of 0.85, $P < 0.01$). The avoidance of specific behavioral traits was originally intended to resolve species-specific bias, but doing so also makes the tool uniquely appropriate for community cats, whose behavior may differ from that of cats who spend significant amounts of time in the home.

Minor modifications to the survey instrument developed by Zasloff[15] included systematically replacing the word 'pet' with 'community cat(s)'. This was done for two reasons. First, community cats are, by definition, not owned by their caretakers. Second, the term 'pet' implies a degree of interaction that may not apply to community cats (e.g. sitting in one's lap). In addition, the survey invitation did not reference the term 'owned cat' and instead invited responses from individuals who currently provide care for community cats. Finally, the CCAS-mod uses a five-point Likert scale instead of the original four-point scale used by Zasloff.[15] Five-point scales are more commonly accepted in cases where aggregate scores must be treated as interval level data for descriptive statistical purposes.[17]

Survey scoring

The results of the CCAS-mod were analyzed in two ways. The first analysis included all survey submissions for which respondents had valid responses for all 11 of the CCAS-mod statements, including those indicating the respondent neither agreed nor disagreed with 1 or more statements. Doing so generated results that can be used in future research since it is a more widely accepted method of providing values that can be summarized statistically. In this analysis method, the scoring schema was a 5-point scale (1 = strongly disagree to 5 = strongly agree).

The second approach was undertaken to score the CCAS-mod in a way to make it comparable to the original instrument developed by Zasloff,[15] with no neutral category. To be able to compare the results of this research with the scores from the owned-cat research, all response sets that included any value(s) of 'neither agree nor disagree' were eliminated, and a 4-point scale was used for scoring (1 = strongly disagree to 4 = strongly agree). The average score was then compared to that reported by Zasloff.[15] Scores were summarized, and descriptive statistics were calculated using Excel (Microsoft Corporation, version 2307).

The remaining sections of the survey included questions about the types and levels of investment individuals make when caring for community cats (e.g. monthly expenditures) and basic demographic information about the survey respondents. These data were gathered to understand the characteristics of individuals responding to the survey. Cat-specific questions included items such as the number of groups cared for, size of the groups, proximity of the groups to the home residence, and the level of interaction that respondents had with the cats they provide care for. The complete survey is provided as supplementary material.

Results

Results are reported in accordance with the Enhancing the QUAlity and Transparency Of health Research (EQUATOR) Network's Checklist for Reporting Of Survey Studies (CROSS),[18] where applicable.

Caregiver demographics

A total of 329 individuals consented to participate in the survey. Of these, 295 (90.2%) indicated that they had provided food, water, or shelter to 1 or more community cats currently or within the recent past. Respondents' demographic information is provided in Table 1.

Comfort from Companion Animals Scale

Respondents indicating that they had provided food, water, or shelter to 1 or more community cats currently or within the past 12 months were then asked to respond to the CCAS-mod instrument. Results for each of the 11 CCAS-mod items are provided in Table 2.

As noted previously, the CCAS-mod responses were analyzed two ways: the first using a 5-point schema and the second using the same 4-point scoring schema used by Zasloff.[15] Descriptive statistics for both methods are provided in Table 3.

Caregiver resources and investment

Caregivers were asked about how long they have been caring for community cats, how frequently they provide care, and the financial resources they have committed. A summary of their responses is provided in Table 4.

Based on 254 valid responses, the caregivers we surveyed reported spending an average of $103 (median $50) for food and veterinary care each month for the cats in their care (apart from any expenditures for their pets). Individuals who responded at the high end of the range (e.g. $1,500/month) were those who noted that they performed humane trapping of cats other than those they care for. Respondents were also asked about the number of cats in their care and how many groups of cats they cared for. A summary of their responses is provided in Table 5.

