HUMANE DOG POPULATION MANAGEMENT GUIDANCE

International Companion Animal Management Coalition

RSPCA International

HUMANE SOCIETY INTERNATIONAL

IFAW INTERNATIONAL FUND FOR ANIMAL WELFARE

WORLD SMALL ANIMAL VETERINARY ASSOCIATION

ARC

WSPA World Society for the Protection of Animals

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Introduction

ICAM

The International Companion Animal Management Coalition (ICAM Coalition) is made up of representatives from the World Society for the Protection of Animals (WSPA), the Humane Society International (HSI), the International Fund for Animal Welfare (IFAW), RSPCA International (the international arm of the Royal Society for the Prevention of Cruelty to Animals), the Universities Federation for Animal Welfare (UFAW), the World Small Animal Veterinary Association (WSAVA) and the Alliance for Rabies Control (ARC).

This group was set up to fulfil several objectives, including the sharing of information and ideas on companion animal population dynamics with a view to coordinating and improving member organisations' recommendations and guidance. Each organisation has agreed that it is important to strive to improve our mutual understanding through collaboration. We have a responsibility as funding and advisory bodies to ensure we are offering the most accurate guidance, based on the latest available data and concepts, to those involved with dog population management in the field. We also believe it is important that we endeavour to be transparent and to document our opinions and philosophy whenever possible. It is to this end that this document has been produced – it represents our recommendations at the time of writing, based on the knowledge we have accrued to date, and will be subject to updates when appropriate. We are acutely aware of the lack of data in this field and will strive both to support the collection of new data and to incorporate it into our future discussions, assessments and guidelines.

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Who this guidance is for

This document is intended for use by government bodies and non-governmental organisations (NGOs) which are involved in dog population management.

The ICAM Coalition believes that responsibility for dog population management properly resides with local or central government. Animal welfare NGOs should not be encouraged, nor seek, to take on the authority's overall responsibility for dog population management other than through a contractual agreement, with appropriate funding and resources. However, animal welfare NGOs play an important role in guiding and supporting government strategy, so it is important for such organisations to have an understanding of all the components of a comprehensive strategy. This will enable them to target their support where it can be most effective and to make the best use of limited resources.

Aim

As an animal welfare advocate, the ICAM Coalition believes that when population management is deemed necessary, it is essential that it is achieved in a humane manner and ultimately leads to an improvement in the welfare of the dog population as a whole. As NGOs we also believe it is important that population management is achieved as effectively as possible due to limitations on resources and also due to our responsibility to our donors.

The aim of this document is to provide guidance on how to assess dog population management needs and how to decide upon the most effective and resource-efficient approach to managing the population in a humane manner[1].

We are aware that the status, composition and size of dog populations can vary significantly between and within countries and so there is no single intervention that will work for all situations. Therefore, we strongly advocate the need for initial assessment and consideration of all potential relevant factors before deciding on a programme design. The only concept we consider universal is the need for a comprehensive programme that is focused on causes and not solely on treating the symptom, namely the roaming dog population.

1. Although in a different format and using more recent examples, this document does share many of the concepts, particularly with regards to initial assessment, included in the WHO/WSPA (1990) *Guidelines for Dog Population Management.*

Introduction

All the organisations within the ICAM Coalition seek to improve animal welfare as a common purpose, and as a priority. Dog population management is an area of concern for all of us due to the welfare issues involved.

Roaming dogs may encounter a range of welfare problems, including:

- malnutrition
- disease
- injury through traffic accidents
- injury through fighting
- abusive treatment.

Attempts to control the population may also present significant welfare problems, including:

- inhumane methods of killing such as strychnine poisoning, electrocution and drowning
- cruel methods of catching
- poorly equipped and managed holding facilities.

Within any population of dogs there will be different categories of ownership. These are:

- owned with restricted movements
- owned and allowed to roam
- unowned.

RSPA International

Owned roaming dog in Portugal.

There will be welfare issues relating to both restricted and roaming dogs. However, for the purposes of this document, the aim of dog population management is defined as: "To manage roaming dog populations and the risks these may present, including population size reduction when this is considered necessary".

Whether reducing the size of a roaming dog population is considered necessary will, to some extent, be subjective. In each situation there will be some people willing to tolerate roaming dogs and others who will not. For example, some members of the public and government authorities are concerned with public health and safety problems associated with roaming dog populations, including:

- transmission of disease to humans (zoonoses) and other animals
- injury and fear caused by aggressive behaviour
- nuisance through noise and fouling
- livestock predation
- causing of road traffic accidents.

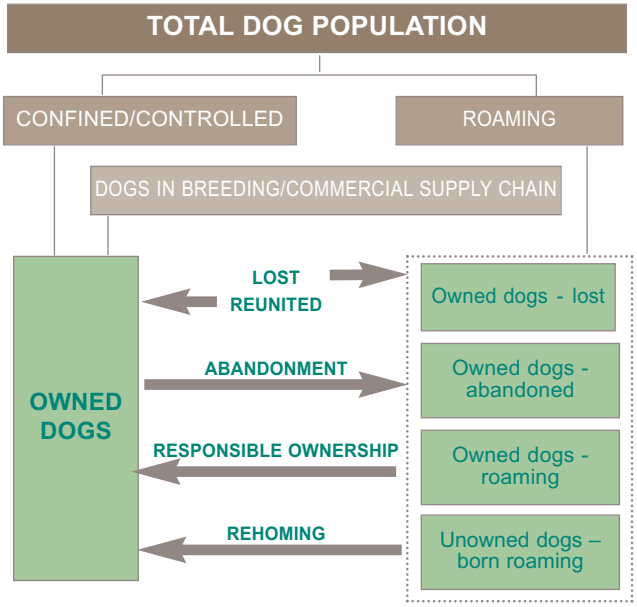
On the other hand, in some countries roaming dogs may be valued, owned animals that are allowed to roam unrestricted by the local community. A reduction in their numbers may be neither necessary nor wanted, but improving the welfare and health of the population and reducing zoonotic risks may still be recognised as beneficial and desirable.

A roaming dog can be either owned or unowned. It is the responsible ownership of a dog that prevents it being considered a problem by other members of the community. This document considers management options that address both categories (owned and unowned) of dog.

Terminology

From a population management perspective, we feel it is most useful to characterise the dogs first in terms of their behaviour or location (in other words, whether they are confined or roaming) and then by their ownership status. This is illustrated in Figure 1, below. Terms appearing in the diagram are explained under Definitions.

Figure 1: Sub-populations of the total dog population
The diagram shows the sub-populations into which the total dog population can be partitioned. Note that these categories are fluid and dogs may move between categories, as indicated by the arrows.



RSPCA International

Fisherman and community dog in India.

Definitions

Roaming dog

One that is not currently under direct control or is not currently restricted by a physical barrier. This term is often used inter-changeably with 'free-roaming', 'free-ranging' or 'stray' dog. Note that this term encompasses both owned and unowned roaming dogs and does not distinguish whether the dog has an 'owner' or 'guardian'; indeed in many countries the majority of dogs that would be defined as roaming do have an owner but are allowed to roam on public property for all or part of the day.

Owned dog

For the purposes of this document, an owned dog is one that someone states is their property or claims some right over – simply put, when enquiries are made about a dog someone will say: "That's my dog". This does not necessarily mean it is a responsibly owned dog. Indeed ownership can range from: 'loose' ownership in the form of irregular feeding of a dog that roams freely in the streets; to a dog kept as part of a commercial breeding facility; to a well cared for, legally registered and confined pet. In reality, what constitutes dog ownership is highly variable and fits along a spectrum of confinement, provision of resources such as food and shelter and the significance of companionship.

