

Why don't more cats wear collars? Barriers associated with the use of collars for companion cats

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Abstract

5 Aims:

To investigate public perceptions of the use of collars for companion cats in New Zealand. To understand perceptions around safety and efficacy of collar use.

Methods:

10 An online questionnaire was distributed to members of the public via social media. The questionnaire collected details of respondents, cat ownership status, and responses to a number of questions regarding collar use in cats. Data were analysed using SPSS analytical software v21.0 for Windows (IBM Inc., Chicago IL, USA). Results were considered significant if $p \leq 0.05$.

15 Results:

A total of 512 responses were collected, 393 (76.9%) respondents reported owning at least one cat at the time of survey, of which 141 (36.4%) stated that at least some of their cats wore collars and 211 (54%) had at least one of their cats micro-chipped. Of the respondents with a pet cat, 351 (90%) allowed their cats outdoor access at least some of the time. Respondents
20 used collars for identification, and to reduce predation of birds and other animals. Reasons for

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not using collars included cat intolerance of collars, repeated collar loss and concern over collar safety. Respondents felt collars could cause injury if caught on objects, or if too tight, and many believed 'not all cats will tolerate a collar'. Significant differences were found between cat owners and non-owners regarding whether cats were important for pest control; 25 whether cats will tolerate collars; whether being well fed influences cat hunting behaviour; whether cats should be kept indoors at night; and whether a cat without a collar was likely to be a stray. Respondents trusted veterinarians and the SPCA most as sources of pet care information.

Conclusion:

30 Collar use for companion cats in New Zealand appeared to be low. Cat owners perceived a number of barriers to the use of collars which may be imagined, or result from incorrect use. Collars may be useful for improving animal welfare allowing rapid identification, improved rates of returns to owners and prompt medical interventions in the case of injury. Collars with attached devices such as bells are also useful to reduce the impact of domestic cats on both 35 native and introduced wildlife, and may improve public perceptions of stray/wandering cats.

Relevance:

A number of concerns have been raised in recent years about the negative impacts of cats on New Zealand's natural environment, and the possibility of poor welfare among unowned cats. 40 Understanding the perceived importance of cat collars and exploration of the perceived barriers to their use are vital to enhance our understanding of cat ownership, cat identification and impact of cat predation. This understanding can help to guide development of policies and practices to improve animal welfare, reduce the negative impact of pet predation, and promote responsible pet ownership.

SPCA Society for the Prevention of Cruelty to Animals, NZVA New Zealand Veterinary Association

Introduction

The domestic cat population in New Zealand has been estimated to be approximately 1.4 million owned animals, and approximately 48% of households in New Zealand are reported to own a cat (MacKay, 2011). This estimate excludes stray cats and, within Auckland, areas of high human population density have been shown to have particularly high densities of stray cats (Aguilar and Farnworth, 2012, 2013). These two groups of cats, which are largely indistinguishable, likely have a complex interaction which perpetuates New Zealand's cat population. Given the body of evidence demonstrating a strong bond between cats and their owners (Sable, 2013; Staats et al., 2008) companion cats, and therefore urban cat populations in general, are likely to remain part of the complex ecology of New Zealand for the foreseeable future.

Loyd et al. (2013) indicated that free-roaming cats may experience numerous hazards in the outdoor environment, including traffic accidents and fighting injuries. Becoming lost is an extension of these risks and cats are less likely to be reunited with their owners than dogs, in part due to a lack of routine identification (Lord et al., 2007a; Weiss et al., 2012). Proper identification is also useful for contacting owners in the event of emergency medical treatment, where poor animal identification may delay necessary interventions and reduce the likelihood of a positive outcome (Slater et al., 2012). Whilst feral cats can be euthanized without consultation, the Animal Welfare (Companion Cats) Code of Welfare 2007 requires strays to be relinquished to an appropriate animal charity for assessment and euthanasia after a seven day holding period (MPI, 2007). Farnworth et al. (2010b) have previously described

