



Humane dog management

Better lives for dogs and communities

We were known as **WSPA**
(World Society for the
Protection of Animals)

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A final thank you to World Animal Protection supporters for their continuous and tireless commitment and generosity to our work.

“The greatness of a nation and its moral progress can be judged by the way its animals are treated.”

Mahatma Gandhi



1. About World Animal Protection

1. About World Animal Protection

Here at World Animal Protection, we have been moving the world to end cruelty to animals for more than 50 years. And managing issues related to free-roaming dogs in diverse communities around the world has always been one of our areas of expertise.

We work with governments and international bodies including the World Health Organisation (WHO), the World Organisation for Animal Health (OIE) and the Food and Agriculture Organisation of the United Nations (FAO). NGOs and local communities are also key partners in our mission to ensure dog populations are managed humanely.

Our focus is on the adoption and implementation of a 'One Health' approach to dog-related concerns and problems. This is collaboration between animal health, human health and environmental sectors to come up with viable and sustainable solutions.

Through our guidance and technical support to governments and our partnership facilitation we are building a world where people respect and value dogs, and act compassionately towards them to create a harmonious coexistence.

1.1 Working with World Animal Protection – what people say.

“World Animal Protection has assisted us immensely in improving the welfare of our animals by raising public responsibility in improving animal wellbeing and spearheading campaigns to control rabies.”

Dr Kassim
Principal Secretary
Government of Zanzibar

“In the past, local people would not even have considered that poisoning dogs was wrong, and would have done nothing to stop it. Now, thanks to our work with World Animal Protection, they know better and have a greater respect for animal sentience – cruelty is no longer accepted as a norm.”

Mauricio Santafe
Veterinarian
Paraiso de Mascota
Cali, Colombia.

“World Animal Protection has been providing instrumental support in rabies elimination program of Bangladesh and supplementing the movement to prevent dog killing by municipalities in Bangladesh.

It is not only the technical support but it is the involvement of one international organisation that matters very much. Continued support of World Animal Protection for rabies elimination in countries of South Asia can stop dog killing.”

Professor Dr Be-Nazir Ahmed
Line director for communicable
disease control
Ministry of Health and Family Welfare
Government of Bangladesh



2. Introduction

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- There are an estimated 700 million dogs globally^{1,2}. In many communities around the world dogs are generally free-roaming and there is increasing evidence that most are owned^{3,4,5,6}.
- Owned free-roaming dogs usually live closely with people and are generally well cared for by the householders to whom they belong⁷. Estimates of unowned free-roaming dogs in rural and urban settings are generally low (<10%)^{7,8,9} but upper confidence limits of 37%^{7,9,10} have been reported.
- In canine epidemiological and ecological models, it is often assumed that unowned dogs are usually in such an adequate state of health that their population is maintained at a constant level. But so far only one population study has reported the health status of the dogs involved. This study found that almost all of the unowned dogs were emaciated and in very poor health. These dogs were most likely owned dogs that had been dumped or abandoned and were subsequently unable to find sufficient edible refuse to maintain adequate health⁷.

Dogs are often well tolerated by local communities. However, conflicts between dogs and humans may arise which can pressurise governments to remove the dogs. Consequently governments may adopt inhumane culling methods. These methods such as poisoning and electrocution not only cause extreme stress and death to the animals, they also severely distress people who witness the culls on their streets.

For more than 30 years, we have been helping governments manage dog populations humanely. Where there are conflicts surrounding free-roaming dog issues, we show how effective, ethical and sustainable interventions can solve the problems creating a harmonious co-existence between dogs and people. Our approach and methods are outlined in this report.





3. Dogs in communities — the benefits and the problems

3. Dogs in communities

3.1 The benefits and the problems

Dogs often live near people^{7,11,12} and provide benefits including companionship, security and assistance. Some working dogs are even trained to detect diseases in humans and protect livestock. There is also research evidence of the positive effects dogs have on human health and well-being^{13,14}.

- ❖ Despite these benefits, dogs can cause concerns in communities especially when they are free roaming. These concerns can include zoonotic disease transmission, dog bites and road traffic accidents¹⁵ particularly in countries with limited social and economic development^{11,16}.
- ❖ Occasionally free-roaming dogs are also present in areas of civil unrest or armed conflict where people have been forced to flee their homes and leave their dogs behind¹¹. In such circumstances and areas free-roaming dogs may need to be managed in a way that allows them to live with people harmoniously^{12,13}.
- ❖ For an overview of the causes and effects of free-roaming dog populations as well as the World Animal Protection solution and benefits see diagrams 1 and 2.





