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Population Survey (Census) of Stray Dog Population in Ahmedabad, Gujarat

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POPULATION SURVEY (CENSUS) OF STRAY DOG POPULATION IN AHMEDABAD, GUJARAT

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PROJECT OVERVIEW

POPULATION SURVEY (CENSUS) OF STRAY DOG POPULATION IN AHMEDABAD, GUJARAT

Project undertaken at the request of:

Ahmedabad Municipal Corporation

Project execution and funding by:

Humane Society International (HSI)

PROJECT DURATION:

August 2010 to November 2010

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INTRODUCTION

RABIES is a viral neurological disease that causes acute encephalitis (inflammation of the brain) in warm-blooded animals including human beings. It is zoonotic (i.e., transmitted by animals), most commonly by bites from an infected animal but occasionally by other forms of contact also. Rabies is almost invariably fatal if post-exposure prophylaxis is not administered prior to the onset of severe symptoms. Despite the development of first rabies vaccine in 1885, the World Health Organization estimates that between 30,000 and 70,000 people die worldwide from rabies each year. Most of these deaths occur because of inadequate control of rabies in domesticated animals.

Ahmadabad, the biggest city of Gujarat with a human population of approximately, 6 million. The rapidly expanding population of Ahmadabad means that the metropolitan region extends far outside from the confines of the old city. However, the development is rapid but uncontrolled. Therefore, there are a large number of areas that are prone to stray dogs and these areas are constantly increasing. The old methods of population control by strychnine poisoning or electrocution employed by the municipal corporations have not proved effective in controlling street dog populations, as new dogs soon migrate into the areas, where the local dog population has been killed, and rapidly begin to repopulate the areas. This migration of dogs from one area to the other increases the possibility of the transmission of diseases such as rabies.

In 1990 the WHO and the World Society for the Protection of Animals (WSPA) collaborated on the publication of 'Guidelines for Dog Population Management', which proposed a new, long-term method for the control of urban dog populations in a more scientific and humane manner. The method advocated amongst all other measures a systematic sterilization programme rather than the mass euthanasia programmes normally undertaken by Indian municipalities, respectively.

STUDY AREA:

Ahmadabad City:

Leading Industrial and Commercial city of Gujarat

Geographical Status: 23^0 1' North Latitude and 72^0 41' East Longitude.

Seventh Largest City of India and located on the Bank of River Sabarmati.

It was Capital of Gujarat State till June 5, 1970

Location of City:

Ahmadabad, the biggest City of Gujarat, lies on 23^0 1' North Latitude and 72^0 37' East Longitude on the bank of River of Sabarmati. The city is well connected by rail, roads and airways with all the important cities of the country. It is the Seventh largest city of the country with an area of 466 Sq. Kms and a population of 6 Millions. The city is divided in to 64 wards. After the bifurcation of ex-bilingual Bombay State in May 1960, Ahmadabad was a capital of Gujarat, till it was shifted to Gandhinagar; a newly constructed capital town at a distance of 24 kms. in the year 1970. Ahmadabad is now a district headquarter and many state-level and district-level offices are located in the city. The geographical position of the city would be clear from the following details.

Latitude	
Extreme North Point	23^0 1' N
Extreme South Point	22^0 56' N
Average	22^0 58' 30" N
Longitude	
Extreme West Point	72^0 30' E
Extreme East Point	72^0 41' E
Average	72^0 35' 30" E

Topography:

City lies in a region of North Gujarat which is a Plain, dry and sandy area. Except small hills of Thaltej-Jodhpur Tekra, entire surroundings of the city is a plain area. There are no woods or forests nearby. The sea is at a distance of 80.65 kms. at the gulf of Cambay. Sabarmati, one of the longest rivers of Gujarat, bifurcates the city into eastern and western parts. Though the river is perennial, it gets practically dried up in the summer, leaving only small stream of water flowing feebly. The following figures of minimum and maximum Altitude of the city would show only marginal variations indicating a flat surface:

OBJECTIVES

1. Survey of the areas of the city of Ahmadabad to study the population of stray dogs.

2. Study to be carried out to count the number of male, female, pups, operated male and female dogs.

3. Studies also performed on index of abundance of dogs for each ward chosen.

METHODOLOGY

1. For the study of the population of stray dogs in Ahmedabad, 16 wards were selected based on the Sampling Methodology. All the 64 wards were given alphabets A, B, C and D. 16 of each alphabet hence divided Ahmedabad. A lottery was then picked to decide, which of the Alphabets denoted wards would be chosen randomly.

