Dog Population Management in Colombo, Sri Lanka

Introduction

Sri Lanka is a tropical Asian country with a many roaming dogs and is endemic with rabies, with 51 confirmed human cases in 2008 (rate of 0.27 per 100,000 pop). The Colombo Municipal Council (CMC), in the capital of Sri Lanka, used to manage their dog population (for more than 100 years) by catching dogs with nooses, impounding for three days and if ownership was not claimed, eliminated often through gassing using exhaust fumes. This was an ongoing process where approximately several hundreds to a maximum of four thousand dogs were culled each year, on top of registering and vaccinating owned dogs within its limits. However, with this system the average number of rabies cases of dogs in Colombo lingered around 30-35 per year from 1990 to 2006, and it did not result in a controlled dog population. A circular by the Ministry of Local Government & Provincial Council in May 2006 halted the indiscriminate killing but not the capture of stray dogs. Later that year all capture other than suspect rabid dogs was also halted by the CMC.

The concerns for human health and dog welfare have led to the start of the Colombo Dog Population Management project with three primary partners: CMC, Blue Paw Trust (BPT) and the World Society for the Protection of Animals (WSPA). This project kicked off with a pilot year starting June 2007 and was fully launched in mid 2008. It is expected that the CMC takes on the primary responsibility of this project post 2012.

This project was developed to follow the guidance provided by the International Companion Animal Management (ICAM) Coalition (www.icam-coalition.org). This guidance advises an initial stage of assessment to understand the dog population dynamics, human-dog relationship and potential conflict (including the risk of rabies) locally before developing a comprehensive programme that addresses the root causes and of the problems faced in the specific location. Further to this, it highlights the importance of monitoring and evaluation to learn and evolve the project further, with a focus on sustainability through community involvement and building responsible dog ownership.

Assessment of the problem

A survey was carried out in mid 2007 to establish the status of the dog population at this time; and hence a baseline for future evaluation of the programme, and for developing the detailed design of the programme itself. The survey consisted of two related elements; (1) a direct observation and count of roaming dogs and (2) a questionnaire of dog and non-dog owners. The aim was to estimate the size and composition of the entire dog population in the city (both roaming and confined dogs), to investigate the welfare status of these dogs,

to begin to understand the dynamics of the population and more specifically what was maintaining the roaming dog population, and the community’s attitude towards dogs.

The number of roaming dogs at the peak time of day in the CMC area was estimated to be 3,385 (95% confidence intervals of 2,612 and 4,837), of which 46% are owned. A baseline indicator for lactating females (11.2% of roaming females were lactating) and number of puppies (7.3% of total roaming dogs were puppies) was obtained and are used to monitor the implementation of the project. Indicators of the welfare status of the dogs were also measured and used as a monitoring indicator, namely the presence of skin condition (42% of roaming dogs had a skin condition) and body condition score (32% of roaming dogs had body condition of 1 or 2, from a scale of 1-5, indicating emaciated or thin body condition).

The number of owned dogs in Colombo was estimated at 15,640 (95% confidence intervals of 9,305 and 21,261), with a high percentage (83%) of those has been vaccinated against rabies. The attitude questions provided evidence that dogs belonging to people with a less positive attitude towards dogs in general are less likely to be vaccinated or dewormed, and are more likely to suffer from skin conditions. However, the welfare indicators for owned dogs suggested they had a better welfare status than roaming dogs. With only 17% showing skin infections, only 1% showing lameness and 27% with a body condition score of 1 or 2. Of the adult females, only 23% of them were reported to be sterilised or chemically contracepted. From the survival of adults and pups and the estimate of fecundity, the annual growth rate of the owned population was estimated to be 10%; or 1,500 extra dogs per year.

**Designing the intervention**

The project started with a focus on just a few components in the pilot year, but a more comprehensive approach was designed using the logical framework approach with stakeholder participation at the end of 2008, utilising the results of the assessment and learning points from the pilot year.

