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Management of feral domestic cats in the urban environment of Rome (Italy)

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Abstract

In Italy, which is rabies-free, the national Law No. 281 [Legge Nazionale 14 agosto 1991. No. 281: Legge Quadro in materia di animali di affezione e prevenzione del randagismo. Gazz. Uff. Rep. Ital. no 203 del 30 agosto 1991: p. 3] on the management of pets and on the control of feral cats has introduced the no-kill policy for this species. Thus, “trap-neuter-release” (TNR) programs have been carried out for >10 years. In this paper we present data on registered colonies and censused cats in Rome from 1991 to 2000; the results of the neutering campaign from 1991 to 2000; and a survey, on 103 cat colonies, on the effects of demographic control of urban feral-cat colonies in the city of Rome, carried out by the local Veterinary Public Services (VPS) in collaboration with the associations of cat care-takers. In 10 years almost 8000 were neutered and reintroduced in their original colony. The spay/neuter campaigns brought about a general decrease in cat number but the percentage of cat immigration (due to abandonment and spontaneous arrival) is around 21%. This suggests that all these efforts without an effective

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education of people to control the reproduction of house cats (as a prevention for abandonment) are a waste of money, time and energy.

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1. Introduction

The debate about the no-kill policy is a topical subject in feral-cat population management.

In Italy, the promulgation in 1991 of national Law No. 281 on the management of pets and on the control of stray dogs and feral cats has introduced the no-kill policy for both species. The crucial points of [Law No. 281 \(1991\)](#) concerning the management of feral cats are:

1. Feral cats have the right to live free; they are protected and cannot be moved from their colony.¹
2. Feral cats have to be surgically neutered by the local Veterinary Public Services (VPS) and reintroduced in their colony.
3. Cat care-takers (known also as “cat-lovers”) become an institutionalised figure. Colony care-takers are gathered in associations; they can have the official assignment of the management of a cat colony if the local VPS and the office for the animal welfare agree. Management modalities are defined at the local level.

Cats are currently classified as feral when they can range freely and are not closely attached to a particularly household ([Passanisi and Macdonald, 1990](#)) and/or if they avoid human contact ([Levy et al., 2003](#)).

Among western countries Italy, that is rabies-free ([Prosperi, 1974](#)), represents the only example where the “no-kill” policy has been applied by law for >10 years. Killing the feral cats has been illegal since 1991 (since 1988 for Rome and Latium Region, following the [Regional Law No. 63 \(1988\)](#), now substituted by the [Regional Law No. 34 \(1997\)](#)). Instead, trap-neuter-release (TNR) programs have been used. TNR programs are considered the most practical, effective and humane way for controlling free-roaming cats because they are intended to decrease reproduction without causing harm to the cats ([Levy et al., 2003](#)). Moreover, only TNR programs encounter the approval and, thus, the cooperation of cat care-takers.

So far, the evaluation of the effect of a long-term TNR program on feral urban cat populations is insufficient in our and other countries. Most published studies are short-term (reviewed in [Gunther and Terkel, 2002](#)) and on only one ([Levy et al., 2003](#); [Zaubrecher and Smith, 1993](#)) or two cat colonies ([Neville and Remfry, 1984](#)). Thus, it is difficult, if not impossible, to determine if any change did in fact result from the method of treatment. The only study carried out on an extensive scale (920 cats in 132 colonies) ([Centonze and Levy,](#)

¹ In the law the colony is not defined. Following [Levy et al. \(2003\)](#) in this paper a colony is defined as a feeding area and shelter frequented by an apparently stable population of cats.

2002), was done on colonies (70%) that were in rural areas or in small towns, and therefore is not directly comparable with the results of TNR programs carried out in strictly urban areas.

Given the peculiar position of Italy in this context (due to the Italian laws) we feel that results of long-term TNR extensive campaigns are crucial for understanding costs/benefits of the method. Thus, in this paper we present:

1. Data on registered colonies and censused cats in Rome from 1991 to 2000.
2. The results of the neutering campaign from 1991 to 2000.
3. A survey on the effects, after several years, of demographic control of urban feral-cat colonies in the city of Rome, by the VPS in collaboration with the associations of cat care-takers.