the complexities of classifying cats as feral, stray, or owned, and collars may be a useful
70 means of differentiating between owned and unowned cats. Collars have been reported to be
the most efficient method of visual identification for animals (Lord et al., 2007a, b). However
collars are prone to loss (Lord et al., 2010), and public perception about the safety of collars
may deter cat owners from using them (Calver et al., 2013; Lord et al., 2010). Weiss et al.
(2011) found that provision of a free collar and identification tag at spay/neuter significantly
75 increased the use of collars for identification. This perhaps indicated that, following
appropriate intervention, safety concerns may not be as large a barrier to collar use as
previously suggested. Microchips may be considered to be a safer, more reliable and
permanent means of animal identification, however microchips are used even less frequently
than collars (Lord et al., 2010; Lord et al., 2009; Slater et al., 2012). The utility of microchips
80 is dependent upon a number of factors including the animal being presented at a facility with
a functional microchip scanner; the animal being successfully scanned; and the owner contact
information associated with the microchip being current/correct (Lord et al., 2009).

Urban cats are known to be predators of wildlife in New Zealand (Flux, 2007; Gillies and
Clout, 2003), and have significant effects on both native and non-native urban bird species
85 (Baker et al., 2008; van Heezik et al., 2010). The risk posed by continuing cat predation has
prompted calls for, and introduction of, greater regulations on cat ownership in Australia
(Calver et al., 2011). One option to mitigate the impact of cats on wildlife in New Zealand is
to use collar-mounted devices, including bells, sonic devices and pounce inhibitors which
have been demonstrated to reduce the hunting success of cats (Gordon et al., 2010; Nelson et
90 al., 2005). Calver et al. (2007) reported collar-mounted devices worn alone or in combination
can reduce predation success by over 50%, and demonstrated that repeated hunting failures
resulted in reduced predatory behaviour. It has been postulated that regular use of collars with
mounted devices may contribute to the protection of native and non-native fauna (Calver et

al., 2011; Calver and Thomas, 2011; Farnworth et al., 2010a). However the use of anti-
95 predation devices is not without drawbacks, and some devices have been shown to be
unreliable (Calver and Thomas, 2011).

Despite the evidence that collars are useful for animal identification and as predation
deterrents, Farnworth et al. (2010a) demonstrated only 39% of New Zealand cat owners
provided their cats with a collar for visual identification, of which only 50% had bells
100 attached. This study aims to investigate public perceptions of the use of collars for cat
identification in New Zealand in an attempt better understand perceptions around safety and
efficacy of collar use for companion cats.

Materials and Methods

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Data on cat ownership and perceptions and use of collars were sought via an anonymous
online survey developed using online survey tool SurveyMonkey, and distributed through
social media. The survey remained open from August 7-29, 2013, and responses were
gathered from adult (18 years and over) New Zealand residents (n=512). The survey
110 consisted of thirteen questions, and can be viewed in full as appendix 1. Data gathered
included age, sex, area of residence, cat-ownership status, and management of any owned
cats. Respondents were also asked to indicate their level of agreement with a number of
statements regarding cats and collar use, responses were on a 5-point Likert scale (Likert,
1932) ranging from 'strongly agree' to 'strongly disagree'.

115 The research was approved by the Unitec Research Ethics Committee, Auckland, New
Zealand (UREC Registration Number: 2011-1152).

Statistical Analyses

Results were analysed using SPSS/PSAW 21 statistical software (IBM Inc., Chicago IL, USA). Differences in gender parity were analysed using χ^2 test. χ^2 tests were used on
120 contingency tables to explore differences between rural and urban cat owners regarding collar use, and attitudes toward cats for pest control. Attitudes concerning cats and collar use were also compared between owners and non-owners. Some responses were ‘pooled’ into ‘strongly agree/agree’, ‘neutral’, and ‘disagree/strongly disagree’ in order to satisfy the assumptions of the statistical tests.

125 Results

A total of 512 responses were collected. Table 1 summarises the demographics of the respondent population. Of the respondents, 393 (76.9%) reported owning at least one cat at the time of survey, and 142 (27.8%) reported working with animals in some capacity. There was a strong bias towards female respondents ($p < 0.001$), and cat owners ($p < 0.001$).

130 Of the cat owning respondents, 141 (36.4%) stated at least some of their cats wore collars. Urban cat owners were more likely to use a collar than rural cat owners ($p = 0.036$). Of the respondents who reported owning a cat, 211 (54%) had at least one of their cats micro-chipped, and 46% (180) reported that their cats were not micro-chipped. Of the respondents with a pet cat, 211 (54.1%) allowed their cats outdoor access at all times, 140 (35.9%) only
135 some of the time, 13 (3.3%) never allowed outdoor access, and 6 (1.5%) had a secured enclosed property. See table 2 for full cat ownership and collar use data.