Once the wards were chosen, detailed maps of each of the 16 wards were then provided by the AMC to decide on the routing and staff deployments.

4 teams were created with 2 members each and were given fixed routes to follows on a daily basis. This was done on Motor bikes. All the 4 teams were deployed in the same wards till it was completed before shifting to a new area.

2. The detailed maps for all the wards were provided by the AMC with roads and boundaries. These maps were further sub divided by us and handed over to each teams in terms of the area they had to cover and the route they had to follow every day. The counting time for the duration of the project was between 0600 Hrs – 1000 Hrs every day in the morning when we expect to see most dogs on the streets as the traffic is low.
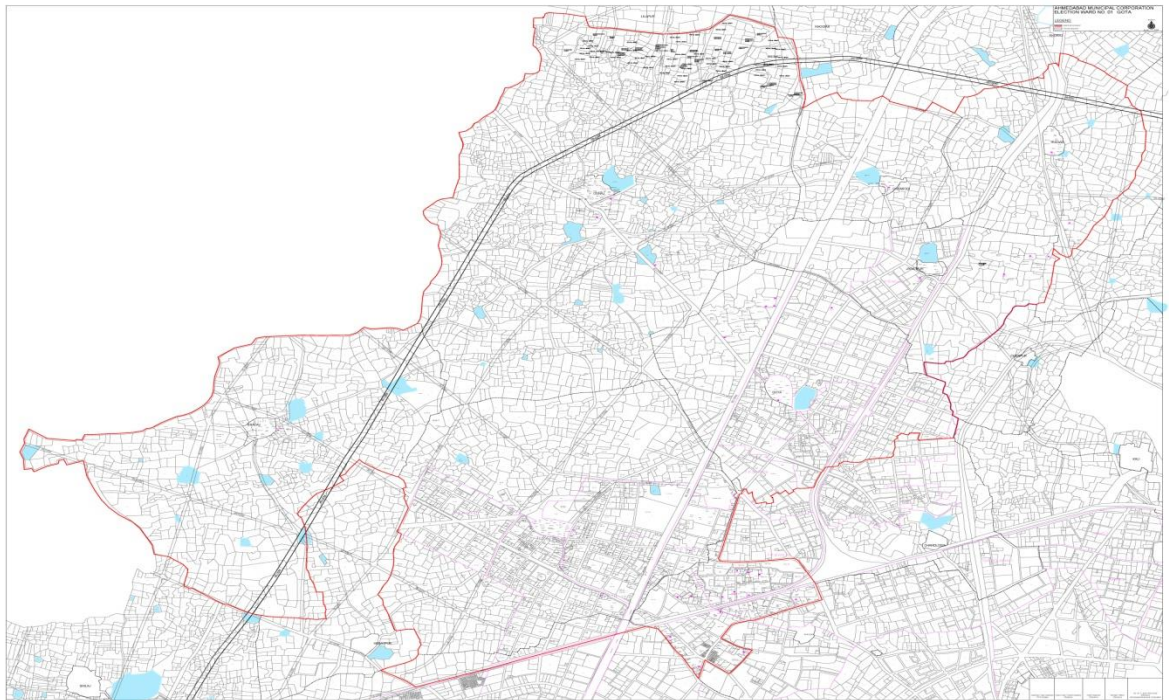
3. Methods adopted for the dog counting were:

a) WSPA Method (Sampling, total dog count)

A format needed to be filled by the census staff marking every single dog they saw as per the following categories –

- Intact Male, Intact Female
- Sterilized male, Sterilized Female
- Lactating Female, Intact Pups, Unknown

This methodology was critical to decide the percentage of the sterilized dogs we could find in the existing roaming population.

This method was not used to determine the total population of dogs as it is highly unlikely to count every single dog on the street irrespective of the number of times the same area is surveyed.

Name of
Area/Ward   Date

Vehicle No.   Name of staff

End K.M.   End time

Start K.M.   Start Time

Total K.M.   Total time

Male	
Male ear notched	
Female	
Female lactating	
Female ear notched	
Pup	
Unknown	

comments

b) Capture, Mark and Recapture Technique –

Each of the chosen 16 wards was further subdivided into fixed survey areas of approximately 2 kilometers. This was important for us to determine the density of dogs (Index of Abundance) as it will set a benchmark so that a similar exercise post intervention will allow us to quantify increase or reduction in population in the future

This demarcation was done using GPS devices.