Due to the massive neutering campaign, we would expect a decrease in number of cats and in the number of cat colonies.

2. Materials and methods

The subject of our study were feral cats inhabiting urban streets (Natoli, 1994). Following the suggestion by Gunther and Terkel (2002), they might be defined correctly, as simply “street cats” because they lived in the street, they ranged freely and they did not belong to a specific household and the majority of them were untamed.

Colonies were censused and registered by the VPS after an evaluation on the site and on the state of the cats (feral versus free-roaming owned cats); cat care-takers were responsible for capturing the cats that were then surgically neutered by the VPS and reintroduced in their original colony. The tip of the left ear was cut to identify neutered cats.

In Rome, VPS are organised in five territorial units, from A to E. When the law came out, only the VPS of Rome D was active and provided neutering for the whole city (and this was done in the dog shelter). In 1997 the public veterinary practices of Units A, B, C and E were activated. Thus, because this paper concerns the activity by the Rome D VPS, data reported here for the period 1997–2000 refer only to cat colonies of VPS Rome D rather than for the whole city of Rome.

Urban feral-cat colonies living within the Municipality of Rome were registered by VPS at the dog shelter since 1989 on the basis of: (a) citizen requests for cat-neutering or (b) the notification of hygienic (bad smell due to remains of food, sprayed urine, etc.) and/or sanitary (risk of transmission of zoonotic diseases) problems concerning the presence of cats.

A survey to describe the effects of the neutering campaign was started in November of 2000 and was completed in June 2001. We had resources to describe the number and the status of 10% of colonies registered in the period 1991–2000 in Rome. The surveyed colonies (103) were chosen within the Rome D Unit area from different contexts (historical ruins, parklands, private gardens, hospital grounds) and of different sizes, to have a representative sample of situations met in the city. Colonies were evaluated 2–6 years after first registration; no colony registered before 1994 or after 1998 was surveyed. Data recorded for each colony were: (i) number of cats initially registered c/o VPS (declared by cat care-takers); (ii) number of cats counted by VPS; (iii) number of cats neutered in public

veterinary facilities; (iv) number of cats neutered privately (declared by cat care-takers); (v) number of cats present at date of survey, checked by VPS; (vi) number of non-neutered cats present at date of survey, checked by VPS.

Descriptive statistics are given. To evaluate the differences of number of cats in the colony before versus after the neutering campaigns, Wilcoxon (paired) signed-rank test (1-tailed) was applied. Furthermore, to assess the effects of different years on TNR program results, Spearman's rank correlation was applied to the difference in colony size under the neutering program and the actual number of years (2–6) between the neutering and the survey.

3. Results and discussion

The number of registered cat colonies has been steadily increasing from 1991 to 2000 (Table 1). Recall that the number of cat colonies that were registered in 1991 (76) refers to the whole city, whereas data reported for the 2000 refer only to a part of Rome (managed by the Health Unit Rome D) and underlines a massive increase in the attention on management of cat colonies.

Number of cats per colony ranged from 3 to more than 80. In 10 years, almost 8000 (out of 13,273 cats declared and 5792 colonies registered) were captured by cat care-takers, neutered by the VPS and reintroduced in their original colony by cat care-takers (Table 1); 2 cats out of 7980 died post-operatively.

Many cats were neutered privately at cat care-takers expenses; long time latency between the request and the VPS intervention and lack of trust in the Public Service itself were reasons more often given by cat-lovers for not using VPS facilities.