When asked why they used collars respondents most often cited identification, and to reduce predation of birds and other animals. When asked why they did not use collars, respondents most often cited cats’ intolerance of collars, repeated collar loss and concern over collar
140 safety. See table 3 for further data on reasons for and against collar use.

Respondents tended to agree with statements suggesting collars could cause injury if caught on objects, or if too tight. There was also a high level of agreement with the statement ‘not all cats will tolerate a collar’. Respondents strongly agreed motor vehicle accidents are a significant risk for cats, and that if a cat was found with identification on it, respondents
145 would endeavour to contact the owner as quickly as possible. All statements and the levels of agreement are contained within table 4.

There were no significant differences between inner city/urban respondents and semi-rural/rural respondents in their attitudes toward cats for controlling pests. Significant differences were found between cat owners and non-owners regarding whether cats were
150 important for pest control ($p < 0.001$); whether cats will tolerate collars ($p = 0.001$); whether being well fed influences cat hunting behaviour ($p = 0.04$); whether cats should be kept indoors at night ($p = 0.001$); and whether a cat without a collar was likely to be a stray ($p = 0.007$). Table 5 contains the details of responses to each of these statements.

When asked which sources of pet care information were most trusted, respondents most often
155 identified veterinarians and the SPCA. Full data on most trusted sources of pet care information can be found in table 6.

Discussion

The female bias in responses is unsurprising, as female response bias to online questionnaires has been demonstrated (Stieger et al., 2007). Additionally, some studies have suggested
160 women may be more likely to own a cat (Murray et al., 2010; Westgarth et al., 2010).

The low percentage of respondents reporting cat collar use is consistent with the findings of Farnworth et al. (2010a), and a number of respondents (particularly cat owners) strongly believed collars to be unnecessary and/or dangerous, and poorly tolerated by cats. Micro-chipping appeared to be more commonplace than collar use, and may be a preferable method

165 of cat identification for New Zealand cat owners. Respondents tended to disagree that collars
were unnecessary if a cat was micro-chipped, which suggests there may be some level of
cognitive dissonance between the value of collars as a means of identification and perceived
risks/limitations of collars. On the basis of this, veterinary practices may wish to encourage
all clients to microchip their cats, and also ensure all unidentified cats are scanned for
170 presence of a microchip.

Respondents expressed concern over the safety of collars, particularly when caught on
objects, and 63 respondents reported having lost a cat, or had a cat injured as a result of
wearing a collar. The literature suggests incidence of collar-related injuries is low (Calver et
al., 2013; Lord et al., 2010), however collar-related injuries were reasonably commonly cited
175 by respondents to the current study, perhaps due to variability in collar quality and materials,
or incorrect fitting of collars (too tight, or too loose). A larger proportion of respondents
showed some level of agreement to the statement ‘You should always be able to fit all of
your fingers under a cat's collar when it is on the cat’, compared to those who disagreed to
some degree (225:145). The current recommendation for collar tightness is two fingers
180 should fit under the collar (Lord et al., 2010), and this discrepancy suggests there may be
some level of public misconception as to how tight a cat collar should be. Studies on collar
safety have found that collar-related injuries were more likely to result from collars which
were too loose rather than collars which were too tight (Calver et al., 2013; Lord et al., 2010).
Applying collars too loosely may explain the surprisingly large number of collar-related
185 injuries identified by respondents in this study, or perhaps such injuries may be under-
reported in the literature. At the very least it may be worthwhile to explore this area in future
research. Previous studies have highlighted a high level of compliance when collars are
provided to clients by a veterinarian (Weiss et al., 2011), so veterinarians and the SPCA

should perhaps strongly promote collar use, and sufficient information must be provided to
190 clients to ensure safe application and early use of collars in cats.