The teams were given special equipment to be able to safely and humanely mark dogs within the demarcated areas in each of the chosen wards.

Non toxic but strong color was used as a marking agent to be dispensed from motorized spraying devices, strapped to the back of the pillion riders.
Their movement was tracked at the control center via GPS to ensure that they remained within the marked zones.
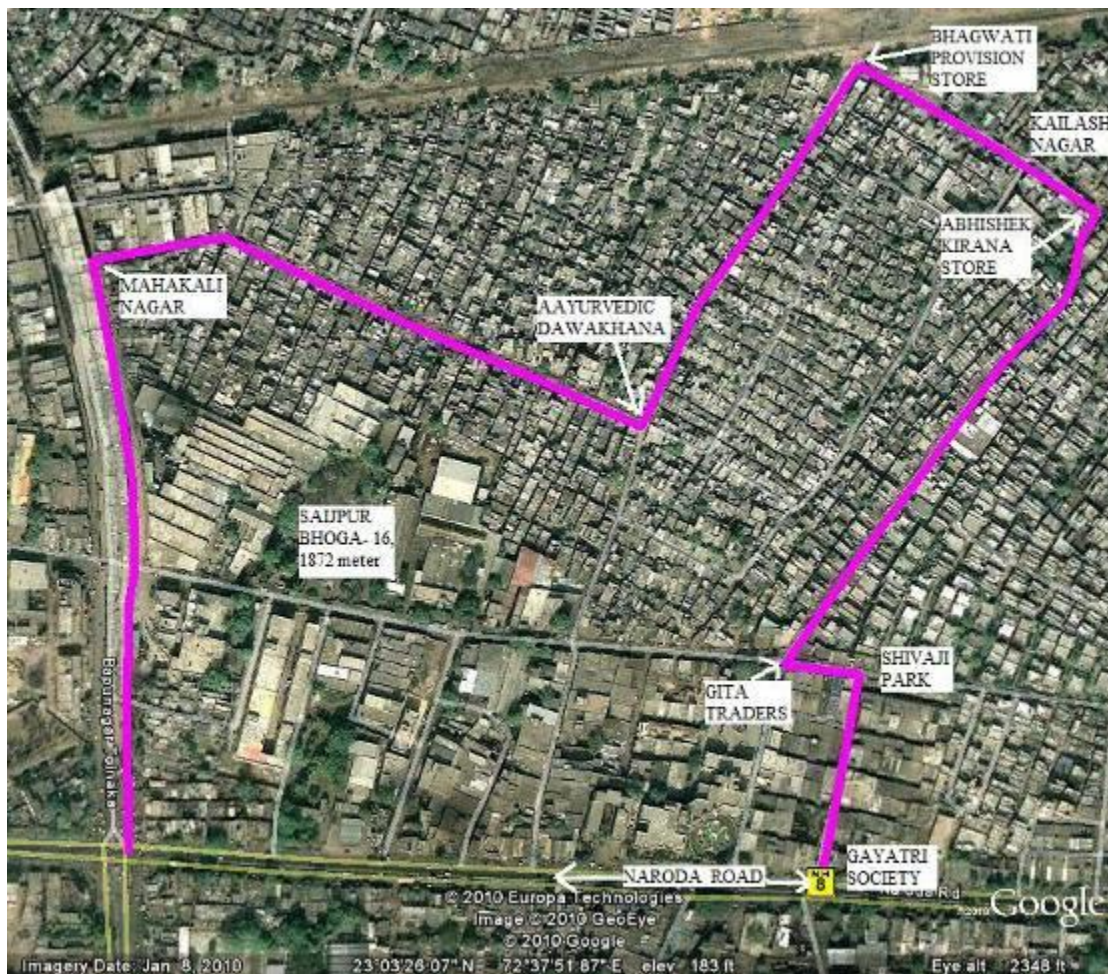
OBSERVATIONS

Extensive survey of every street of the selected wards presented some interesting observations –

a) Urban areas had the least density of roaming dogs.
b) The highest concentration of dogs was near garbage disposal areas.

c) Lower and middle income group housing societies and such areas in general had a high density of roaming dogs.
d) Density of dogs was higher even in urban areas where we found deliberate human feeders.

