

## Cats on farms in the UK: numbers and preventative care

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Studies concerning domestic cats on farms have historically explored social interactions and roaming patterns. Limited information exists on the numbers of farm cats, and care provided for them. Questionnaire-based exploration of the farm cat population has been conducted in the USA<sup>1</sup> and the UK<sup>2</sup>. However, neither study distinguished between types of farm cat, nor extended beyond basic provisioning and reasons for keeping cats.

The aim of this study was, within a UK sample, to estimate the number of 'pet', 'farm' and 'feral' cats living on farms, describe the characteristics of farms with any type of cats and describe the resources and preventative care provided to 'pet' and 'farm' cats.

An anonymous 23-question survey was constructed (Supplementary material). Questions included farm details (type of farm, size, location), the numbers of 'pet', 'farm' and 'feral' cats and the neutered status of and provisions made for 'pet' and 'farm' cats.

The questionnaire ran online between October 2016 and January 2017 and was shared via social media, the Young Farmers Association and veterinary practices. Paper copies of the questionnaire were available at two Somerset farmers' auctions and sent to a small convenience sample of veterinary practices in Cornwall, Somerset and Hereford for distribution to farmers.

Respondents were self-selected; eligibility was restricted to farmers, farm workers and farm residents at least 16 years old. Only one questionnaire was instructed to be completed per farm, although verification of compliance was not possible. A prize draw incentive was used.

Ethical approval was granted from the University of Bristol ethical committee (reference 30541).

The definitions given for types of cat were: Pet cats “live mainly indoors and where you or a family member provide most of their food”. Feral cats “live around the farm but are not fed by anyone on the farm and are not considered to be ‘part of the farm’”. Farm cats “live mainly outdoors or in outbuildings, derive some or most of their food from active hunting and are considered to be ‘part of the farm’”.

The number of ‘pet’, ‘feral’ and ‘farm’ cats within the sample was calculated. For ‘farm cats’, chi-squared tests were used to analyse associations between their presence/absence and the following variables: organic/conventional farms; farm location (England /rest of the UK); farm size (less than 100 hectares/100 hectares or more); and type of farm (livestock compared with arable).

Descriptive statistics were reported for the proportion of farms that provided food to ‘farm’ cats, and vaccinations to ‘pet’ and ‘farm’ cats and the percentage of ‘pet’ and ‘farm’ cats which were neutered.

Data were analysed using SPSS Statistics version 23 (IBM; NY; USA). Significance was set at  $P < 0.05$ . Confidence limits were calculated using Epitools<sup>3</sup>.

Questionnaires were completed by 109 respondents. Most (n=106) provided data on the number of cats living on their farm, with 92.5% (n=98) having one or more cats. The numbers of 'pet', 'farm' and 'feral' cats on the sample of farms are summarised in table 1. For farms with 'farm cats', (n=69) most had one (n=17; 24.6%) or two (n=22; 31.9%) cats. Thirty (28.3%) farms reported having both 'pet' and 'farm' cats on their property.

No associations were found between the presence of 'farm cats' and: organic compared to conventional farms ( $\chi^2=0.12$ ; df 1; P=0.73), farms in England compared to those in Wales/Scotland/Northern Ireland ( $\chi^2=0.37$ ; df 1; P=0.54), farms under 100 hectares compared with farms of 100 hectares and over ( $\chi^2= 2.55$ ; df 1; P=0.11), or the type of farm (livestock compared with arable) ( $\chi^2=0.39$ ; df 1; P=0.84).

All farms provided food for their 'farm cat(s)'. Of these, 92.8% (64/69) gave food daily. Forty-five percent of adult 'farm cats' (n=148/325) were neutered. For males (n=100), 50% were neutered (n=50), 48% entire (n=48) and 2% unknown (n=2). For females (n=186), 53.2% were neutered (n=99) and 46.7% entire (n=87). Thirty-nine cats were of unknown sex and neuter status. Of 113 'pet' cats, 92.9% (n=105) were neutered, with four male and four female entire cats reported. Data for the vaccination frequency of 'farm' and 'pet' cats are shown in table 2.