3.2 Diagram 1: Causes and effects associated with dog population concerns



3.3 Diagram 2: Solutions and benefits associated with dog management programmes



4. Dog culls are not the answer

4. Dog culls are not the answer

- To quickly and cheaply eliminate free-roaming dog-related concerns that include disease, environmental faecal contamination and behavioural concerns, governments have resorted to culling^{17, 18, 19}.
- These culls often use inhumane methods that cause considerable animal suffering. As most free-roaming dogs are owned^{3, 7} with owners expressing the importance of their welfare,¹² culling methods are often not accepted by local citizens. From this we can conclude that community involvement in dog management programmes becomes critical for success¹².
- Research also shows that culling operations are expensive and ineffective^{19, 20, 21}. While dog population size and density may drop immediately after a cull, numbers soon rise afterwards². The immediate reduction in the numbers of dogs following a cull is usually transient. Owners replace their free-roaming dogs lost during a cull with new dogs that will again be allowed to roam^{7, 22}.
- It can also have a negative effect on rabies vaccination coverage where the indiscriminate killing that occurs usually includes owned, healthy and vaccinated dogs. As owners replace their dogs with new, unvaccinated puppies,^{7, 22} zoonotic disease transmission increases as herd immunity* decreases¹⁹.

* Herd immunity - immunity that occurs when a significant proportion of a population ('herd') is vaccinated and provides a measure of protection to those that haven't been vaccinated.

Case study

Creating a successful alternative to culling

Colombo, Sri Lanka 2007–2010

- World Animal Protection (then WSPA) initiated an agreement with the Colombo Municipal Council (CMC) and the Blue Paw Trust (BPT) in 2007. Their aim was to establish and run a humane rabies and dog management project in Colombo. The project's focus involved controlling the spread of canine rabies while managing the roaming dog population size and improving dog welfare in the city. The objectives were achieved by:

- **mass vaccination of dogs – both owned and unowned**
- **sterilisation of dogs with a focus on females**
- **education in bite prevention and rabies awareness**
- **development of dog managed zones**
- **training of Colombo City Dog Pound staff.**

- The humane project led to a reduction in dog rabies cases from an average of 43 cases per year (2001–2005) down to just two cases in the first six months of 2011. Questionnaire surveys of local communities revealed a reduction in dog bites from 9,632 bites per year in the city down to 7,540 in 2010, a reduction of more than 20%. An improvement in dog welfare was observed based on body condition scores and the absence of skin disease. An immediate change in welfare was also seen as dogs were no longer culled by inhumane methods.



5. Specifically-tailored management programmes are the answer

- Multi-faceted dog management programmes, designed to address community concerns regarding free-roaming dogs offer an ethical and effective alternative to culling.
- These programmes are generally an ongoing process and require long-term commitment. This is because if the programme ceases there may be a recurrence of issues generated by free-roaming dogs.
- Consequently, where free-roaming dogs are generating problems, any programme intended to address the situation must begin with an assessment of the source of free-roaming dogs (owned or unowned). It must also assess which stakeholders are concerned about the free-roaming dogs and why^{13, 22, 24}.
- These assessments will provide baseline data crucial for each step of the programme including monitoring and evaluation.

5. Specifically-tailored management programmes are the answer





6. Developing a stakeholder committee

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- A stakeholder in a dog management programme is anyone who can affect or is affected by dog-related issues. When developing the programme it is important to identify these stakeholders and for the authorities to establish an advisory stakeholder committee²⁵.
- This committee should, with assistance from external experts, analyse and quantify the problem. It should also identify the causes, obtain public opinion on dogs and propose the most effective long-term and short-term approaches to use²⁵.
- Ideally the responsible government authority should bring the stakeholders together for consultation²³.
- Dog management is a multifactorial issue. Because it requires collaboration between agencies working for animals, people and the environment, it fits well under the One Health umbrella. The relevant stakeholders should be involved in the development of comprehensive and sustainable management strategies.
- These strategies should take country and area-specific issues into account and provide a clear, ongoing approach to monitoring and evaluation of outcomes¹¹.

The following table shows the stakeholders to be considered for involvement in a dog management programme.

It is also important to acknowledge the need for collaboration between different departments within the government. The table below gives examples of those whose involvement may be required.