e) Since the garbage is disposed of in the night and removed only in the mornings, all the garbage dumps were found to have a large population of dogs, scavenging as it a major source of food.

f) There are vast expanses of areas in almost all wards where there is little or less development (shanty's, slums, vacant plots, under construction buildings, abandoned buildings) and have no tar roads. These areas provide adequate shelter to the dogs when the traffic is high during the day.

g) Since the first survey was carried out in the peak monsoon season, a parallel survey was carried out post monsoons and an average was taken in terms of the total dogs counted each time.

h) Barring a few areas where sickly, skin disease infested dogs were identified, overall the general condition of the dogs was observed to be varying from fair to healthy.

i) Towards the end of the count (September- October) a high incidence of mating behavior was identified across Ahmedabad which suggests that in the coming months a high number of pups will be seen in the city.

RESULTS AND DISCUSSION

Result of Survey # 1

WSPA Method (Sampling, Total dog count)

To find out the existing percentage of the sterilized dog population in Ahmedabad due to the past 10 years of Animal Birth Control.

Ward No.	Ward	Un-operated dogs	Operated dogs	Total dogs	% operated dogs	unknown	Grand Total
1	Gota	928	79	1007	7.8	19	1026
9	Naranpura	471	141	612	23.0	0	612
12	Sardar Nagar	926	109	1035	10.5	0	1035
16	Saijpur Bogha	298	81	379	21.4	7	386
19	Girdhar Nagar	643	117	760	15.4	0	760
23	Bodakdev	947	130	1077	12.1	5	1082
34	Nikol	825	112	937	12.0	3	940
36	Bapu Nagar	757	88	845	10.4	0	845
39	Raikhad	567	84	651	12.9	0	651
41	Vasna	925	115	1040	11.1	17	1057
43	Behrampur	1396	199	1595	12.5	3	1598
52	Vastral	380	133	513	25.9	7	520
55	Bhaipura Hatkeshavar	453	94	547	17.2	16	563
56	Amrai Wadi	484	242	726	33.3	20	746
58	Mani Nagar	733	167	900	18.6	4	904
61	Isanpur	424	65	489	13.3	6	495
	Grand Total	11157	1956	13113	14.92	107	13220
	Per Ward	697	122	819.5625	14.92	7	826

This suggests that 14.92% of the total dog population as per the current scenario is sterilized. We shall be using this as a KEY FIGURE in estimating the total dog population of Ahmedabad.

Result of Survey # 2

Capture – Mark – Recapture Method (Index of Abundance)

To indicate the density of street dogs as per the current scenario, this can be again undertaken in the future in the same areas after intervention by the AMC to measure the increase or decrease in the population.

Ward No.	Ward	Dogs/ K.M.
1	Gota	24
9	Naranpura	16
12	Sardar Nagar	20
16	Saijpur Bogha	30
19	Girdhar Nagar	22
23	Bodakdev	14
34	Nikol	32
36	Bapu Nagar	25
39	Raikhad	22
41	Vasna	57
43	Behrampur	20
52	Vastral	29
55	Bhaipura Hatkeshavar	42
56	Amrai Wadi	15
58	Mani Nagar	19
61	Isanpur	16

This suggests that the density of dogs per km. can vary from as low as 14 (Bodakdev) to 57 (Vasna)

 # 3 - Collation of final data as per finding from #1 and #2

Table-3: TOTAL POPULATION OF DOGS IN THE CITY

S. No.	Year	Annual survival of street dog is 0.7	Dogs Operated	Total remaining dog
1	2001	0	1897	1897
2	2002	1328	3061	4389
3	2003	3072	2586	5658
4	2004	3961	3636	7597
5	2005	5318	7632	12950
6	2006	9065	45011	54076
7	2007	37853	1218	39071
8	2008	27350	1855	29205
9	2009	20443	14704	35147
10	2010	24603	6856	**31459**
Total dogs operated in the city			**88456**	

Current number of Sterilized Dogs in the City	**31459**
Total % age of Operated Dogs in the City (calculated during survey)	14.92%
Total dog population in the city	**210852**
Ahmedabad population	6,000,000
dog/human	28

As per a scientific study conducted by Help in Suffering, Jaipur, it was concluded that only 70% of the sterilized dogs survive every calendar year from the overall figure in Indian city conditions.