Community dog

There may also be situations where more than one individual claims ownership of an animal and these can be known as community dogs.

Responsible animal ownership

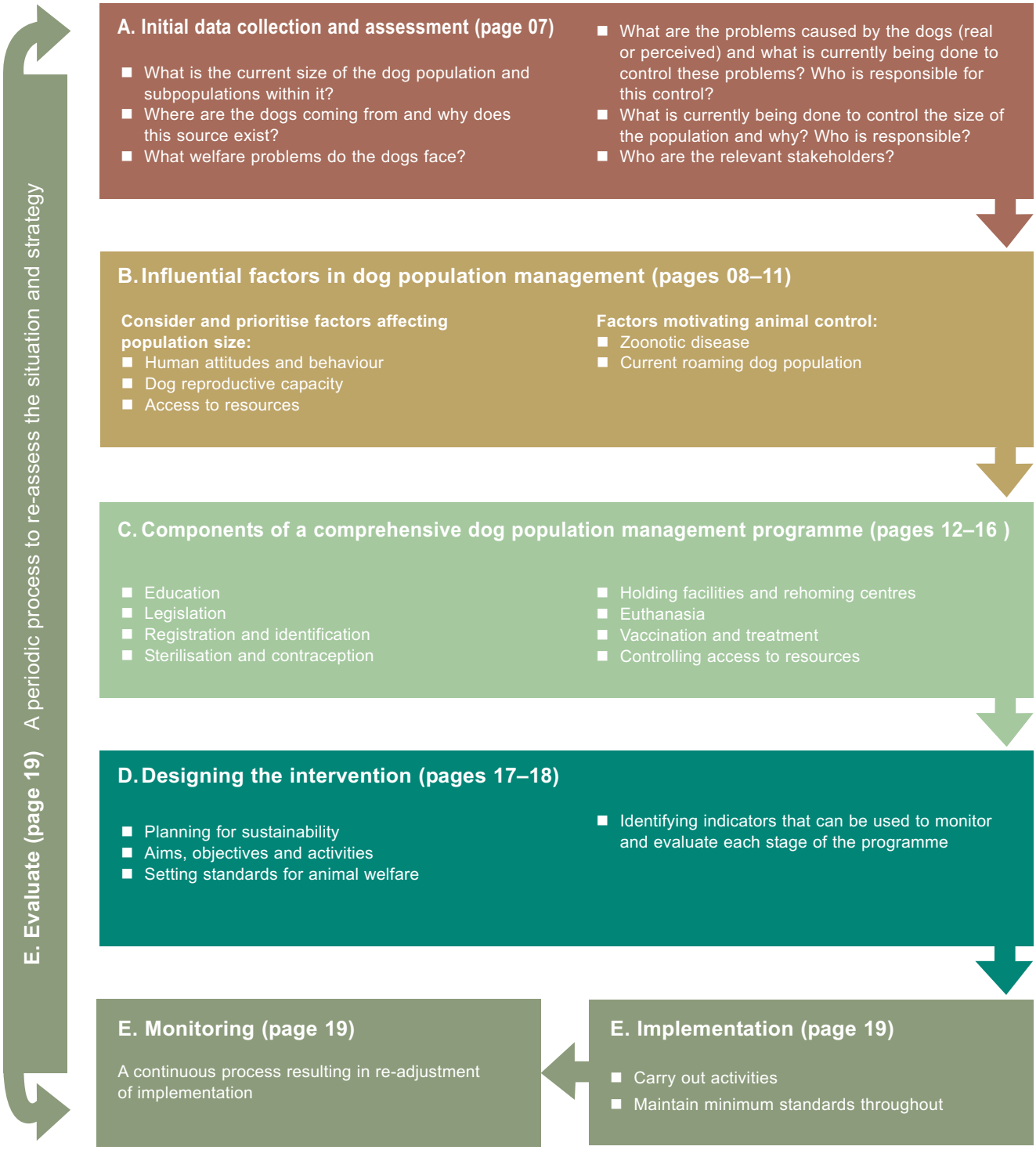
It is a principle of animal welfare that owners have a duty to provide sufficient and appropriate care for all their animals and their offspring. This 'duty of care' requires owners to provide the resources (e.g. food, water, health care and social interaction) necessary for an individual dog to maintain an acceptable level of health and well-being in its environment – the Five Freedoms[2] serve as a useful guide. Owners also have a duty to minimise the potential risk their dog may pose to the public or other animals. In some countries this is a legal requirement.

2. Freedom from hunger and thirst; freedom from discomfort; freedom from pain, injury or disease; freedom to express normal behaviour; freedom from fear and distress. Farm Animal Welfare Council (FAWC): www.fawc.org.uk/freedoms.htm

Content structure

This document follows the structure explained in Figure 2: A process overview, below.

Figure 2: A process overview



A. Initial data collection and assessment: Understand the problem you are facing

Before embarking on a dog population management programme it is essential that the dynamics of the dog population are understood and measured objectively. This approach ensures the final management programme will be tailored to the characteristics of the local dog population, rather than using a single blanket intervention for all dogs or all situations.

Assessing the local dog population

The main questions to be explored through the assessment are as follows:

1. What is the current size of the dog population and the categories within it? This includes both owned and unowned, confined and roaming dogs, and where these overlap.
2. Where are the roaming dogs coming from? What are the sources of these dogs and why do these sources exist? Management strategies should aim to reduce the future unwanted roaming population by targeting the primary sources.
3. What are the main welfare issues faced by these dogs?
4. What is currently being done, both informally and officially, to control the dog population and why?

   a. Understanding what is already being done can allow current resources and control measures to be improved and built upon. This also helps ensure that any new interventions will not conflict with current measures but rather replace or complement them.

   b. Whose responsibility is it to control the roaming dog population? This usually falls within the remit of the agriculture (or sometimes health) department, with municipalities often responsible for carrying out activities locally. NGOs can provide effective elements of population management, but in order to do this they should be supported in partnership with, or led by, the responsible authority. It is also essential that any measures taken fit within the legal framework of the country.

   c. Pressure from the public can be very powerful and this is usually the 'why' behind control attempts. It is necessary to listen to the concerns and opinions of the local community and local authority; addressing these will help ensure the sustainability of the project. The justification for wanting dog populations to be controlled will depend on opinions as to whether roaming dogs are unwanted, but be aware that these will be determined by both the person you are asking and the individual dogs concerned.

Within each of these main questions are sub-questions and tools that can be used to address them. See Annex A for an exploration of the questions, but note that the sub-questions and tools described are neither an exhaustive nor prescriptive list, rather an attempt to highlight key areas of importance.

It is essential that all relevant stakeholders are consulted during this process; representation should be sought from everyone who is affected by the dog population. As far as is possible, a participatory approach should also be used; not only should people be consulted, but their views taken into consideration and their input used to design and drive the future intervention. This will encourage 'buy-in' from the stakeholders and will inevitably improve the success of the programme.

Creating a multi-stakeholder committee

Ideally, it will be the duty of the responsible government authority to bring together stakeholders for consultation. However, if they are unwilling or unable to do this, NGOs can create a working group themselves and feed back the findings to the relevant authorities. For further information on developing a consultative process see Annex B.

The following is a list of possible stakeholders to be consulted. Those marked with a * are recommended as minimum requirements of the committee.