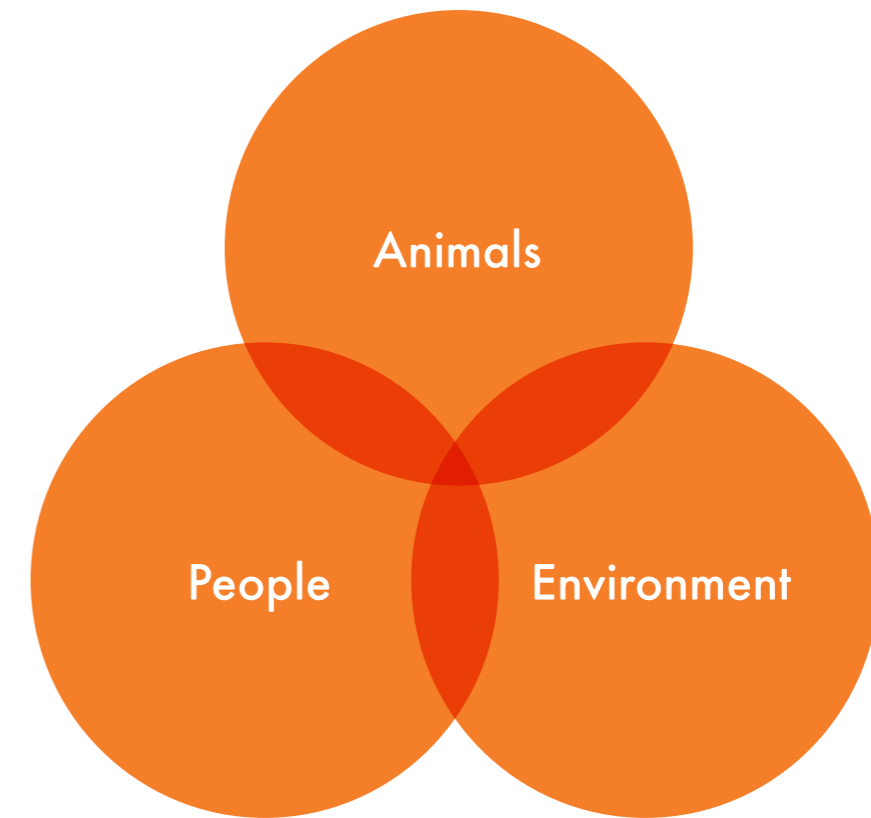
Government services	<ul style="list-style-type: none"> • Official veterinary services • Official medical services • Official waste / environment management services
International bodies - eg	<ul style="list-style-type: none"> • WHO • FAO • OIE
NGO community	<ul style="list-style-type: none"> • Animal sheltering, fostering and rehoming community
Local community	<ul style="list-style-type: none"> • Local community leaders / representatives
Academic community with relevant experience	
Local media	
Private veterinary and medical communities	

Government	<ul style="list-style-type: none"> • Local government agencies • Legislators
Ministry of agriculture	<ul style="list-style-type: none"> • Veterinary authorities • Animal Health department
Ministry of environment	<ul style="list-style-type: none"> • Sanitation department
Ministry of education	
Ministry of health	
Ministry of tourism	



7. About One Health and its role in improving dog welfare.

Free-roaming dogs can cause concerns not only for animals, but also for people and the environment. To address these issues successfully, collaboration between animal health, human health and environmental sectors is imperative. This collaboration is known as the One Health concept²⁶.