We have used this scientific paper and its outcomes to determine the finding of our research and have used the sampling method findings and comparing with the figures of sterilized dogs made available to us (83456 by AHF and 5000 by other groups = 88456 dogs) to reach our final conclusion.

Recommendations –

a) We conducted a basic statistical analyses based on the total dog bites figures by the AMC authorities between January 2006 – June 2010.

AHMEDABAD MUNICIPAL CORPORATION
HEALTH EPIDEMIC CELL
Information regarding Dog Bite Cases in Ahmedabad city. (2006 to 2010)

No.	Month	2006 Total Cases Of all Hospital	2007 Total Cases Of all Hospital	2008 Total Cases Of all Hospital	2009 Total Cases Of all Hospital	2010 Total Cases Of all Hospital	
1	January	2330	2209	2563	2704	3228	
2	February	2184	1865	2413	2431	2951	
3	March	1910	1843	2190	2713	2982	
4	April	1382	1773	2057	2340	2980	
5	May	1420	1551	2008	2366	2453	
6	June	1441	1460	1923	2142	2326	
7	July	999	1147	1481	1662	0	
8	August	1021	1105	1266	1490	0	
9	September	1020	1236	1514	1642	0	
10	October	1038	1457	1696	1889	0	
11	November	1576	1928	2343	2727	0	
12	December	2093	2298	2991	3030	0	
	Total	**18414**	**19872**	**24445**	**27136**	**16920**	
1	**Total no.of Rabbies cases Who reside in AMC**	1	3	2	3	0	**9**
2	**Total no.of Rabbies cases who reside Out side AMC**	0	4	2	2	1	**9**

If we plot a graph based on the above, it would look like –
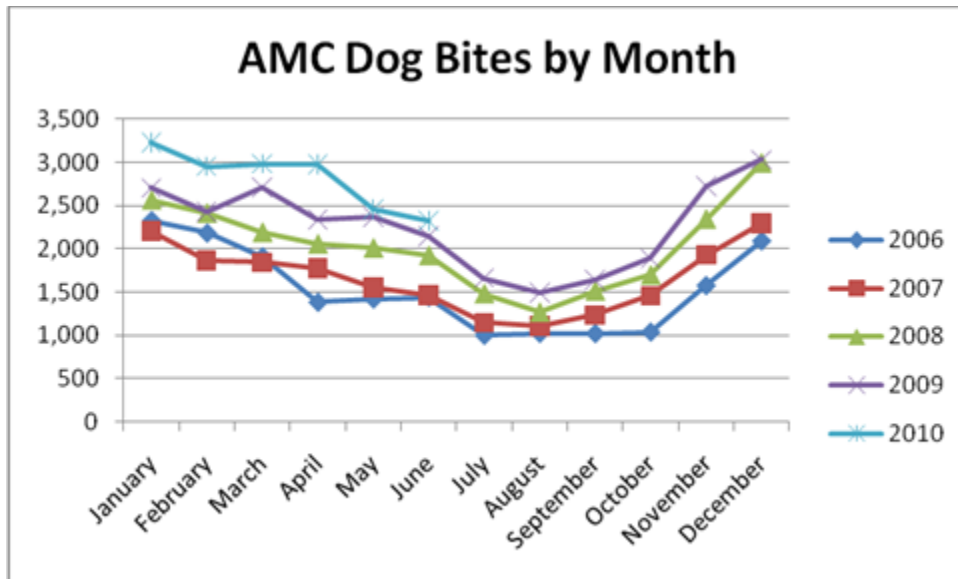
We then requested Animal Help Foundation to provide us with the year wise total dogs they have sterilized since beginning.

S.no	Year	Sterilized Male	Sterilized Female	Total
1	2001			897
2	2002			3061
3	2003			2586
4	2004			3636
5	2005			7632
Total dogs sterilized and vaccinated (2001-2005)				17812
S.no	Year	Sterilized Male	Sterilized Female	Total
1	2006	24113	20898	45011
2	2007	141	77	218
3	2008	498	357	855
4	2009	7202	6502	13704
5	2010	1229	954	5856
		33183	28788	**65644**

Grand total – 83,456 Dogs (2001 – 2010)