- **Government *** – usually local, but central will also be relevant for policy and statutes. Will be the key stakeholder if the programme is national. Several departments are likely to be relevant, including agriculture/veterinary, health, environment (especially with regard to refuse collection), tourism, education and sanitation. (The government must be represented on the committee).
- **Veterinary community *** – national governing body, veterinary professional association, private practitioner clusters and university veterinary department.
- **NGO community *** – local, national and international organisations working in animal welfare, animal rights and human health.
- **Animal sheltering, fostering and rehoming community *** – both government/municipality-run and private/NGO-run organisations.
- **Academic communities** with relevant experience e.g. animal behaviour, veterinary science, sociology, ecology and epidemiology.
- **Legislators *** – departments responsible for both writing and enforcing legislation.
- **Educators** – in schools and universities.
- **Local media** – for education, publicity and local support.
- **International bodies with relevant responsibilities –** World Health Organisation (WHO), World Organisation for Animal Health (OIE) and worldwide veterinary associations.
- **Local community leaders/representatives ***
- **Local community** – both dog owners and non-owners.

B. Influential factors in dog population management: Consider a range of factors that influence dog population welfare and size and decide which to prioritise

Completion of the initial assessment will provide both data on and insights into the local situation. The next stage is to highlight which factors are the most important and so should be prioritised in the management programme; identifying these priority factors will ensure that resources are not spent on issues that have only a minor impact on the wider problem. In almost all situations more than one factor will be important, so an effective strategy will require a combination of interventions.

The following is a list of factors that are frequently listed as priorities in dog population management. These are split into those that influence population size and those that influence or motivate people to attempt to control the population. However, others may be relevant in certain conditions and it is important to stay focused on what is appropriate for the target community and the causes of roaming dog populations, not just the effects.

Factors influencing dog population size

Human attitudes and behaviour

Aim: To encourage responsible ownership.

Human behaviour is likely to be the most powerful force behind dog population dynamics. The encouraging of responsible and rewarding human-animal interactions will lead to both an improvement in animal welfare and a reduction in many of the sources of roaming dogs. The owned dog population may be found to be a significant source of roaming dogs and may suffer from many preventable welfare problems, and human behaviour towards dogs will be the driving force behind these problems.

Several issues need to be considered when exploring human attitudes and behaviour.

a. Local beliefs and attitudes may affect human behaviour towards dogs. It may be possible to address these beliefs to change behavioural outcomes. For example, a belief that sterilisation will cause negative behavioural changes in dogs can be addressed through education and examples of sterilised dogs in the community, so encouraging owners to seek sterilisation for their dogs.

b. Keep messages about human behaviour consistent. The intervention should encourage responsible and rewarding human-animal interactions. For example, demonstrating respectful and careful handling of dogs will help to encourage empathetic and respectful attitudes in the local population. Do watch out for any elements of the intervention that could be seen to encourage irresponsible or careless behaviour.

c. Religion and culture play an important role in peoples' attitudes and beliefs. Engage religious representatives and community leaders early in the process, to explore how religious or cultural interpretation could hinder or support potential interventions.

d. Interventions to change human behaviour should be tailored carefully to your target audience as different methodologies will be required for different ages and cultures. It is important to understand the most effective ways of communicating to each target audience.

e. Because human behaviour is such a key factor of success, it is important that owners are not only aware of interventions but fully understand and engage in all relevant aspects (see Case study 1).

CASE STUDY 1

An example of human attitudes that could affect dog population management

In China, IFAW and One Voice funded a MORI poll in 2004 which revealed that approximately 76 per cent of citizens considered neutering pet cats and dogs to be cruel. This highlighted the need for extensive education and discussion before starting any intervention involving reproduction control through sterilisation.

In 2006, there was a similar situation in Zanzibar when WSPA and the local government introduced a sterilisation intervention. It started with low compliance, with few owners willing to bring their animals for sterilisation. However, over a period of months, the education programme, discussions with key community leaders and actual examples of healthy sterilised animals began to create a change in human attitudes, leading people to actively bring their animals to be sterilised.

WSPA

Local people watching surgical sterilsation through windows of mobile clinic on Zanzibar.

Reproductive capacity of population

Aim: To balance out 'supply and demand' so that the number and type of dogs produced will match the number and type wanted by the public.

In order to reduce the size of an unwanted roaming dog population in a humane way it is often necessary to reduce the 'surplus' population. This surplus may come from unowned, owned or deliberately bred dogs and all three categories need to be taken into account when controlling supply and demand.

The following issues need to be considered.

a. Reducing reproduction. Sterilisation can reduce the capacity for reproduction, but it is important to select the target population of dogs carefully.

i. Dogs that are reproducing most successfully.

- To reduce the reproduction rate of the population most effectively it is important to assess which dogs are actually producing puppies and successfully supporting them to adulthood.
- Some studies of specific populations of dogs that were not receiving care directly from humans (e.g. were living off the resources provided by garbage tips only) have reported that the population size was maintained through continued immigration rather than successful breeding within the group. From this, it can be assumed that in many cases only those dogs receiving some level of care directly from humans will be able to reproduce successfully.
- From an animal welfare perspective, the suffering of puppies born to females of poor welfare status (should they manage to carry a litter to term) should be considered. In general, the mortality of puppies in unowned roaming dog populations is likely to be high.
- It must be noted, however, that dogs of poor welfare status at the time of prioritising could become healthy in the future and therefore able to reproduce successfully.

ii. Dogs whose offspring are most likely to become roaming dogs.

There may be specific populations of dogs whose offspring are most likely to be allowed to roam or be abandoned. This may relate to a lack of awareness and acceptance of responsible ownership, which can be a result of education, public and institutional attitudes and socio-economics.

iii. Female dogs. It may be sensible to focus the main effort of the intervention on female dogs, as females are usually the limiting factor in reproductive capacity. It requires just a few entire (un-neutered) males to impregnate receptive females, so the sterilisation of even a sizable proportion of the male population may not lead to a reduction in the overall reproductive capacity of the population. Each sterilisation of a female, however, will individually contribute to a reduction in the overall reproductive capacity.

iv. Male dogs. Machos. However, the sexual behaviour of entire male dogs may become problematic, especially when females that have not been sterilised are in oestrus. Adult males may not change their behaviour as significantly following castration as young males who have not yet developed their sexual behaviour. Hence young males may be considered the next priority group for sterilisation, followed by adult males.

Note: *Both male and female dogs can act as vectors for rabies, so if only females are being selected for sterilisation in a rabies-endemic area, males should at least be vaccinated.*

b. Reducing commercial supply i.e. dog breeding. A comprehensive strategy should also consider commercial sources of dogs, such as breeding farms or pet shops.

Commercial breeding facilities may produce poorly socialised and unhealthy puppies, which make poor pets. Outlets, such as pet shops or markets, may also keep animals in poor conditions and sell them on without proper advice about care or responsibilities. The 'low quality' of these dogs and the lack of understanding or realistic expectations of dog ownership will leave these dogs at high risk of abandonment. A combination of legislation and enforcement via inspections by trained enforcement agencies can be used to improve the conditions of these commercial facilities and hence the welfare of the animals involved. Outlets should also be required to provide proper advice about care and the responsibilities of dog ownership. Education can be used to ensure potential owners know the options available to them when acquiring a new pet, including rehoming centres. They should also know to expect a well-socialised and healthy puppy.

Access to resources

Aim: To reduce the access to resources that may be encouraging dogs to roam and to use manipulation of local resources to reduce the local roaming dog population.

Dogs generally have access to resources (including food, water and shelter), which may be available directly from an owner within the confines of a household or provided on public property when roaming. The extent to which a dog relies on the resources available on public property for survival will depend on the level of care provided by its owner. Some owned dogs are encouraged to roam by the opportunity to access resources on public property but do not rely on these for survival, while other dogs have no owner or are offered no care by their owner and so are entirely reliant for their survival on resources accessed when roaming. Altering the access to resources on public property will have an impact on the roaming dog population by discouraging opportunistic roaming. However, it may also potentially reduce the survival of those that depend on these resources.