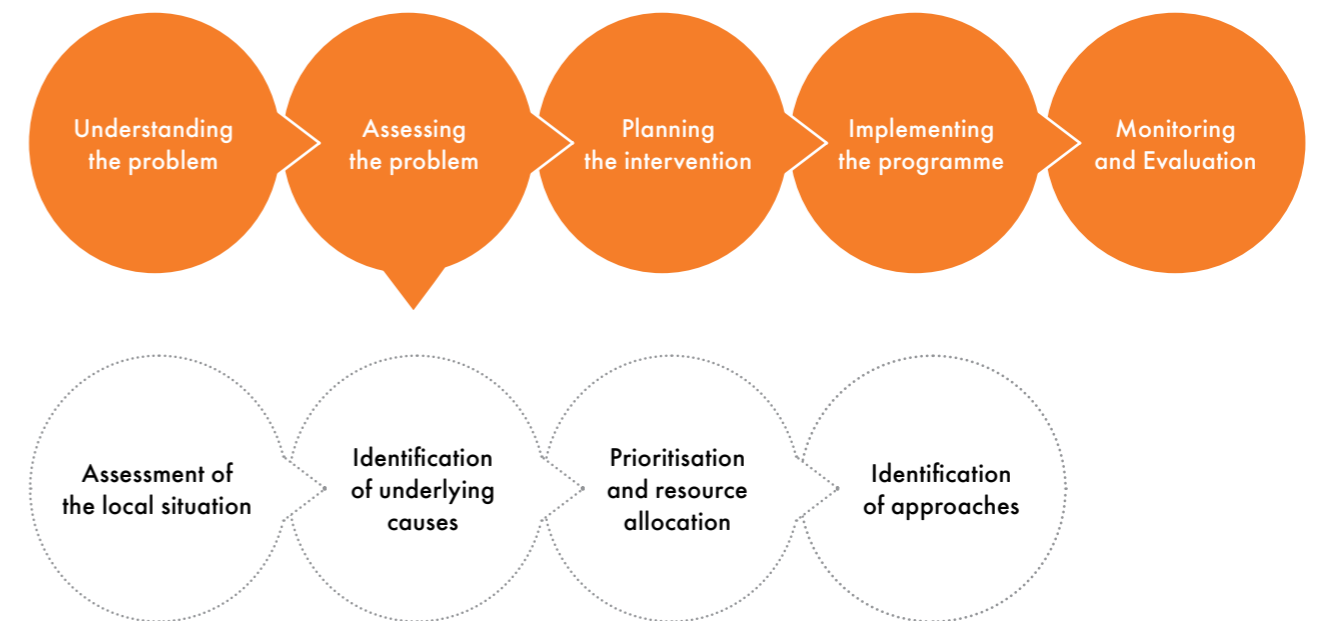


7. About One Health and its role in improving dog welfare



8. How to design a One Health programme to manage free-roaming dogs

- Concerns associated with free-roaming dogs vary among different societies, communities and geographical regions. Consequently, any programme must be tailored towards the specific location in question.
- It must be based upon the characteristics of the local dog population, the attitudes, behaviours, and religious beliefs that the people in that community have towards dogs. It should also address specific issues identified by affected stakeholders and the overall community perception of those issues^{12, 23}.



8. Designing a One Health programme

8.1 Understanding the concerns associated with free-roaming dogs

The first step in achieving a successful and sustainable programme is clearly stating the specific problem and identifying the affected stakeholders. The factors that precipitate these issues need to be assessed and understood.

- Some unsuccessful attempts at dog management programmes have been known to focus on the ‘symptoms’ of the dog population. One symptom could be the visible issues of too many dogs on the streets.
- This can result in culling, sterilisation or impoundment leaving the underlying causes unaddressed^{11, 23}. For example owners may allow their dogs to free-roam because of cultural or local attitudes. They also may not be able to afford fencing or a welfare-friendly way of confining their dog.

8.2 Assessing the problem

A thorough assessment of the specific concerns related to free-roaming dogs and the reasons behind them provides baseline data crucial for all programme stages; this includes monitoring and evaluation. Data may include numbers for dog bites or rabies case figures. The fraction of the community allowing their dogs to roam or tolerating free-roaming dogs, the fraction of abandoned dogs and those without identifiable owners etc can also be included.

Examples of objectives of a dog management programme (modified from the OIE)²⁵

1. Improve the health and welfare of dog populations.
2. Reduce the number of free-roaming dogs to an acceptable level.
3. Promote responsible dog ownership.
4. Reduce the risk of zoonotic diseases.
5. Prevent harm to the environment and to other animals.
6. Prevent illegal trade and trafficking.

Three main reasons why we need to survey the dog population:^{27, 20}

To assess the NEED for intervention –

- Different areas within a city or urban area need to be compared. This will determine where intervention should be prioritised. The need should be assessed and based on identified/main concerns as well as other factors, such as frequency of complaints about dogs or welfare concerns.

To PLAN an intervention –

- This involves the evaluation of dogs in an area, discussion with stakeholders and concerned parties to identify factors associated with the need for intervention. This will ensure that resources can be allocated appropriately and targets identified to evaluate progress.

To EVALUATE an intervention –

- Surveys can be conducted once the intervention is underway. These should detect changes/issues of concern in dog numbers/health and other factors, including attitudes towards dogs and bite incidences. Results will show the effectiveness of the programme.

Once the data is revealed, work can begin on prioritisation and resource allocation²³ and a set of objectives can be decided upon²⁵.

8.3 Components of an effective programme

A range of components (listed below) should be carefully considered for a successful dog management programme. The components to include depend on the specific issue or issues identified as needing to be addressed by affected stakeholders¹¹. Implementation of components may need to be prioritised according to the availability of resources (financial, human, technical etc). Components may evolve over time to keep in step with the stage of resolution of identified concerns¹².