As you can see from the Chart above, the number of dog bites drops seasonally and then rises sharply at the end of the year (isn't this when the breeding season occurs in Ahmedabad?). Therefore, in order to gain some sense of the annual dog bite rate, one can plot the curves from just January to July and calculate the linear trend line slope for each year (as has been done in the graph below).
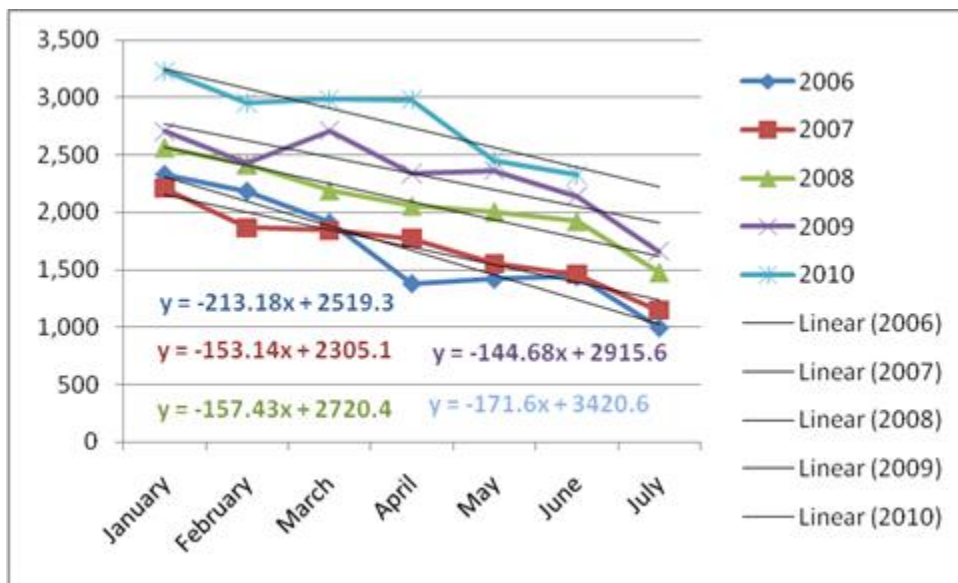
The intercept of each year's trend line on the y-axis is given by the number at the end of the equations in the chart above. This intercept is a reasonably reliable measure of the number of dog bites in Ahmedabad each year. If one tabulates these numbers by year, it produces the following table.

Year	Trend line Intercept	Percentage 2006
2006	2519.3	100.00%
2007	2305.1	91.50%
2008	2720.4	107.98%
2009	2915.6	115.73%
2010	3420.6	135.78%

In other words, the big sterilization project in 2006 had the effect of reducing the dog bites in Ahmedabad by 8.5% according to the statistics.

The above exercise proves that sterilization will bring the dog bites down and sustained efforts will reduce the bites as well as the population.

b) Lots of pet dogs were also noticed during the extensive survey of the 16 wards. A high percentage of these "owned" animals were found roaming on the streets and were not sterilized. Several pedigreed dogs were also found in the wee hours taking a walk with their owners. It is still not known regarding their role in contributing to the dog bite figures in Ahmedabad as the records are not maintained as per the origin of the bite (owned/ stray dogs).

We recommend that strict legislation be enforced in ensuring that these dogs are sterilized and vaccinated apart from being registered so that we may come to know the total population of pet dogs besides that of the street dogs and a proper plan can be laid out.

c) Garbage disposal system needs to be improved as most of the garbage is available for the animals to scavenge throughout the night and at some places it is not even removed on a daily basis. Unregulated disposal of meat bye products and hotel/restaurant waste needs to be controlled.

d) However, the first step should be tackling the over population of dogs through a systematic and sustained Animal Birth Control program and an efficient Garbage disposal system needs to be implemented.

e) Targeting only stray dogs and ignoring the thriving pet dog population will produce mixed results. A focused and comprehensive approach needs to be devised to reach a favorable outcome.

f) Displacing any dog (stray, pet, intact or sterilized) will always have an adverse affect in the overall agenda and it will negate any progress made as per a scientific plan.

g) Ideal chronology which needs to be adopted –

1. Census (Completed)
2. Reproductive control -Large scale sterilization/vaccination/return project
3. Solid waste management – of the city's garbage
4. Availability of post bite vaccines for humans in government hospitals
5. Understanding Rabies
6. Registration and identification of dogs - Pet registration and licensing to be made mandatory
7. Humane education targeting children to reduce dog bites
8. Responsible dog ownership
9. Regulation of dog breeders
10. Research, data collection.

End of Report