The aim of the project is a Colombo in which humane and responsible dog management positively impacts the community and improves the welfare of its dogs. This aim will be realized by achieving a smaller, healthier and more accepted roaming dog population in Colombo. Eight objectives were identified as important to achieve the aim, they are:

1. Suitable national and local legislation are able to support and sustain this project
2. Increased capacity and engagement of the CMC at all levels to manage their dog population humanely
3. Increased individual and community responsibility towards dogs
4. Increased awareness of bite prevention in school children (high risk ages)
5. Affordable veterinarian treatment available to low income communities
6. Increased percentage of female dogs sterilized to decrease rate of population growth
7. 80% of all dogs in CMC areas are vaccinated against rabies
8. Project model processes are developed, documented and promoted
Indicators were also set for ongoing monitoring and evaluation of the project. Several methods of data collection have been used for monitoring, including questionnaires, regular direct observation of roaming dog populations in a sample of wards, pre and post education evaluations and collection of most significant change stories. Official statistics on dog rabies cases, human rabies cases and dog bites are also collated to assess impact.

This set of project aims, objectives, activities and indicators were modified several times in the course of the project to incorporate learning points and will be reviewed from time to time.

*Please see Annex A for the current Logical Framework of the project.*

**Carrying out the project**

Various activities are carried out to achieve the eight objectives listed above. The Logical Framework (Annex A) highlights all the activities being carried out. Below is the summary of key activities and achievements from June 2007 to June 2010 according to the objectives:

1. Suitable national and local legislation are able to support and sustain this project
   a. Legislation related to dog population management (rabies ordinance, dog registration and the newly proposed animal welfare act) are reviewed and suggestions were proposed.

2. Increased capacity and engagement of the CMC at all levels to manage their dog population humanely
   a. Eight rabies kennels built for isolation and pound management guidelines developed.
   b. Training of CMC staff in relevant skills including humane dog handling, recognizing dog behavioural signs, delivering responsible ownership messages to communities, surgical neutering and humane euthanasia – including four Animal Control Officer courses carried out for CMC staff.
   c. Computerised database developed for recording impounded dogs, vaccinations and registrations.
   d. Awareness programmes and training provided to CMC Medical Officers of Health, Public Health Inspectors and Health Educators to carry out community education and integrate responsible pet ownership and bite prevention messages into their ongoing health education programmes.

3. Increased individual and community responsibility towards dogs
   a. Six ‘Dog Managed Zones’ developed where these areas have their fencing reinforced, garbage controlled and replaced with dog feeding sites, dogs are sterilised and vaccinated, and staff are educated on dog feeding, rabies and dog bite prevention.
   b. Community Liaison Officer engages with the community to identify community dog carers, provide post operative care, identify community dogs for vaccination, and to provide education on responsible dog ownership.
   c. 36 community education sessions were conducted (through street drama or DVD lecture) reaching out to 2,395 adults and 1,776 children.
4. Increased awareness of bite prevention in school children (high risk ages)
   a. Education of children primarily on dog bite prevention, and some rabies awareness and responsible dog ownership to 54,582 children in 179 primary schools and 19,836 children in 43 secondary schools.

5. Affordable veterinarian treatment available to low income communities
   a. Some basic treatment has been carried out during the mobile clinics, although this is not the focus of the mobile clinic.
   b. CMC has agreed to upgrade their static clinic at the Dog Pound to provide low cost treatment and sterilisation for the public starting from end of 2010.

6. Increased percentage of female dogs sterilized to decrease rate of population growth
   a. 4,647 dogs sterilised through mobile clinics via targeted sterilization of both owned and community dogs with a focus on female dogs and involving maximum community involvement in bringing dogs for sterilization and post-operative care

7. 80% of all dogs in CMC areas are vaccinated against rabies
   a. Mass vaccination of both owned and community dogs – annual vaccination increased to nearly 12,000 by CMC and BPT together

8. Project model processes are developed, documented and promoted
   a. Indicators of the project progress are being measured via dog counts, questionnaire surveys, pre and post education evaluations, analysis of CMC records, and are being reported on quarterly through the Logical Framework.
   b. Standard operating procedures of ten components of the project activities have been developed.
   c. Successful visit by the Nepali delegates comprising of government and NGO representatives to the project.