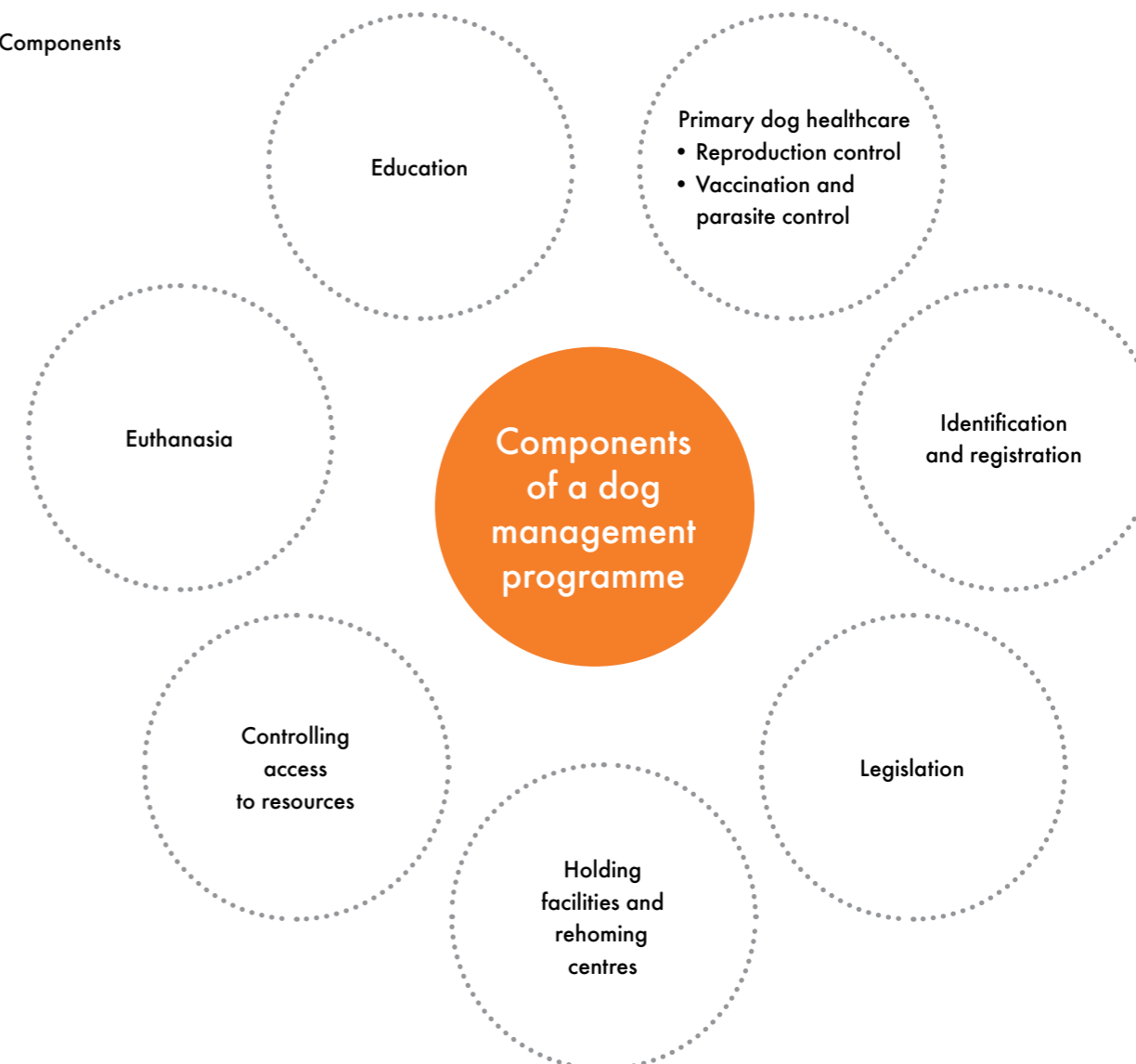
- Each component is explained in more detail below, with practical examples of how they may contribute to a dog management programme. The components and benefits of each component are based on the available literature and World Animal Protection’s experience.

- However, more data are needed on the efficacy of each component (and in combination) to address issues related to free-roaming dogs. As these data come to light, our recommendations for the management of free-roaming dogs may evolve.