Table 1. Caregiver demographics

	n (%)
Gender identity (*N* = 290)	
Male	43 (14.8)
Female	227 (78.3)
Other	2 (0.7)
Prefer not to answer	18 (6.2)
Age (*N* = 290)	
<20 years of age	1 (0.3)
20–29	10 (3.5)
30–39	20 (6.9)
40–49	36 (12.4)
50–59	64 (22.1)
60–69	93 (32.1)
≥70 years of age	52 (17.9)
Prefer not to answer	14 (4.8)
Race/ethnicity (*N* = 278)	
American Indian/Alaska Native	0 (0.0)
Asian	0 (0.0)
Black or African-American	4 (1.4)
Hispanic or Latino	2 (0.7)
Native Hawaiian or other Pacific Islander	0 (0.0)
White	252 (90.7)
Other (please specify)	0 (0.0)
Prefer not to answer	20 (7.2)
Level of education (*N* = 261)	
Master's degree	41 (15.7)
Bachelor's degree	55 (21.1)
Associate's degree	14 (5.4)
Post-secondary non-degree award	4 (1.5)
Some college, no degree	94 (36.0)
High school diploma or equivalent	42 (16.1)
No formal educational credential	0 (0.0)
Prefer not to answer	11 (4.2)
Residence type (*N* = 292)	
House	244 (83.6)
Apartment, flat	20 (6.9)
Condo	6 (2.1)
Duplex	3 (1.0)
Mobile home	7 (2.4)
Other (please specify)	8 (2.7)
Prefer not to answer	4 (1.4)
Residence status (*N* = 290)	
Mortgage or loan (by respondent or other household member)	137 (47.2)
Owned outright (by respondent or other household member)	89 (30.7)
Rented	40 (13.8)
Occupied without payment	2 (0.7)
Prefer not to answer	22 (7.6)
Length of residence (*N* = 289)	
<1 year	9 (3.1)
1–2 years	13 (4.5)
2–5 years	49 (17.0)
6–10 years	36 (12.5)
11–15 years	45 (15.6)
15–20 years	40 (13.8)
> 20 years	103 (35.6)
Prefer not to answer	7 (2.4)
Total pre-tax household income during 2022 (*N* = 284)	
<$15,000	19 (6.7)
$15,000–34,999	43 (15.1)
$35,000–49,999	42 (14.8)
$50,000–74,999	39 (13.7)
$75,000–99,999	24 (8.5)
$100,000–149,999	27 (9.5)
>$150,000	15 (5.3)
Prefer not to answer	75 (26.4)

Table 1 continues

Table 1. Caregiver demographics

Finally, caregivers were asked to respond to four statements describing sacrifices they have made due to their caregiving duties. A summary of their responses is provided in Table 6.

Discussion

Caregiver demographics

The vast majority of survey respondents (78.3%) identified as female, which corresponds to the results of previous surveys. Zasloff and Hart,[19] for example, found that 74.3% of caregivers surveyed on the island of Oahu identified as female; Centonze and Levy[20] found that 84.6% of caregivers surveyed in north central Florida identified as female. More than 9 in 10 (90.7%) of our respondents identified as white, compared to 70.3% of Jefferson County residents.[21] Similarly, Zasloff and Hart[19] found that 58.1% of Oahu caregivers surveyed identified as white compared to 23% of island residents generally.

More than one-third (34.5%) of our caregiver respondents were 40–59 years of age, with more than half (54.1%) being 50–69 – somewhat older than caregivers on Oahu[19] and somewhat younger than those in north central Florida.[20] Although these previous studies suggest that the typical caregiver is 'middle-class', it is worth noting the considerable number of respondents who fall below that (ambiguous) household income threshold. Nearly half of our respondents (49.8%) reported annual incomes of less than $50,000 compared to the median household income of $61,633 in Jefferson County.[21] And although 43.1% of respondents reported annual incomes of $50,000–150,000, which is generally considered 'middle class',[22] 29.7% reported annual incomes of less than $35,000. To put this into context, the U.S. Department of