The majority of respondents indicated collar-mounted devices reduce predation, but most did
not agree that how well fed a cat is will influence hunting behavior. This aligns with current
understanding that many cats engage in hunting behaviour independent of hunger (Barratt,
195 1998; Hervias et al., 2014). There appeared to be some level of confusion expressed by
respondents as to the role of cat predation in controlling pest species, as there were high
levels of agreement with statements suggesting collars are used to deter hunting, but also that
cats are important for pest control. This indicates a level of dissonance between using collars
to reduce hunting, while valuing cats for their ability to hunt and control pests. Respondents
200 may be aware of cat predation and believe collars are predation deterrents, but may be unsure
as to the true impact of cat predation on native and non-native fauna. Cat owners were more
likely to agree that cats play an important role in the control of pests, which may then
influence their decisions on whether to use collars and collar mounted devices, and perhaps
explain the low utilization of such devices identified by Farnworth et al. (2010a).

205 Attitudes between owners and non-owners also differed in regards to the nocturnal
confinement of cats, with non-cat owners more likely to favour keeping cats in overnight.
Loyd et al. (2013) note that whilst overnight confinement may limit the potential captures of
nocturnal species, the susceptibility of diurnal and crepuscular species is increased with the
high rate of daytime access companion cats are given to free-roam outdoors. It would have
210 been interesting to explore the reasons why people felt cats should be confined at night, as the
authors are suspicious it would be related to aggressive cat interactions and cat safety rather
than predation. The difference between owners and non-owners is less easy to explain, but

perhaps there is a perception among non-owners that cats roaming at night are a nuisance. This may be an area for future investigation.

215 Most respondents agreed motor vehicles are a major cause of trauma for cats, and only a small number of respondents felt confident their cat is safe whilst free-roaming. A large majority of respondents agreed they would make the effort to contact the owner of an injured or deceased pet if it were immediately identifiable. This suggests cat owners are aware of the risks to their cats when free-roaming, and feel identification is valuable for early notification
220 of injury or death. Low collar use in this situation may be attributable to the fact that 29% of owners felt their cats rarely leave their own property – almost certainly an underestimate of the true range of most cats (Barratt, 1997; Horn et al., 2011; Wierzbowska et al., 2012).

The limitations of this study include the method of online survey distribution which may not reach a wide range of socio-economic groups, or an appropriate mix of cat owners / non-
225 owners in the general population. There is also likely a response bias in favour of those with an interest in animal welfare and/or cats. Whilst we understand the limitations of the study, and the probability of a biased sample group, the results highlighted some interesting points that can be taken into consideration for on-going public education and management of domestic cats.

230 Conclusion

Whilst only a preliminary investigation, this study has yielded interesting results which indicate collars are not widely used by cat owners, and microchips may be more readily adopted as a means of cat identification. As the most trusted sources of pet information according to respondents, veterinarians and the SPCA should perhaps consider promotion of
235 collar use, and also education of the public and clients about how to do so safely. Use of collars in domestic cats in New Zealand will enhance their welfare by increasing success in

reuniting lost cats with their owners, facilitate prompt identification of cats allowing early intervention medical treatments; and secondarily promoting biodiversity and reducing predation through use of collar-mounted devices to decrease hunting success.

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Table 1. Demographic data of respondents

Variable	Response	N (%)	Total responses
Sex	Female	440 (86.6%)	508
Age	18-24	85 (16.7)	
	25-34	141 (27.6)	
	35-44	122 (23.9)	
	45-54	91 (17.8)	
	55-64	45 (8.8)	
	65-74	26 (5.1)	510
Area of residence	Inner city	65 (12.8)	
	Urban	345 (67.8)	
	Semi-rural	54 (10.6)	
	Rural	45 (8.8)	509
Works with animals	Yes	142 (27.8)	510
Owns one or more cats	Yes	393 (76.9)	511

Table 2. Number of cats owned by respondents, use of collars and microchips, and cat access to the outdoors

Variable	Response	N (%)	Total responses
Number of cats	1	180 (46)	391
	2	128 (32.7)	
	3	37 (9.5)	
	>3	46 (11.8)	
Cats wear collars	All	110 (28.4)	387
	Some	31 (8)	
Cats micro-chipped	All	176 (45)	391
	Some	35 (9)	
Cats outdoor access restricted	Always – indoor only cats	13 (3.3)	390
	Daytime only	7 (1.8)	
	Dark only (dinner-breakfast)	68 (17.4)	
	Overnight only (late evening-morning)	65 (16.7)	
	Never – free to come and go	211 (54.1)	
	Completely enclosed property	6 (1.5)	