Several issues need to be considered when exploring this factor.

a. The intervention of reducing access to resources should not be used alone. For those animals identified as being dependent on public property resources for survival, changes to the access to these resources (through measures such as improved rubbish collection) should be done in step with reducing this population or by making alternative provisions for those animals.

b. Improving rubbish collection and disposal can reduce a point of interaction between people, especially children, and roaming dogs.

c. In some situations, the main food source will be food provided directly by humans through deliberate feeding rather than refuse (indirect resource provisioning). The motivation for feeding will vary between geographical areas and between individuals and this must be understood and taken into consideration if attempting to influence human feeding behaviour, for example see point d, below. Education will play an important role in influencing this behaviour. Alternatively a reduction in the dog population may automatically lead to a reduction in resource provision as people will not feed dogs that do not exist.

d. Altering access to resources in specific areas can be used to alter the spread of the dog population. For example, a public park that people want free of roaming dogs can be maintained by removing access to resources, such as using animal proof bins and educating people not to feed dogs in these areas. In some countries regulations exist that restrict areas where dogs can be exercised or can roam freely. These regulations are enforced by environmental and communal officers.

Factors motivating people to control dog populations

Zoonotic diseases (diseases that can be transmitted from non-human animals to humans)

Aim: To reduce the risk the dog population presents to human health and the health of other animals.

Zoonotic diseases are often the primary cause for concern with regard to roaming dog populations, particularly with local and central government who have a responsibility for public health. Because rabies is a fatal disease, with dogs being the most common vector for transmission to humans, rabies control is often a major motive for dog population management.

Several issues need to be considered when exploring this factor.

a. The importance of zoonotic control should not be played down to relevant stakeholders, such as public health officials. It is important to explore together ways that effective zoonotic control can be achieved while remaining neutral, or even positive, towards animal welfare.

b. Zoonoses are a concern for the general public and people may at times behave cruelly towards dogs out of fear of zoonotic diseases such as rabies. Controlling zoonoses and providing tangible evidence of this control (e.g. fitting red collars to indicate recent vaccination) to the public may help to increase confidence and reduce aggressive behaviour towards these dogs.

c. In some situations it may be advisable to introduce improved zoonotic control to restore public confidence first and then follow with other elements of dog population management, such as sterilisation or improved health care.

Vida Digna

Roaming dogs feeding from rubbish in Peru.

However, a comprehensive programme of population management including simultaneous zoonotic control is the ideal option.

d. The risk of zoonotic disease transmission to those involved in any population management intervention must be considered. For example, dogs that succumb to rabies can excrete the virus in their saliva up to two weeks before symptoms appear. All personnel working in close proximity to dogs should be provided with adequate training and equipment and given appropriate prophylactic (preventative) medication.

Current roaming dog population

Aim: To reduce the risks that the current roaming dog population presents to the community and to avoid poor welfare of the current roaming population.

The current roaming dog population can lead to human-animal conflicts (in addition to zoonotic diseases) and can be a motivating and visible animal welfare problem. In many situations the current population of roaming dogs will need to be addressed for reasons of public pressure, public health and the welfare of the animals themselves. The best method of addressing this population will depend very much on the local human community and the dog population itself.

Several issues need to be considered when exploring this factor.

a. It is important to identify exactly where and why human-animal conflict occurs. It may actually be possible to resolve some of the conflict through methods other than those aimed at population reduction, such as bite prevention education or establishment of dog-free zones in potential conflict areas.

b. Human-animal conflict and welfare issues are often blamed on an unowned roaming dog population, when in reality many of these roaming dogs may actually be owned or abandoned by previous owners. Improving responsible animal ownership and introducing registration and identification of dogs are all methods of tackling this issue. Further details are provided in Section C.

c. There may be rehoming potential in the local community that could provide unowned roaming dogs with responsible ownership. To administer this, a rehoming centre or fostering system would be needed, although these need careful management if they are not to cause welfare concerns of their own. Rehoming centres can be expensive and time consuming to run, so it is best to explore creative alternatives before commiting to a physical centre. See Section C for a more detailed discussion of this subject.

d. In some cases there will be no, or little, local rehoming potential. In this situation the welfare of the dogs must be considered. In many cases, the poor welfare of these dogs and public pressure will mean these animals need to be removed. If they are sick, injured or have significant behavioural problems, such as aggression, euthanasia may be the best option. If no homes are available, euthanasia may be preferable to long-term kennelling for reasons of animal welfare, as dogs are difficult and expensive to kennel in the long term without significant suffering.

e. If the welfare of these dogs is generally good and the local human community tolerates them, it may be possible to introduce a combination of measures to control them in situ, including: vaccinating the population to ensure it does not carry rabies; using an 'ambulance' to collect individuals that are injured, ill or aggressive for humane euthanasia; maintaining dog-free zones via rubbish collection and good fencing. These measures should be used in conjunction with others designed to tackle the source of this population. Further details are provided in Section C.

f. The mass killing of dogs through inhumane methods is unfortunately often used as an attempt to control the population. There are many reasons why this should not be done. Killing roaming dogs does not address the source of the animals and so will have to be repeated indefinitely. This method often meets resistance both within the local area and outside, as inhumane treatment of a sentient animal will be seen as ethically questionable, especially when humane alternatives exist. If the inhumane methods used are also indiscriminate, such as poison baits, there will also be a risk to non-target species, pet animals and even humans. There is no evidence to suggest that killing reduces rabies incidence (see Case study 2) and may actually discourage dog owners from engaging in rabies prevention programmes when these are run by authorities that are known to cull indiscriminately.

It has been suggested that in some cases mass killing may lead to redistribution of the surviving animals into newly vacant territories, which may actually increase the rabies risk through increased movement. It is also hypothesised that in a situation where reproduction is limited by access to resources, a sudden reduction in animals through mass killing may allow greater access to resources for the remaining animals, and potentially their reproductive success and survival would increase enabling them to quickly replace the culled animals. However, to date we are not aware of data that demonstrate these effects.

CASE STUDY 2

An example of the ineffectiveness of mass killing for rabies control

Flores is an isolated Indonesian island which had been rabies-free until a canine rabies outbreak resulted in at least 113 human deaths. The outbreak began after three dogs were imported from rabies-endemic Sulawesi in September 1997. Local authorities responded with a mass killing of dogs, starting in early 1998. Approximately 70 per cent of the dogs in the district where rabies had been introduced were killed during that year, yet canine rabies still existed on Flores at the time the study was published (June 2004).

From Windiyaningsih et al (2004). *The Rabies Epidemic on Flores Island, Indonesia (1998 2003)*. Journal of the Medical Association of Thailand, 87(11), 1-5.

C. Components of a comprehensive dog population management programme: Select the solutions most appropriate to your situation

An effective dog population management programme needs a comprehensive approach. Ideally, the overall programme should be coordinated by the local authority responsible for dog population management. NGOs should work with the authority to identify the areas in which they can support the programme and make most difference. All activities should be selected based on the priorities identified in the initial needs assessment. This section outlines a range of components that might form part of a comprehensive dog population control programme.

Education

In the long term, education is one of the most important elements of a comprehensive approach to management, as human behaviour is an extremely influential factor in dog population dynamics (see Section B). In general, education needs to encourage a greater responsibility among dog owners for population management and the care and welfare of individual animals. However, there may be key specific education messages that are important to highlight at different stages of the programme, for example: bite prevention; selection and care of dogs; realistic expectations of dog ownership; advertising the importance of, and access to, preventative treatments; and knowledge of normal and abnormal canine behaviour.