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Table 2. Responses to modified Comfort from Companion Animals Scale (CCAS-mod)

Statement	*N*	*n* (%)				
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The cats I care for provide me with companionship	290	5 (1.7)	26 (9.0)	71 (24.5)	106 (37.0)	82 (28.3)
Providing for community cats gives me something to care for	289	5 (1.7)	14 (4.8)	58 (20.1)	112 (38.8)	100 (34.6)
Being a caregiver to community cats provides me with a pleasurable activity	291	4 (1.4)	10 (3.4)	29 (10.0)	126 (43.3)	122 (41.9)
The cats I care for make me play and laugh	290	4 (1.4)	13 (4.5)	69 (23.8)	113 (40.0)	91 (31.4)
Providing for community cats gives me something to love	292	6 (2.5)	14 (14.8)	62 (21.2)	113 (38.7)	97 (33.2)
I get comfort from caring for community cats	290	5 (1.7)	7 (2.4)	34 (11.7)	129 (44.5)	115 (39.7)
Being a caregiver to community cats is a source of constancy in my life	290	4 (1.4)	17 (5.9)	60 (20.7)	111 (38.3)	98 (33.8)
I enjoy watching the community cats I care for	291	5 (1.7)	5 (1.7)	14 (4.8)	117 (40.2)	150 (52.0)
The community cats I care for make me feel loved	291	6 (2.0)	10 (3.4)	71 (24.4)	105 (36.1)	99 (34.0)
The community cats I care for make me feel trusted	291	4 (1.4)	5 (1.7)	52 (17.9)	120 (41.2)	110 (37.8)
Being a caregiver to community cats makes me feel needed	287	3 (1.0)	8 (2.8)	56 (19.5)	117 (40.8)	103 (35.9)

Table 3. Level of caregiver attachment based on CCAS-mod data (see text for details)

5-Point schema (*N* = 276)	
Mean (SD)	44.7 (8.1)
Median	44.0
Range	11–55
Q1	40
Q3	53
4-Point schema (*N* = 133)	
Mean (SD)	39.6 (5.9)
Median	42
Range	12–44
Q1	34
Q3	44

Health and Human Services' most recent poverty guideline for a family of four is $26,500/year.[23]

Caregiver attachment to community cats

The results of our 4-point CCAS-mod analysis (mean: 39.6, SD: 5.9) are nearly identical to those reported by Zasloff[15] for cat owners (mean: 39.6, SD: 4.8). To our knowledge, this is the first time this type of scale has been used to measure caregiver attachment to community cats. It is worth noting that the majority of respondents (73%, *N* = 292) indicated that they were able to pet at least some of the community cats that they care for. This might be one reason that caregiver scores in this survey were so similar to those of pet owners in Zasloff's[15] survey of cat owners.

Our findings validate the AAFP's recognition that 'free-roaming cat caregivers and their human–animal bond'[1] be a consideration in the policies and practices governing the management of free-roaming cats. It is reasonable to assume, for example, that many of the cats entering a shelter as 'stray' have caregivers who would miss them should they disappear (regardless of the ultimate outcome). The strong attachment that caregivers feel for community cats suggests that they are likely to grieve the disappearance of a community cat much as they would the disappearance of a pet. Our findings also validate the common practice of returning healthy cats lacking identification (i.e. collar or microchip), regardless of perceived level of sociability, as part of a shelter's TNR and RTF programs. The underlying assumption that these cats are sociable due to regular human contact is supported by the fact that nearly three quarters of caregivers surveyed were able to pet at least some of the cats in their care. Furthermore, our data show that caretakers are likely to be concerned if their community cats go missing. The vast majority of respondents (92.1%) either agreed (37.8%) or strongly agreed (54.3%) that they worry when cats do not show up as expected. All of which should give policymakers and shelter managers pause, since the stray category makes up the majority of feline admissions at many shelters.[4,5]