The survey carried out in 2000 on 103 cat colonies showed that the neutering campaigns brought about a general decrease in cat number (from 1655 to 1293 censused individuals) (Wilcoxon (paired) signed-rank test (1-tailed): $Z = -3.6$, $N = 103$, $P < 0.001$). In 55 colonies the number of cats decreased, in 20 it remained stable whereas in 28 of them the number of cats increased. Before the neutering campaign the number of cats per colony ranged from 4 to 50 (number of cats/colony: median = 12, $QR_{25} = 10$, $QR_{75} = 20$). After starting the neutering program, the number of cats per colony ranged from 2 to 40 (number of cats/colony: median = 10, $QR_{25} = 6$, $QR_{75} = 16$). One colony went extinct and in another case only 1 cat remained from a colony originally composed of 20 cats. Large colonies (21 cats or more) tended to be rarer (23 before and 9

Table 1

Cat sterilization campaign in Rome (Italy) by Public Veterinary Service in cooperation with Associations for Animal Protection (1991–2000)

Number	Year									
	1991	1992	1993	1994	1995	1996	1997 ^a	1998	1999	2000
Cats declared	1418	1696	1174	1896	2064	1704	1364	785	407	765
Cats sterilized	953	1257	1108	900	738	492	550	531	693	758
Colonies registered	76	194	313	433	562	681	799	863	906	965

^a In 1997 other VPS facilities were activated in Rome (see text). Data here reported for the years 1997–2000 refer only to cat colonies of VPS Rome D.

Table 2

Results of the survey carried out in 2000 on 103 cat colonies in Rome, 2- to 6-year interval between initial and final recordings

Total cats initially recorded	1655
Total cats neutered by VPS	1005
Total cats neutered privately	419
Total non-neutered cats present today	441
Total cats declared today	1293

after TNR program), whereas small sized colonies increased in number. TNR campaign for feral cats is having some success albeit, not consistently seen in every colony. Nevertheless, the results show that TNR programs have some effects after >2 years from the beginning, as it was already hypothesised (Frank, 2004; Gunther and Terkel, 2002). In fact, in this study the colonies that were neutered 2 years before the survey increased in number of cats (13%), whereas colonies neutered 3, 4, 5 or 6 years before the survey showed progressive decreases of 16, 29, 28 and 32%, respectively (Spearman's rank correlation = -0.90 ; 1-tailed $P < 0.035$).

However, on the whole, we had hoped for a more-important decrease in the numbers of feral urban cats. In reality, although many cats are neutered and many neutered cats die (from car accidents, etc.), many cats are introduced in colonies (mainly by abandonment of domestic house cats). Data of Table 2 show clearly this complex demographic dynamic. The total number of cats neutered both by the VPS and privately is higher than the number of cats declared during the survey. Moreover, at survey, 34% of the cats declared were non-neutered. Available data on number of cats dead or disappeared and abandoned or immigrated, given by cat care-takers and available only for 55 colonies out of 103, could not be checked by VPS and were not included. If we compare number of cats initially registered and the number of cats present today, the percentage of cat decrease (due to death or disappearance) would be around 22%. But, if we consider the number of cats neutered during the neutering campaign (1424) plus the number of non-neutered cats at survey (441), the mortality or disappearance risk raises to 31%.

Moreover, if we compare number of non-neutered cats out of the cats initially registered (231) and the number of non-neutered cats present today (441), the percentage of cat immigration (due to abandonment and spontaneous arrival) would be around 16%. But, if we take into account the mortality risk of non-neutered cats, cat immigration raises to 21%.

Cats born within the colony do not contribute substantially to the increase because young kittens are almost invariably taken and homed by the cat care-takers.

These data suggest that the control of reproduction of owned pet cats is crucial to achieve control of the feral-cat population. An effective information campaign is needed so that the cat-owning public accepts the need for better management of their pets' fertility. Subsidized neutering for owned pet cats might be less expensive in the long run.

Finally, after 15 years of experience, people involved in the management of urban feral cats are aware that a more careful plan of neutering is desirable, but we also have to be careful not to identify the concept of "welfare" with only "neutering".

4. Conclusions

This study gives some crucial information on the results of long lasting TNR programs on a large number of urban feral cats. The main evidence is that TNR programs produce a conspicuous (16–32%) decrease on total cat number, but not as great as hoped and not before at least 3 years from neutering. TNR programs alone are not sufficient for managing urban feral-cat demography, and we suggest that they be matched with an effective educational campaign directed to citizens to reduce the high risk of owned-cat abandonment.

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