- Once objectives have been assigned for each of the components deemed suitable/necessary for the programme and resources allocated, implementation can begin. It should be conducted in stages, initially with a closely-monitored pilot programme so that any adjustments to the programme can be made before the full programme is launched.

- Communities and stakeholders should be engaged and consulted throughout the programme. They should also be involved in making recommendations to improve the intervention. Problems and failures should be viewed as opportunities to improve the programme.

Components



8.3.1 Education

Education is a key component in dog management programmes. Problems associated with free-roaming dogs are all influenced by human behaviour. Education can provide a means to improve knowledge, influence perception and change people's attitudes towards dogs where conflict exists. It can also bring about social and economic benefits as people learn about disease, dog bite prevention and dog behaviour.

Why educate?	The benefits of education
To build awareness of animal welfare and related issues.	The improved care and welfare of dogs.
To encourage responsibility towards dogs among dog owners and non-dog owners alike.	A better relationship between dogs and people. A foundation on which the next stages of responsible dog ownership can be built.
To understand the concerns associated with dogs in the community.	Widespread acceptance of the dog management programme. The social and economic benefits that come from sustainable objectives.
To understand the advantages of having dogs in a community.	Companionship, protection/security, disease detection, assistance, herding other animals, hunting purposes.
To understand dog behaviour.	People can enjoy safer interactions with dogs. People are more aware of the factors contributing to dog bites and zoonotic diseases associated with dogs.

8.3.2 Primary dog healthcare

8.3.2.1. Reproduction control

Reproduction control has long been regarded as a means to reduce the dog population size. Studies have, however, shown varied results in this regard with some study areas maintaining population size²⁸ whereas a reduction was seen in others^{28, 29}.

- Increasing evidence now suggests that local dog population size is regulated by community and/or owner behaviour³⁶. Consequently, changing the attitudes to ownership may be more likely to affect population size.
- Implementation of mass dog sterilisation should therefore take account of location-specific dog population criteria and local attitudes towards dogs.
- Sterilisation may, however, be used on a case-by-case basis to deal with problematic behaviour. This could be aggression during the mating season or the propensity for specific dogs to roam. Although, sterilisation does not always curb these behaviours.
- It may also address welfare issues, such as the dumping and killing of unwanted puppies.

There are different methods for controlling reproduction, but surgical sterilisation of female and male dogs is currently the most reliable option. Surgical sterilisations should always be carried out by a qualified veterinarian. Good aseptic techniques and pain management throughout and after the procedure are requirements to ensure animal welfare.

Why control the reproduction of dogs?	The benefits of reproduction control among dogs
Dogs will be less likely to go looking for a mate.	Dogs are less inclined to roam during breeding season.
To reduce or eliminate dog culling.	Persuades local authorities not to cull and gives local authorities the ability to opt out of the unpopular option of culling.
Sterilised animals are unable to reproduce.	Prevention of unwanted puppies.
To reduce the number of dog bite-related injuries and diseases.	There may be a reduction in aggression and territorial behaviour.

8.3.2.2. Vaccination and parasite control

Often, programmes for the management of free-roaming dogs are linked to public health concerns in relation to dog bites and the spread of zoonotic diseases. The seriousness and fear of these concerns can precipitate culls. Preventative measures to combat these concerns, such as vaccinating dogs against rabies, will abolish fears and render culling unnecessary and counter-productive.

- Veterinarians should always be involved with these programmes to assist in administering and advising owners on the benefits of preventative treatments, such as vaccinations and anti-parasite treatments.

Why vaccinate and use parasite control?	The benefits of vaccinations and parasite control
To reduce the prevalence of zoonotic diseases such as rabies.	Improved public and animal health through the reduction or elimination of zoonoses.
To reap economic benefits.	It is a more cost-effective method of reducing diseases than culling.

8.3.3 Identification and registration

Identification and registration are essential tools when it comes to promoting responsible dog ownership. There are many different identification methods available. It is important to select the method that suits the local situation with regard to practicality and cost.

Why use identification and registration?	The benefits of identification and registration
To trace dogs back to their owners and promote responsibility towards their dog/s.	Owners can be reunited with lost dogs because the identification connects them with their owners.
As a tool to help enforce legislation.	Irresponsible owners can be prosecuted - eg, for neglect, for using dogs for fighting or for abandonment.
To control and survey the dog population.	When mandatory identification and registration is in place, unidentified dogs can be taken care of. New homes can be sought if an owner can't be traced. Could provide a means for owned versus unowned dog population.