Group size, cat numbers, and cost of care

Nearly three quarters (72.4%) of our respondents care for 1 group of cats, typically made up of three cats. This corresponds with the results of previous studies in which 75–79% of caregivers reported caring for a single group of cats.[19,20] Nearly nine in 10 of our respondents (88.2%) care for cats on their own property, a much higher rate than Zasloff and Hart[19] reported among Oahu caregivers (34%) and somewhat higher than Centonze and Levy[20] reported in Florida (62.1%). The typical group size (i.e. medians ranging from 3 to 6) corresponds with previous

results. Nearly two-thirds of the caregivers (65%) surveyed by Zasloff and Hart[19] reported caring for groups of no more than 10 cats. Centonze and Levy[20] reported a mean group size of 5.1 cats after TNR efforts were underway. Some other studies have reported median group sizes of 10–12 cats,[24–26] while still others have reported median group sizes of 6 cats or fewer.[27,28] The maximum group size reported from our survey respondents was 100 cats. Other studies have reported maximum group sizes of 59[19] and 89 cats.[20] Such large ranges suggest that caregivers likely interpret the term *colony* – often used when referring to groups of free-roaming cats – differently. (It is unlikely that 100 cats are gathering in close proximity even during mealtime.) In any case, although the term might bring to mind very large groups

Table 4. Caregiving specifics and caregiver commitment

	n (%)
How long have you been caring for these community cats? (*N* = 291)	
<1 year	38 (13.1)
1–2 years	63 (21.6)
3–5 years	87 (29.9)
6–10 years	54 (18.6)
11–15 years	20 (6.9)
>15 years	29 (10.0)
How often, on average, do you care for community cats? (*N* = 293)	
2× daily	182 (62.1)
1× daily	70 (23.9)
Every other day	3 (1.0)
1× weekly	7 (2.4)
2× weekly	2 (0.7)
Other	29 (9.9)
How would you describe the area where your cats are? (*N* = 289)	
Urban	84 (29.1)
Suburban	135 (46.7)
Rural	57 (19.7)
Other	13 (4.5)
How do you travel to reach the cats you care for?* (*N* = 271)	
None, I feed the cats in my own yard	239 (88.2)
Vehicle that I own	22 (8.1)
Carpool	0 (0.0)
Rely on family or friends	1 (0.4)
Public transportation	0 (0.0)
Paid transportation (taxi, Uber, or Lyft)	0 (0.0)
Bicycle	0 (0.0)
Walk	3 (1.1)
Other (please specify)	6 (2.2)

* Multiple responses were permitted.

Table 5. Number of cats being cared for

Group size, respondents caring for one group of cats (*N* = 198)	
Minimum	1
Maximum	40
Mean	4.7
Median	3
Q1	2
Q3	5
Smallest group size, respondents caring for multiple groups of cats (*N* = 74)	
Minimum	1
Maximum	30
Mean	4.8
Median	4
Q1	2
Q3	6
Largest group size, respondents caring for multiple groups of cats (*N* = 70)	
Minimum	1
Maximum	100
Mean	10.6
Median	6
Q1	4
Q3	12

Table 6. Sacrifices reported by community cat caregivers

	N	*n* (%)				
		Very often	Often	Sometimes	Rarely	Never
I have postponed or canceled a vacation in order to care for the community cats	287	18 (6.3)	12 (4.2)	58 (20.2)	53 (18.5)	146 (50.9)
When going out of town, there is someone who can cover for me as caretaker	289	131 (45.3)	63 (21.8)	50 (17.3)	17 (5.9)	28 (9.7)
I have gone without purchasing something for myself because I needed the money to provide carefor community cats	290	27 (9.3)	24 (8.3)	57 (19.7)	59 (20.3)	123 (42.4)
I go outside when the weather is poor to provide for community cats	287	200 (69.7)	47 (16.4)	30 (10.5)	5 (1.7)	5 (1.7)

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of cats, the empirical evidence suggests that such groups are the exception rather than the rule.