Several issues need to be considered when using this component.

a. Education initiatives should be developed in coordination with the local education authorities and carried out by trained professionals. All stakeholders can advise on content and provide impetus for programmes but delivery should be carried out with expert support.

b. It is important to engage all potential sources of education on dogs to ensure that messages are kept consistent. Ideally this should include animal welfare groups, the veterinary profession, schools, enforcement bodies and the media (including animal-focused media groups). It may be necessary for one particular body to take on a coordinating role.

CASE STUDY 3

An example of an education programme

Following 2004's tsunami, The Blue Paw Trust ran an education programme alongside a mobile veterinary clinic on the south and east coasts of Sri Lanka. This involved the distribution of leaflets on dog and cat care, talks at community centres and local schools, and discussions between vet-team members and the public at the clinic site. The latter also involved introducing animal owners to their local vet, who attended the clinics to support the programme and become familiar with surgical sterilisation techniques.

These education initiatives were planned and designed with input from schools and local authorities (public health inspectors) and run in coordination with other local welfare groups.

c. Veterinarians and veterinary students may also require focused educational efforts in the area of population management, including:
   - the rationale behind or justification for population management
   - their role in related public health issues
   - methods of reproductive control
   - key messages on responsible ownership for clients
   - euthanasia methods
   - how they can become involved with and benefit from proactive population management programmes that encourage responsible care of dogs, including regular vet care.

d. Educational messages can be communicated in many ways, including:
   - formal seminars and structured lessons in schools
   - leaflets and brochures provided to targeted audiences
   - awareness raising in the general public through the press, billboards, radio and TV
   - directly engaging people in discussions as part of community-based programmes (see Case study 3).

e. It can take time for the impact of education on dog population management to become evident, so methods of monitoring and evaluating its impact need to incorporate both short-term and long-term indicators. The impact can be considered on three levels: the acquisition of knowledge and skills; changes in attitudes; resultant behaviour change.

Legislation

It is essential that the dog population management programme fits within legislative guidelines – and is preferably supported by them. Legislation is important for the sustainability of the programme and can be used to ensure dog population management is carried out humanely. Relevant legislation can be found at both central and local government level and is sometimes scattered within several different statutes, laws or acts. Separate policy documents may also be relevant and can impact on the emphasis or method of legislative enforcement. Changes to legislation can be a long and bureaucratic process.

Several issues need to be considered when using this component.

a. There is a balance to be struck between clear legislation and legislation that is so restrictive it does not allow for evolution in management practices over time.

b. Time should be taken to draft new legislation carefully, drawing from the experiences of other countries and relevant professionals. An inclusive process with all relevant stakeholders participating should be used, including appraisal exercises where input is actively sought and incorporated from several sources.

c. Changes to legislation are difficult to achieve so it is important that submitted drafts are accurate and realistic. The end product should deliver laws that are: holistic; considered suitable and reasonable by the community; engage the authorities with their responsibilities; achieve the desired impact for animal welfare; sustainable.

d. Sufficient time should be allowed for any changes to legislation to be introduced. Guidance notes should be provided in advance to help with interpretation.

e. Legislation will be a 'paper exercise' unless it is enacted uniformly and enforced effectively. Effective enactment will usually require the majority of effort to be spent on education and incentives and the minority to be spent on carrying out punitive enforcement measures. Education about legislation has to be targeted at all levels, from law enforcement bodies (such as lawyers, police and animal welfare inspectors) to relevant professionals (such as veterinarians and shelter managers) and dog owners. Successful enforcement has been achieved in some countries through the use of animal welfare inspectors (also referred to as wardens or animal control officers). These officials are trained and resourced to provide education, handle animals when required and enforce legislation through advice, warnings, cautions and eventual prosecutions.

Registration and identification

The most effective way of clearly connecting an owner with his or her animal is to use registration and identification together. This should encourage a sense of responsibility in the owner as the animal becomes identifiable as his/her own. Registration/identification is an important tool for reuniting lost animals with owners and can be a strong foundation for enforcement of legislation (including abandonment legislation and mandatory regular rabies vaccinations).

Several issues need to be considered when using this component.

a. There are several methods of animal identification available, and these can be used either separately or in combination. They differ in three important ways: permanence; visibility; and whether an animal has to be anaesthetised when they are applied. Microchips, tattoos and collars/tags are the three most common methods; the most suitable will depend partly on local conditions and partly on the reasons identification is being used.

b. If permanent identification of a large population is required, the microchip currently offers the best option since the number of permutations of digits in the code is sufficient to identify all dogs, while human errors (transposing numbers and incorrect reading of the numbers) are less likely as a digital scanner is used to read the chip. Microchipping also has the advantage of being a global system, so animals moving from one area (or country) to another can continue to be identified (see Case study 4). Before instituting a microchip system, it is advisable to check that the chips and readers used conform to ISO standards.

c. It is important that registration and identification information is stored on a central database (or that separate databases are linked in some way), which is accessible to all relevant people (e.g. the veterinary profession, police, dog wardens and municipal pounds). It may require the support of central government to ensure a single unified system is used.

d. Mandatory registration and identification can help the practical problems faced by shelters. When a dog brought to a shelter is identified, it can be returned to its owner without delay (avoiding welfare compromise for the dog and reducing stress to the owner). If not identified, it is by definition 'unowned' so the shelter can implement its policies (whether rehoming or euthanasia) without the delay of waiting for an owner to come forward. Both scenarios will free up valuable kennel space, which will potentially increase capacity.

CASE STUDY 4

An example of a registration and identification system in Estonia

Tallinn city government is the first to adopt a mandatory registration and identification system for dogs in Estonia. The system was set up in August 2006 as a pilot scheme, when the city of Tallinn commissioned a commercial company to develop a database to record and identify animals and their owners.

Municipal regulations stipulate that all dogs are to be permanently identified by a microchip that has been implanted by a vet. The owners and their animals' details are recorded onto a database, which can be accessed by authorised personnel. The register was designed to be universal, allowing the same system to be adopted across Estonia. As well as identifying animals, the system has been designed to record animal health information such as rabies vaccinations. It is anticipated that the system will eventually be used to issue rabies vaccination recalls to owners when their dogs are due for annual inoculations, as rabies vaccination is a mandatory requirement in Estonia.

e. Registration fees can be charged (a 'one off ' fee or payment each year) in order to provide funds for other areas of the management programme. Although care needs to be taken to balance potential income against enforcement, if fees are too high owners may try to avoid registration. Differential fee scales can be used as an incentive for sterilisation, encouraging owners to keep only a small number of animals and discouraging breeding of dogs.

f. Licensing may be used when certain criteria have to be fulfilled prior to dog ownership, for example when people wish to breed dogs or own regulated dog breeds ('dangerous' dogs). It could also be used to encourage responsible ownership by requesting that people complete a 'certificate in dog ownership' before they are granted a licence to own a dog.