Impact so far

Dog and human rabies cases
Figure 1 shows the concurrent increase in vaccination efforts made since 2007 and the introduction of sterilization efforts following the end of elimination activities in 2006. The reduction in dog rabies cases is assumed to be a direct result of an increase in vaccination coverage. In addition, sterilization and RPO education and may have an impact by reducing population turnover and hence maintaining vaccination coverage between campaigns. The majority of this increase in vaccination since the project began in 2007 is due to vaccination of community dogs for the first time in CMC. It is relevant to note that even when elimination was at its peak, the dog rabies cases were still maintained at 25 cases or above, as compared to the decline to below 25 cases seen in 2008 and in subsequent years.
Dog rabies cases in CMC against elimination, vaccination and sterilisation from 1990 to June 2010

Figure 1 – Change in dog rabies cases over time, against the numbers of dogs eliminated, sterilized or vaccinated over the same time period

**Dog population size**

The roaming dog population has been observed consistently in a sample of 10 wards (total wards in Colombo is 47, hence a sampling fraction of 0.21). These counts suggest an initial increase in the dog population followed stabilisation and then an apparent decrease. Further counts in 2010 and 2011 will establish whether this apparent reduction is maintained. The initial increase is to be expected due to the halting of dog elimination in 2006 which is assumed to have held the dog population below the carrying capacity of the city, hence when the project started one year after elimination had stopped the city may have been experiencing a recovery in dog population size. The stabilisation and then decrease is expected due to the natural mortality of dogs no longer being matched by births due to the reduction in reproductive capacity of the population. Reduction in reproductive capacity is also clear from the decrease in the percentage of lactating females seen during the direct counts from 8% in 2007 to 1.2% in 2010. The percentage of sterilised dogs seen during a direct count is a significant predictor of the percentage of lactating females ($R^2 = 0.33$, df = 59, p<0.001), for every 1% increase in the population sterilised this predicted a decrease of 0.1% in the percentage of lactating females.
Figure 2 – Line graph showing change in dog counts for 10 sample wards over time, from June 2007 until June 2010

Changes in dog welfare
The welfare of the roaming dog population has also shown improvement as shown by a significant increase in percentage of dogs showing good body condition and no visible signs of skin conditions. Both time and neuter status were found to have a significant effect on both percentage of the population that had no skin condition ($R^2 = 0.44$, df = 64, $p<0.001$) and the percentage of the population that had a body condition score of 3 or above ($R^2 = 0.44$, df = 65, $p<0.001$). Suggesting that sterilised dogs had better body and skin condition, but also that both sterilised and unsterilized dogs showed an improvement in body and skin condition over time since the project began, perhaps due to a greater access to resources following an improvement in the care shown by the local communities.

Knowledge of bite prevention and rabies avoidance
The education programme on bite prevention, rabies awareness and responsible dog ownership has shown both an increase in knowledge immediately following the lesson and also an impressive level of retention over time. Using a standard set of questions it was found that 86% of primary school children and 90% of secondary school children had gained the required knowledge immediately after the education session and that retention was good, with 85% of primary school children and 78% of secondary school children having maintained this same level of knowledge after 6 months.

WSPA is looking to publish a paper on the findings of the mid project review. Please contact WSPA should anyone wish to have more details on the impact of this project.
Conclusions

The project has set out to provide an effective and humane alternative to the previous approach of regular dog impounding and elimination. This alternative project including vaccination, sterilization and education has been well accepted and received by the CMC and the local communities and it set to be maintained by local government from 2012 onwards. The impacts on human health and animal welfare have been positive, most notably with a decline in dog rabies cases from 2008 onwards to well below previous annual fluctuations. The main challenges remaining will be to ensure a suitable national and local legislative foundation for this project and others like it and to establish the source of future sustainability once WSPA funding comes to an end. However this is already a project for Colombo to be proud of and in response WSPA is beginning to invest in helping the replication of this model to other locations, in particular in South and South-East Asia. However this model also has relevance closer to home in other locations within Sri Lanka and the project partners hope to support shared learning wherever we find individuals, organisations and authorities with similar aims.