The monthly expenditures for food and veterinary care reported by the caregivers we surveyed (i.e. mean $103, median $50) differ somewhat from those reported in previous studies. Centonze and Levy,[20] for example, reported a median of $5/week, or $37/month when adjusted for inflation, for food alone. Zasloff and Hart[19] found that 65% of caregivers spent no more than $50/month for food ($93 when adjusted for inflation). The reasons for these differences are not clear, although it is worth noting that residents of Jefferson County (and others nearby who take advantage of ACA's services) typically receive veterinary care for community cats at no cost or at heavily subsidized rates. It is also worth reiterating that caregivers spending the most were also incurring costs from the humane trapping of cats other than those they care for. Interestingly, the expenditures documented here exceed those of U.S. cat owners, who report spending roughly $47/month on food and veterinary care combined.[29]

Caregiver sacrifices

The sacrifices that individuals make in order to provide for community cats can be seen as an additional measure of attachment. Nearly one-third (30.7%) of our respondents have postponed or canceled a vacation, so that they can care for community cats. And 37.2% have gone without purchasing something for themselves because the money was used for community cat care. Caregivers' concern for the welfare of the cats in their care is an additional reflection of their attachment and indicates their knowledge of, and concern for, these cats as individuals. The vast majority of respondents (92.1%) either agreed (37.8%) or strongly agreed (54.3%) that they worry when cats do not show up as expected. These results will likely come as a surprise to some; to caregivers, however, our findings are likely to ring true.

Unfortunately, the bond caregivers have with the cats in their care is often ignored – or seen as a character flaw, making caregivers the object of ridicule, bullying, and scorn. In an incident that gained national attention in late 2022, two residents of Wetumpka, Alabama, were found guilty of multiple misdemeanors related to 'feeding and trapping cats on public property'. Body camera footage of their arrest showed both women, one 61 and the other 85 years old, being handcuffed and then driven away in police vehicles.[d] Support for their defense resulted in more than $90,000 being raised online, mostly in small amounts (more than 3,200 donations in all).[e]

Conservationists opposed to TNR have often dismissed the critical role caregivers can play in conducting periodic censuses of the cats in their care,[30,31,f] arguing that caregivers 'have not been trained on population ecology field protocols'.[g] And some conservationists have suggested that the people involved with TNR might suffer from mental illness.[30,32,33]

As the aforementioned examples demonstrates, the concerns caregivers have for their reputation and personal safety are well founded. So, too, are their concerns for the cats in their care – which might very well be greater than concerns for themselves. Incidents of community cats under threat of removal,[h] or even being shot[i] by individuals who were both fully aware that the cats were being cared for and unrepentant for their actions, are all too common. This shows blatant disregard for the bond that exists between cat caretakers and the animals in their care; and caregivers rarely have any means of recourse since they do not own the cats.

In December 2020, an unannounced culling (via shooting) of community cats at the Port of Newcastle's Stockton Breakwall in New South Wales, Australia, left caregivers to 'discover trails of blood, missing cats, cats with open, gaping wounds, and cats with broken limbs'.[34] The incident's impact on caregivers was, not surprisingly, directly related to their feelings of attachment for the cats in their care, 'evident when the caregivers talked of the individual cats by name and pointed out their favourites, when they

d. Yurkanin A. 'Y'all have three cop cars because I'm feeding cats?' Two Alabama women guilty in trial over feral felines - al.com. AL.com. Published December 14, 2022. https://www.al.com/crime/2022/12/yall-have-three-cop-cars-because-im-feeding-cats-two-alabama-women-guilty-in-trial-over-feral-felines.html. Accessed May 30, 2023.