8.3.4 Legislation

Legislation – and its enforcement – is important for the delivery and long-term sustainability of any management programme. Legislation gives an agency authority to enforce measures for the humane management of free-roaming dogs.

Combined with education programmes, legislation can promote animal-friendly solutions and responsible dog ownership.

Why legislate?	The benefits of legislation
To ensure dog management programmes are humane and carried out.	Improved animal and human welfare and/or health.
To establish requirements that the public must satisfy when importing and exporting dogs. This is notably to prevent the introduction of zoonotic diseases into a country (see UK Pet Travel Scheme as an example ³⁰).	Avoidance of the introduction of animal diseases and zoonoses and reducing the number of disease introductions and outbreaks in a country.
To establish a regulatory framework for dog breeding and ownership. For example making abandonment illegal.	Improved accountability regarding dog ownership and related commercial activities.
Establish requirements for food waste disposal and the disposal of animal waste.	Cleaner environment, reduced public nuisance.
	Improved animal health and public health. Limits the availability for free-roaming dogs to scavenge.
Establish requirements for the notification and control of specified diseases, such as rabies and leishmaniasis.	Improved public health and animal health. Compliance with international (such as OIE) obligations regarding transparency in disease notification.
Establish penalties for those who break the rules – for example treating animals inhumanely.	Better compliance with the rules, safer communities.
Establish requirements for registration/licensing and individual identification of dogs.	Enable authorities and dog owners to trace lost dogs to their owners; enable prosecution of those who break the rules.

8.3.5 Holding facilities and rehoming centres

Although free-roaming dogs may be well tolerated in many communities around the world, temporary holding and rehoming facilities may be required to manage individual aggressive or problematic dogs. Veterinary involvement within these facilities should be a requirement as animals that are admitted may be suffering from disease, malnutrition or injury.

These facilities are often costly to run and they only provide a temporary solution. Animal welfare problems such as disease transmission may result from overcrowding or poor management. They cannot be used as the sole means for controlling the dog population, but they may provide a useful contribution under certain circumstances.

Why use holding facilities and rehoming centres?	The benefits of using holding facilities and rehoming centres
To provide temporary holding and care for dogs when: <ul style="list-style-type: none"> • they are in crisis or distress • dealing with problems of animal abuse or neglect when no other options are available • dealing with lost animals • facility for the delivery of primary veterinary health care • quarantine to observe disease symptoms (eg, rabies) or surveillance of disease. 	<p>They are safe areas for animals to recover from illness and/or neglect.</p> <p>It makes rehoming/ adoption of unwanted dogs or dogs without owners possible.</p> <p>They can help lost dogs to be reunited with their owners.</p> <p>They can be used (permanently or temporarily) as veterinary facilities for surgical sterilisation, vaccination, other prophylaxis such as anthelmintics.</p>
Can provide a means to educate the community on responsible dog ownership in conjunction with adoptions or neutering/vaccination clinics.	Before adoption, dogs may be sterilised, vaccinated, treated for parasites and identified and registered to their new owners.

8.3.6 Controlling access to resources

Dogs may be motivated to roam in areas where access to resources, such as food, is available²³. They may, therefore, congregate around refuse and garbage dumps. This could precipitate disease transmission and cause concern for the public where streets are not cleaned and people frequent.

Although there are very few published data regarding the nutritional content of refuse, one study reported that, while there was considerable refuse strewn throughout the study area, most of the refuse was inedible. This provided limited nutrition to the dogs that scavenged. Nonetheless, owned dogs were still sometimes observed scavenging opportunistically⁷. Consequently, access to refuse should be restricted to reduce the possibility of dogs congregating around rubbish sites.

Why control access to resources?	The benefits of controlling access to resources
To restrict dog roaming.	Fewer dogs on the streets.
To provide a cleaner and more hygienic environment.	Improved public health and animal health and welfare.
To prevent access to animal waste products from abattoirs.	There may be a reduction in parasitic infections with zoonotic potential, eg, echinococcosis.
To prevent unnecessary gastrointestinal upset or blockage.	Unnecessary suffering avoided.

8.3.7 Euthanasia

In the event of incurable illness, injury or behavioural problems with no prospect of recovery, euthanasia may be necessary as part of a dog management programme. Euthanasia is the act of inducing death in a humane manner²⁵.

Understanding the principles of euthanasia as part of the programme is essential. It is meant to be applied only when no other options are available and as such, these guidelines will help to determine when ending a life is warranted and when it is not³¹.

Why use euthanasia?