Table 3. Reasons why collars are or are not used by respondents

Reasons collars used	N	Reasons collar not used	N
To prevent them catching/killing other animals	40	The bells/beepers on them are disruptive to us	16
Flea control	17	My cat keeps losing them/They need to be replaced too often	118
Identification	105	I am happy for my cat to control pests around my home	54
To prevent them catching/killing birds	71	My cat is micro-chipped and therefore doesn't need a collar for identification	35
Because they look great	18	I don't believe collars are effective at reducing hunting behaviour	47
Other	34	Too expensive	10
		My cat is intolerant of collars	101
		I think collars are unsafe	88
		I've had a cat injured because they were wearing a collar/I have lost a cat due to collar injury	63
		The bell/beeper on it seemed to bother my cat	28
		Other	65

Table 4. Number of responses given to each statement

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Don't know/ N/A	Total
Cats often get their paws or limbs stuck in their collars and injure themselves	49	101	110	121	17	86	484
Collars with bells, or other deterrent devices reduce the number of animals and birds cats catch/kill	79	204	83	60	16	44	486
I have had to take my cat to the vet at least once following a road accident	48	46	13	87	125	166	485
Collars with bells can improve a cat's hunting ability	11	14	65	218	145	35	488
Cats play an important role in controlling pest populations in New Zealand	59	118	149	88	37	36	487
Motor vehicles are a major cause of trauma for cats	183	167	61	22	6	48	487
Domestic cats who are well fed do not tend to catch many animals/birds	30	76	68	191	99	23	487
I believe owners should always keep cats indoors overnight	99	98	123	110	45	9	484
My cat has a tendency to fight with other cats in the	21	87	65	124	74	117	488

neighbourhood

I feel very confident that my cat is safe whilst it is free-roaming around the neighbourhood	45	129	88	92	24	106	484
I would make the effort to call the owner if I encountered an injured or deceased cat with an ID Tag	363	75	9	6	7	26	486
Not all cats will tolerate a collar	127	220	43	41	17	37	485
Flea collars are still the most effective form of flea control	6	16	51	148	191	71	483
If collars are too tight, cats can experience trouble breathing	166	223	30	8	4	56	487
Cat collars should be replaced every 2 years	26	100	153	32	18	156	485
Cat collars are unnecessary if a cat has been micro-chipped	25	66	110	176	71	37	485
I have used flea collars in the past and my cat absolutely hates wearing a collar now	17	51	57	76	63	220	484
You should always be able to fit all of your fingers under a cat's collar when it is on the cat	85	140	42	115	30	72	484
My cat rarely leaves my property	70	69	50	134	51	112	488

Cats risk being choked by collars if they are caught on anything, such as branches or fences	118	214	61	51	14	29	487
Cats not wearing collars are generally stray cats	13	16	51	199	193	12	484

Table 5. Number of responses to statements for which there was a significant difference ($p < 0.05$) between cat owners and non-owners

Statement	Ownership status	Strongly agree/agree	Neither agree nor disagree	Strongly disagree/disagree	Total	P value
Cats play an important role in controlling pest populations in New Zealand	Owner	78	121	152	351	< .001
	Non-owner	47	28	25	100	
	Total	125	149	177	451	
Not all cats will tolerate a collar	Owner	38	28	286	352	.001
	Non-owner	20	15	61	96	
	Total	58	43	347	448	
Domestic cats who are well fed do not tend to catch many animals/birds	Owner	218	51	92	361	.040
	Non-owner	72	17	14	103	
	Total	290	68	106	464	
I believe owners should always keep cats indoors overnight	Owner	130	104	137	371	.001
	Non-owner	25	19	60	104	
	Total	155	123	197	475	
Cats not wearing collars are generally stray cats	Owner	314	40	16	370	.007
	Non-owner	78	11	13	102	
	Total	392	51	29	472	

Table 6. Most trusted sources of information about pet care

Source	Most trusted	Second most trusted	Third most trusted	Total
Social media groups	0	4	17	21
SPCA	42	243	59	344
SAFE	7	21	47	75
Pet Magazine	1	11	39	51
Breeders	8	28	48	84
Friends/family	11	36	91	138
Library books	9	22	39	70
Veterinarian	389	62	17	468
Internet (self-searching)	19	55	120	194