To our knowledge, this is the first UK study to investigate associations between farm characteristics and the presence of cats. No associations were found between having 'farm cats' and the type of the farm, size of the farm, country-level location and whether or not the farm was organic (P>0.5).

All respondents stated that food was provided to their 'farm cats'. In a previous UK study this number was reported as 86.7%. In the current study, the definition of 'farm cats' included cats who obtained some or all of their food by hunting, so it may be that any cat who received no food was classified by respondents as 'feral'. Low uptake of vaccination was reported; especially for the 'farm cat' group. Unvaccinated farm cats could be a source of disease for other populations of cats<sup>4,5</sup>

Fewer than 50 percent of 'farm cats' were neutered. Compared with the percentage of owners that reported neutering their pet cats (93%<sup>6</sup>) the proportion of 'farm cats' reported as neutered is very low. The proportion of neutered 'pet' cats was 92.9%. Unneutered 'farm cats' might provide a source for breeding; contributing to population increases.

In 2010, 186,660 farm holdings were registered in the UK<sup>7</sup>. Within our sample, 69% of farms had 'farm cats', with a median of two per farm. Extrapolating these numbers to the UK results in an estimate of 257,590 'farm cats'. A previous study identified 81.7% of farms in the UK had one or more cats<sup>2</sup>, whereas 92.5% of our sample had any kind of cat.

One of the reasons these results may differ from those of previous studies is the self-selected nature of the respondents in the current study. It is possible that this created a bias towards farmers who were interested in the cats on their farm. If this bias exists, it is likely that the levels of food, vaccination and neutering reported above is an overestimation. Additionally, the reported figures of the number of 'farm cats' in the UK may be an overestimate if it is

assumed that our self-selected respondents were more likely to own cats than non-respondents. The estimate should thus be treated with caution.

The small number of responding farms also limited how reliably the results could be extrapolated to the whole UK, as well as the reliability of the statistical testing. Sharing the survey through veterinary practices may have biased towards farms with animals and future studies should address this, as well as the self-selection methodology. There was also no way of verifying that only one response came from a farm. However, very little is known about cats on farms and this study provides important preliminary information. With a potentially large number of cats receiving low levels of preventative care on UK farms, this could be a target for vaccination and neutering campaigns. Future studies could build on the methodology and knowledge from this study to develop this area further.

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**Table 1.** The number and percentage of a sample of farms in the UK with or without ‘pet’, ‘farm’ or ‘feral’ cats and the prevalence of each type of cat between October 2016 and January 2017 (n=106 farms). Excluding sample farms without any cats, the range, median and interquartile ranges for the numbers of cats on farms are also displayed.

Type of cat	Number of farms without cats of this type (%)	Number of farms with cats of this type (%)	Prevalence (95% CI)	Number of cats			
				Range	Median	25% quartile	75% quartile
Pet	54 (51)	52 (49)	0.49 (0.37-0.56)	1-8	2	1	2.75
Feral	90 (85)	16 (15)	0.15 (0.10-0.23)	1-8	2	1	4
Farm	37 (35)	69 (65)	0.65 (0.56-0.74)	1-27	2	1.5	6

**Table 2.** The vaccination frequency of ‘pet’ and ‘farm’ cats on farms which have ‘pet’ cats only, ‘farm’ cats only and both ‘pet’ and farm cats

Vaccination frequency	Farms with either pet or farm cats		Farms with both pet and farm cats		No pet or farm cats
	Pet cats only N (%)	Farm cats only N (%)	Pet cats N (%)	Farm cats N (%)	
Yearly	9 (42.9)	3 (7.3)	12 (40)	3 (10.0)	-
Less than yearly	2 (9.5)	1 (2.4)	1 (3.3)	0 (0)	-
Once as kittens	4 (19.0)	7 (17.1)	8 (26.7)	6 (20.0)	-
Never	6 (28.6)	30 (73.2)	9 (30.0)	21 (70.0)	-
<b>Total</b>	21	41	30		3