- ☒ To prevent the indiscriminate killing of dogs.
- ☒ To relieve animal suffering from incurable illnesses, injury, or behavioural problems or are likely to continue suffering into the future, or have little prospect of a life worth living in the future.
- ☒ To act on urgent cases of suffering, where euthanasia should be the required course of action. Anything that delays or prevents such a course of action should be avoided.
- ☒ To help vets and staff in holding facilities and rehoming centres make informed decisions with regards to an animal's quality of life.
- ☒ To provide guidelines on a case-by-case basis as to when euthanasia is warranted and when it is not.

The benefits of euthanasia

- ☒ When suffering from incurable illnesses, injuries, or behavioural problems, animals can be relieved from their suffering in a humane and stress-free manner.



9. Implementing the programme

9. Implementing the programme

Successful implementation depends on the completion of an initial assessment, selection of the stakeholder committee, identification of the problem's root causes and a carefully designed programme. After these stages have been thoroughly followed implementation will need to be conducted in stages. It should use closely monitored pilot areas so that any problems can be tackled before the full programme is launched.

The initial stages should not be rushed and key stakeholders will need to collaborate to improve progress in the early stages.

9.1 What is a pilot study?

Studies in pilot areas are mini versions of the full-scale programme. They allow the opportunity to test the implementation stage in advance. Pilot studies identify problems as well as successes and provide valuable information for the full-scale programme, but may not guarantee its success³².

Case study

Using pilot areas to implement a programme on a larger scale

- World Animal Protection is supporting the Bangladesh government to deliver a National Rabies Action Plan and carry out countrywide mass dog vaccinations to protect dogs and people.
- In 2011, a pilot study was set up in the southern beach resort of Cox's Bazar. Two rounds of vaccinations were completed and more than 70% of the area's dog population was vaccinated. Because of these vaccinations, education on dog bite prevention and continued efforts, the area has experienced a significant reduction in both dog and human rabies cases.
- Following the success of this pilot programme, nationwide mass dog vaccinations will be implemented as part of the country's National Rabies Elimination Strategy.



10. Monitoring and evaluation of the programme

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“Getting something wrong is not a crime. Failing to learn from past mistakes because you are not monitoring and evaluating, is.”

Shapiro. J. 2011

Monitoring and evaluation play an important role in the programme process. They allow a programme's effectiveness to be assessed, issues to be identified and adjustments to be made accordingly. Monitoring and evaluation also allow information regarding successes and failures to be published and shared.

During the monitoring and evaluation process whole communities (including those who own dogs, those who do not, and community leaders) should be engaged and consulted. This consultation should be carried out alongside the consultation with other relevant stakeholders. Communities should also be involved in making recommendations to improve the intervention.

It's important to remain open-minded and positive at the monitoring and evaluation stage. Problems and failures should be seen as opportunities to improve the programme, rather than cues to admit defeat²³.



11. What are the economics of dog management programmes?

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The costs associated with dog management programmes can be significant and depend on the specific issues to be addressed. Costs can be particularly high if issues affect dogs on a population level, such as the necessity to vaccinate 70% of all dogs within a large geographical area but provide benefits in the long-run²⁰.

Conversely, where issues related to free-roaming dogs are localised, such as free-roaming dogs congregating around refuse, removing garbage from localised areas probably incurs limited costs.

To guarantee the most effective use of funds, interventions need to be designed with care²⁶. The sustainability and success of a programme depends upon the availability of resources (financial, human, technical etc) over a long period of time. Understanding the economics and benefits of dog management programmes is important¹¹.

Although there are costs associated with the running of a dog management programme, the costs associated with free-roaming dogs can also be substantial and are often ongoing. Costs can pertain to dog bite treatments, road traffic accidents, zoonotic disease post-exposure treatment and injury to livestock and pets. They can also relate to environmental contamination (faeces, urine and thrown around garbage)³⁰.

In countries where tourism accounts for a significant portion of gross domestic product, free-roaming dogs can have an indirect impact on the economy. The sight of free-roaming dogs can create a perception of an uncaring society or of economic hardship. Dog attacks and rabies can have a further negative effect and deter tourists from returning^{34, 35}.

12. How can World Animal Protection help?

We provide expert advice on implementing effective and sustainable dog management programmes. We have been working with governments, international bodies, NGOs and local communities for more than 30 years to help manage free-roaming dogs humanely and we can do the same for you.

Whether you need advice, further information or technical support, please contact the Animals in Communities team at animalsincommunities@worldanimalprotection.org or visit worldanimalprotection.org. Together, we can move the world to protect animals.



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