Sterilisation and contraception

The control of reproduction through permanent sterilisation or temporary contraception can be achieved through three main methods.

a. Surgical: The removal of reproductive organs under general anaesthetic ensures permanent sterilisation and can significantly reduce sexual behaviour (especially if performed early in an animal's development). Surgical techniques must be carried out correctly. A good standard of asepsis (the practice of reducing or eliminating the risk of bacterial contamination) and pain management must be maintained throughout. This can only be assessed by adequate post-operative monitoring during the whole recovery period. Surgery may be costly initially but is a lifelong solution and hence may be more cost efficient over time. It requires trained veterinarians, an infrastructure and equipment.

b. Chemical sterilisation and contraception: These methods are still quite limited by the cost, the fact that they may need to be repeated and by the welfare problems associated with certain chemicals. Currently, no methods of chemical sterilisation or contraception are guaranteed to be effective or without risk when used on roaming unmonitored dogs. However, this is an active area of research and effective and suitable chemical sterilants for mass reproductive control are expected in the future. Most chemicals require trained veterinarians for clinical examination of individuals to assess their reproductive status prior to the application and administration of injections at regular intervals without interruption, which is not possible for most dog management programmes. Chemical sterilants and contraception should be used according to manufacturers' instructions. They may or may not have an impact on sexual behaviours.

c. Physical contraception through the isolation of females in oestrus from entire males: Owners can be educated to recognise the signs of a female dog coming into oestrus and can plan to ensure the female is isolated from entire males during this period. Attention must be paid to the welfare of both the female and males when planning how to isolate the female. Sexual behaviour can become problematic as males will try to gain access to females, however, isolation requires minimal cost to achieve and does not require a trained veterinary surgeon.

When using tools for sterilisation and contraception it is important to consider their sustainability – dog population management is a permanent challenge so it is vital that sustainability is considered throughout the design of the intervention. Providing free or low-cost services with no explanation of the full costs may give dog owners an unrealistic expectation of the true cost of veterinary care.

A local veterinary infrastructure is a requirement for the general health and welfare of owned animals, so if a local, private veterinary capacity could provide sterilisation services it is advisable to work to build up and incorporate this capacity rather than to exclude and alienate it. This may require the support of a growing 'market' for dog sterilisation services in the local community by advocating the benefits of sterilisation and helping to support part of the costs, as well as supporting the development of the service itself through training (see Case study 5).

CASE STUDY 5

An example of a programme to develop sustainable population management involving local stakeholders

An in-depth assessment of the local dog population, which combined formal household surveys and dog counts with local knowledge, provided data on the sources of stray dogs in Dominica and hence perception of the 'problem'.

As a result, the city council acknowledged its responsibility to humanely and effectively enforce the municipal dog control by-laws. It then asked IFAW to complement its municipal programme through the provision of primary veterinary health care (including sterilisation) and education, through a targeted door-to door community outreach program based on the outcomes of the assessment. The aim was to limit the number of dogs roaming at source, as well as to address other welfare issues affecting owned dogs, such as neglect, inappropriate confinement and poor health. The ethos of the project was community participation and leadership and so local vets were an integral part of the project.

Following training programmes both in Dominica and overseas, US- and UK-based IFAW staff provided long distance support to key local staff and stakeholders as well as written veterinary protocols suitable for local conditions but acceptable to international standards. Through this process the local community, veterinary profession and council will be able to take on all elements of this project in the long term.

For a discussion of the results of the community-based questionnaire see Davis et al (2007), *Preliminary Observations on the Characteristics of the Owned Dog Population in Roseau, Dominica.* JAAWS, 10(2), 141 151.

Holding facilities and rehoming centres

Building a shelter will not on its own solve a roaming dog problem in the long term. In fact it may make it worse, as it provides an easy route for pet owners to dispose of their animals rather than thinking about providing for them. In addition, rehoming centres can be very expensive and time consuming to run, hence creative alternatives to centres should be explored prior to a commitment to build one. A fostering system, for example, might be more effective, cost efficient and welfare friendly for the animals (see Case study 6). Rather than providing a rehoming centre, which treats the symptoms of abandonment and not the causes, effort should be focused as a priority on improving responsible ownership as a method of reducing abandonment.

CASE STUDY 6

An example of an alternative to rehoming centres

In an east Asian city with one of the greatest human population densities in the world, a large stray dog population and limited fundraising capacity, many shelters quickly become overwhelmed. In many instances, lack of financial resources and constant demand lead to a dramatic fall in standards of care, resulting in significant animal suffering and distress for the staff. As an alternative, a new organisation focused on creating a foster network of dedicated volunteers to take abandoned dogs and cats into their homes temporarily. For its part, the organisation agreed to support the animals, paying for all medical bills, vaccinations and neutering, until long-term homes were found. In the first year the organisation built up a network of more than 40 foster homes with the goal of reaching 100 within the second year. The animals are rehomed via the internet and the network has the potential to house a far greater number of animals than a shelter ever could. The animals are all homed in appropriate conditions and the scheme has far lower overheads and administrative costs than a shelter. The new organisation has become a success in a city where many similar projects have failed.

Adapted from *Guidelines for the design and management of animal shelters*, RSPCA International, 2006.

If centres for the statutory holding of collected roaming animals and the observation of suspect rabid cases already exist, for example municipally-run and/or funded holding facilities, it may be more cost efficient to improve and expand these existing facilities than to build new ones.

Several issues need to be considered when using this component.

a. Policies will need to be written to cover several issues of importance, including sterilisation, rehoming, capacity (how many animals per kennel and in total and what will be done once the capacity is reached) and euthanasia. These should take into account the welfare of individual animals, the cost implications, the aims and objectives of the facility/centre and the impact of the facility/centre on the long-term dog population management issue, including responsible animal ownership. As this is an issue where emotional factors may come into play it is preferable for the policies to be agreed by all staff at the outset. All new staff must be clear about the policies and have the rationale behind them clearly explained.

   Example 1: A clear policy and procedure should be agreed for assessing the health and behaviour of individual dogs, bearing in mind the typical homes that will be available and what a new home can realistically be expected to provide. Inappropriate rehoming can lead to distrust by the public and mean bad public relations for adoption in general.

   Example 2: Following on from Example 1, some dogs will not be suitable for rehoming based on their health and/or behaviour[3] and there may not be enough homes available for those that would be suitable. It is extremely difficult to maintain a good state of welfare for dogs in long-term kennelling. In this situation, euthanasia should be considered both for the sake of the individual animal and other dogs that could be offered the opportunity to find a new home. To support decision making, euthanasia policies should be clear and transparent for all staff involved.

b. Protocols should be designed for each stage of the process, from quarantine on arrival to daily routines such as cleaning, feeding and exercise to record keeping and rehoming.

c. The design of the centre should take into account the welfare needs of the animals, including both physiological and psychological needs. The site selection should consider public access, physical characteristics, services (such as drainage and water sources), potential noise disturbance, planning permission and future expansion.

d. Finances for rehoming centres are extremely important as centres are hard to close at short notice. Both capital expenditure and running costs should be considered. It is recommended that both the capital outlay and running costs for one year should be raised before commitment to a centre is made.

For further information refer to: *Guidelines for the design and management of animal shelters*, RSPCA International, 2006.

3. E.g. See definitions provided by the Asilomar Accords: http://www.asilomaraccords.org/definitions.html

Euthanasia

When running holding facilities and rehoming centres or networks, euthanasia will be required for animals that are suffering from an incurable illness, injury or behavioural problem that prevents them being rehomed, or are not coping well enough with the facilities to maintain a reasonable level of welfare. Ultimately, a successful population management programme should create a situation where these are the only occasions when euthanasia is required and all healthy animals can be found a good home. In reality, however, most countries will not be able to achieve this situation immediately but will need to work towards it, accepting that some healthy animals will be euthanased as not enough homes exist that can provide a good level of welfare.

Euthanasia deals with only the symptoms and not the causes of population problems. It will not lead to population management and must not be relied upon as a sole response. Whenever euthanasia is used, it must employ humane methods that ensure the animal moves into unconsciousness and then death without suffering.