e. n.a. Cat Ladies of Wetumpka Defense Fund, organized by Cat Ladies Defense Fund, LLC. gofundme.com. https://www.gofundme.com/f/cat-ladies-of-wetumpka-defense-fund. Accessed July 22, 2023.

f. Hostetler M, Wisely SM, Johnson S, Pienaar EF, Main M. *How Effective and Humane Is Trap-Neuter-Release (TNR) for Feral Cats?* University of Florida, Institute of Food and Agricultural Sciences Extension; 2020. https://edis.ifas.ufl.edu/pdffiles/UW/UW46800.pdf.

g. Wolf PJ. *Counting cats*. Vox Felina. Published January 18, 2021. http://www.voxfelina.com/2021/01/counting-cats/. Accessed May 24, 2023.

h. Foderaro LW. At a Long Island Beach, Human Tempers Flare Over Claws and Feathers. *The New York Times*. Published April 18, 2015. https://www.nytimes.com/2015/04/18/nyregion/a-battle-over-cats-and-birds-on-a-long-island-beach.html. Accessed May 31, 2023.

n.a. State seeks removal of feral cat feeding stations because of negative impacts on nēnē | Maui Now. Maui Now. Published April 12, 2023. https://mauinow.com/2023/04/12/state-seeks-removal-of-feral-cat-feeding-stations-because-of-negative-impacts-on-nene/. Accessed May 31, 2023.

Streitfeld D. As Google Feeds Cats, Owl Lovers Cry Foul. The New York Times. https://www.nytimes.com/2018/05/26/technology/google-cats-owls.html. Published May 26, 2018. Accessed August 5, 2018.

i. Chamings A. *The East Bay Regional Park District is shooting cats in Oakland, causing outrage*. SFGATE. https://www.sfgate.com/bayarea/article/East-Bay-Parks-are-shooting-cats-causing-outrage-15782797.php. Published December 8, 2020. Accessed May 31, 2023.

Rice H. Galveston bird-watcher calls feral cats fair game. *Houston Chronicle*. Published April 13, 2007. https://www.chron.com/news/houston-texas/article/Galveston-bird-watcher-calls-feral-cats-fair-game-1810590.php. Accessed May 31, 2023.

voiced concern for the wellbeing of cats who 'went missing' after the cull, and when they shed tears over the deaths of the cats killed in the cull during the interview process'.[34]

Limitations

Our survey was sent to individuals who had interacted in some way with a single community cat organization, and so the sample population is not necessarily representative of all community cat caregivers. It is possible that those who have sought out services from ACA are more attached to the cats in their care. In addition, the survey was deployed in a limited geographic area and so may not be generalizable to other communities. Moreover, comparing the results of Zasloff's[15] original survey to the CCAS-mod is somewhat problematic, both because the response categories were not identical (i.e. a 4- vs. 5-point scale) and because the original survey was conducted 31 years ago in a different community (San Francisco). The benefits of using a 5-point scale[17] suggest that the CCAS-mod would be most appropriate for future research.

Finally, although correlation analyses would be a logical extension of the results presented here, the earlier research reporting attachment levels of owners to their pets did not provide a breakdown of how variables (e.g. gender identity, length of ownership, number of cats owned) correlated to attachment. As a result, such analyses fall outside of the scope of this study. Future researchers might therefore consider exploring factors influencing the degree of attachment to community cats.

Conclusion

The fact that community cats are unowned in no way diminishes the strength of the bond caregivers feel. Such findings have clear policy implications – validating, for example, the common practice of returning healthy cats lacking identification (i.e. collar or microchip), regardless of perceived level of sociability, to where they were found, following sterilization and vaccination.

Authors' contributions

Sue M. Neal: conceptualization, analysis, and writing. Peter J. Wolf: analysis and writing.

Conflict of interest statement

In recognition of JSMCAH policy and our ethical obligations as researchers, the authors acknowledge that one of us (PJW) is employed by a national animal welfare organization that promotes TNR and RTF programs.

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