Vaccination and parasite control

Preventative veterinary treatments can be provided to protect the health and welfare of animals and to reduce the problem of zoonotic diseases. Rabies vaccinations are usually the priority issue, but several other diseases can also be vaccinated against, alongside internal and external parasite control through appropriate medication. These treatments should be provided in conjunction with education about responsible ownership, sterilisation or contraception and registration and/or identification. The need for vaccination and parasite control is often well understood by animal owners, and so offering access to these services may be the easiest way to entice owners into conversations or agreements about the other components discussed in this section.

Several issues need to be considered when using this component.

a. Regular vaccination (especially if covering diseases in addition to rabies) and parasite control is likely to improve the health status of individual dogs. Females that were not previously reproductively successful may become healthy enough to breed. This does mean that the issue of increased reproduction needs to be considered and mitigated as required.

b. As with sterilisation and contraception, preventative treatments can be used to encourage owners to see the value of general veterinary treatment and other population management tools (such as registration and identification), which are required for the long-term welfare of animals, so it is worth exploring how to involve the local veterinary infrastructure in providing preventative treatments. The provision of preventative treatments for free should be done with care and according to the local economic situation, as there is a risk of devaluing general veterinary services if treatment is provided without cost or understanding of the extent of cost subsidies.

WSPA/ BLUE PAW TRUST

Fitting a red identification collar to a dog receiving rabies vaccination and parasite treatment in Sri Lanka.

c. Preventative treatments will need to be provided regularly if they are to be effective, hence the ease of access to treatments should be considered.

d. Treatments can be provided via ‘camps’ (temporary, high-volume treatment sites), which can be very effective at drawing owners’ attention to the importance of preventative treatments and other population management tools. However, the risk of aggressive interactions and disease transmission between the large number of dogs that will attend needs to be mitigated by organising access and exits carefully, using a sterilised needle for each dog, and quarantining sick animals. Such camps will require adequate advertising beforehand. There is also a limit to the distance that the general public will travel for such a service, so thought must be given to the number of camps that would be necessary for the desired coverage, and the associated logistics.

e. Encouraging regular preventative treatments allows for the diagnosis and treatment of any existing conditions.

Controlling access to resources

Dogs are motivated to roam in public places where there is access to resources such as food. In order to restrict roaming, especially in specific areas where dogs are not tolerated (e.g. schools and public parks), access to these resources needs to be restricted. This should be done carefully and in conjunction with measures to reduce the roaming dog population, in order to avoid dogs starving when food sources are removed or moving to different areas to find new food sources.

This can be achieved in a number of ways:

a. the regular removal of garbage from homes and public bins

b. the fencing-in of garbage collection and disposal sites

c. the control of offal and carcass disposal

d. the use of animal-proof bins, such as those with heavy lids, or positioning them out of a dog’s reach

e. education or enforcement measures to stop people littering (and hence feeding dogs accidentally), and to stop people purposely feeding dogs in certain areas.

D. Designing the intervention: Planning, agreeing targets and setting standards

Once the assessment is complete, the priorities for the programme have been decided and approaches for tackling these priority issues have been explored, it is necessary to design and document the full programme plan.

Planning for sustainability

Dog population management programmes often require high levels of resources over a long period of time. These include human resources, infrastructure and finances. It is important to consider the following factors.

a. Responsibility: Ideally resource requirements will be built into the budget of the responsible authority. Government bodies are most likely to be able to achieve sustainability through government funding. NGOs considering taking on responsibility for aspects of dog population management should ensure that they will be fully supported and resourced, whether by the authorities or from other sources, before undertaking such responsibilities. They should also consider carefully that their investment will need to be long term and this commitment may challenge their capacity to take on other work.

b. Owner involvement: An intervention designed to have an impact on owner responsibility could lead to the sustainability of elements of the project, as well as permanent positive behaviour change. For example, sterilisation programmes could become sustainable if owners are encouraged to pay for this service, while at the same time the veterinary profession is supported so that it can provide this at an accessible price.

c. Registration: A registration system with a small fee for dog ownership can provide funding for other components of the wider programme. However, the size of this fee needs to be carefully controlled as large fees will lead to poor registration rates. Charging a fee may not be appropriate in all countries.

d. Fundraising: The ability to fundraise locally will depend on several factors, including the culture of charitable giving and the status of dogs in the local community. Local people, businesses, trusts and dog-related industries (pharmaceutical, pet food and pet insurance) may all be interested in supporting dog management programmes, either financially or through providing resources (such as food or medicines). International grant-making bodies may also provide funding for specific project costs, but are unlikely to support long-term running costs. Again, the sustainability of each of these sources of funds and/or resources must be considered.

e. Human resources: There may be people willing to provide support through unpaid human resources, sometimes termed in-kind or pro bono donations. Several professions carry out pro bono work for the benefit of NGOs, such as marketing, accounting and management firms.

   The veterinary profession is an important human resource, not just for surgical and medical skills but also for vets' ability to influence owner behaviour. Qualified vets may be willing to provide some regular services for free or at a low cost. Student vets may also be willing to help out as part of their training and this can become a formal part of their course, although supervision will need to be provided. Volunteer vets and vet nurses from overseas may also be a valuable source of support, although there is the potential for them to be considered a threat by local vets if they are seen to be replacing their services. The sustainability of this resource is also difficult as travel costs may be high. It may be preferable to utilise these volunteer vets to support the growth and skills of the local veterinary profession.

f. Sustainability: A plan of how the programme will be sustained in the long run should be drawn up at the outset; humane dog population management has a beginning but no end, as it requires ongoing activity to maintain the dog population in the desired state. Including and building upon local capacity will support sustainability, as will the development of responsible animal ownership as individual dog owners begin to support population management activities.

Aims, objectives and activities

The programme plan should include clear and agreed aims and objectives. It is also important at this stage to describe indicators that could be used to assess progress at each stage of the programme. The indicators will be used to monitor and evaluate the success of the programme (see Section E) and it is important to consider them at the outset as baselines are likely to be required.

If a number of organisations are involved in dog population management, it may be relevant to draw up agreements so each party is aware of the overarching aim and their role within the programme. These plans should also be communicated to the end users, such as dog owners and stakeholders that will be affected by the programme even if they are not responsible for the activities themselves (this may include certain authorities). See Case study 7, overleaf, for an example of dog population management design.

Setting standards for animal welfare

The aim of maintaining the best practicable level of animal welfare should be clearly stated by the programme's standards. To ensure agreement and understanding, the standards are best developed by a team of stakeholders. Decisions regarding the fate of individual animals should be made on the basis of both their individual long-term welfare and that of the local dog population. There should also be a procedure for regular monitoring to ensure these standards are being upheld, as well as regular reviews of the standards themselves.

The following are common areas of dog management programmes that may require minimum standards to be applied:

a. surgery, including aseptic techniques, anaesthetics and drug regimes (e.g. analgesia)

b. handling and transporting of dogs

c. housing and husbandry of dogs

d. rehoming procedures

e. euthanasia – when euthanasia should be used and how it should be carried out

f. record keeping and regular analysis of data – although not directly affecting animal welfare, good recording keeping that covers the incidence of disease or injury can help identify parts of the programme that may be compromising welfare. For example, an usually high incidence of post-operative complications at certain times may indicate the need for refresher training for certain veterinary staff or a change in post-operative care.

RAY BUTCHER/PHUKET ANIMAL WELFARE SOCIETY

Surgery using aseptic techniques, Thailand.

CASE STUDY 7

An example of steps for designing interventions

A. Understand the situation

A questionnaire was conducted in Municipality X, which was reported to have the highest number of complaints about roaming dogs. The questionnaire answers showed that 50 per cent of the people who owned female dogs reported they have too many puppies to deal with and that finding homes is a problem. They also reported 45 per cent of the puppies as 'lost'. The level of sterilisation in the female dog population was found to be just three per cent. Owners reported a lack of confidence in local vets' ability and a worry that their dogs' personalities would change as a result of sterilisation.

B. Prioritise the relevant factors

The priority factor here is dog reproduction – there is a surplus of unwanted puppies in the owned population, a need to increase sterilisation levels in owned dogs, and a need to address the vets' ability and the misunderstanding of the impact of sterilisation on dog behaviour.

C. Components of a comprehensive programme

The components are: surgical sterilisation through local veterinary infrastructure; the education of both vets in surgery and local dog owners on the importance of sterilisation.

D. Design the intervention

From this, an aim was written: to reduce the number of unwanted and roaming dogs susceptible to disease and injury on the streets of Municipality X. In order to achieve this aim, several objectives were written, one of which was to increase sterilisation of owned female dogs from three per cent to 50 per cent in two years. Fifty per cent was chosen as a target because 50 per cent of the owners reported a problem with excess puppies. Two years was chosen both because of practical resources (clinic time and funding) and to allow time for the impact of the programme to become evident.

This objective will involve activities such as:

- training to improve surgical sterilisation skills in four local vets, which is paired with two incentives: a voucher system allowing vets to offer low-cost sterilisation services subsidised by a local NGO and a simple marketing plan for the clinic around the subject of low-cost sterilisation
- an education programme, using posters and the local community network focused on the local religious leader, which explains the benefits of sterilisation to dog owners with regards to health and behaviour.

E. Implementation, monitoring and evaluation: check the programme is achieving its goals

Implementation

This should be straightforward if priorities have been chosen sensibly and the design stage carried out in detail. This stage may require a phased approach, using pilot areas which are monitored carefully to ensure any problems are tackled before the full programme is launched. The initial stages should not be rushed into. There will be 'teething' problems, and frequent updates will be required between key stakeholders to monitor closely and improve progress in the early phases.

Monitoring and evaluation

Once the programme is underway it will be necessary to regularly monitor progress and evaluate effectiveness. This is necessary:

a. to help improve performance, by highlighting both problems and successful elements of interventions

b. for accountability, to demonstrate to donors, supporters and people at the receiving end of the intervention that the programme is achieving its aims.

Monitoring is a continuous process that aims to check the programme is going to plan and allows for regular adjustments. Evaluation is a periodic assessment, usually carried out at particular milestones to check the programme is having the desired and stated impact. Evaluation should also be used as the basis for decisions regarding future investment and programme continuation. Both procedures involve the measurement of indicators selected at the design stage because they reflect important components of the programme at different stages (see Case study 8 for an example).

Monitoring and evaluation should be an important part of a programme but not overly time consuming or expensive. Choosing the right list of indicators, with regard to their ability to reflect the changes that need to be measured and can be measured with a degree of accuracy, will be key to the success of this stage. In order to choose these indicators it is essential to have a clear plan of what the programme is setting out to achieve and why, and how the intervention will accomplish this.

Ideally monitoring and evaluation will be approached in a participatory manner where all relevant stakeholders are consulted and involved in making recommendations. It is also important to remain open minded and positive during this process, as things may change contrary to expectations. The exposure of problems or failures should be seen as opportunities to improve the programme, rather than mistakes requiring justification.

The concept of monitoring and evaluation is not complex, but there are many decisions to be made regarding what to measure, how this is to be done and how the results should be analysed and used. These issues and others are discussed in much more detail in other texts, for example go to: www.intrac.org.

CASE STUDY 8

Project matrix (truncated project 'logframe' – only one output listed and no assumptions) showing suggested indicators for each stage of the project initially introduced in Case study 7

HIERARCHY OF OBJECTIVES		INDICATOR A measurement, number, fact, opinion or perception that reflects a specific condition or situation	MEANS OF VERIFICATION How you will measure the indicator
IMPACT/GOAL Reflects the **change** created by the project	Reduction/change in unwanted and roaming dogs in Municipality X	% decrease in number of roaming puppies and lactating female dogs in Municipality X over 2 years	Biannual population survey (direct counts in sample of 500m^2 blocks)
OUTCOME/PURPOSE Reflects the **effect** of the project	Improved community ability to control reproductive capacity of their dogs	% of sterilised females increases to 50% in 2 years	Annual household questionnaire
		% increase in community acceptance of dog sterilisation	Community focus group discussions
OUTPUT 1 Reflects the **effort** put in by the project	4 low-cost sterilisation schemes in Municipality X	Number of dogs sterilised and treated per month	Participating clinics' records
ACTIVITIES 1 Reflects what the project will actually **do**	**1.1** Training for 4 local vets **1.2** Develop voucher system **1.3** Marketing of low cost service	Number of clinics that qualify and sign up to the scheme	Clinic agreements

ANNEX A: Tools to assess dog population management needs

This annex aims to explore the overarching questions posed in Section A. Under each heading is a series of sub-questions paired with suggestions for tools that could be used to investigate the answers. These are not meant to provide an exhaustive or prescriptive list, but rather encourage exploration into the issue.

1. To establish an estimate of the size of the dog population and its categories

SUB–QUESTIONS	SUGGESTIONS FOR TOOLS/METHODS
How many dogs are currently in the categories of 'roaming' and 'confined'? Note that dogs that are roaming will be both unowned and owned roaming dogs.	A survey of the roaming dog population paired with a questionnaire for local dog owners asking for the number of dogs that would normally roam at the time the street survey was conducted. Note that questionnaires require experience to design in order to obtain truthful and relevant data.

2. To understand where roaming dogs are coming from. In other words, what are the sources of these dogs and why do these sources exist?

SUB–QUESTIONS	SUGGESTIONS FOR TOOLS/METHODS
How is the roaming dog population changing over time and how is it maintained? Is the unowned dog population itself capable of successful reproduction? Can unowned dogs raise puppies to adulthood?	Observe the number of dogs in each age class (puppy, juvenile and adult) of the roaming dog population over time. Observe litters of puppies during the breeding season from both roaming owned and unowned populations to see how many survive in the two populations.
Are unwanted owned dogs abandoned in the street to become part of the roaming population? Are owned dogs allowed to roam freely?	Questionnaire for owners – ask whether their dogs are confined to private property or whether they (or somebody else they know, if admitting this behaviour themselves is likely to be a problem) have ever abandoned a dog.
If abandonment or roaming is an issue, why does it occur? What are the beliefs, attitudes or environmental factors that underlie these behaviours?	Attitudes and beliefs behind such behaviours may be hard to measure quantifiably (using a numerical regular scale). Discussions or open-format interviews with groups of people with relevant experience (such as dog owners or animal health workers) can help to bring out opinions. Keep these groups small and informal and allow free discussion around topics, using prompting questions to guide the discussion.

IFAW/S.COOK

Pet owner survey in Dominica.

3. What are the welfare problems being experienced by the dog population and why do these occur?

SUB–QUESTIONS	SUGGESTIONS FOR TOOLS/METHODS
Measuring welfare can be approached either through animal-based assessment (direct observation of the animals) or resource-based assessment (measuring the access animals have to resources important to their welfare) or a combination of both. Measuring welfare in dog populations, especially those populations that include a proportion of roaming animals, is a relatively understudied area. However, it is important to us as animal welfare advocates that we attempt to address this in some of the important sub-questions.	
What is the welfare status of the roaming dog population and how prevalent are welfare problems?	Direct observation of roaming dogs for health status, such as body condition scores, lameness, injuries and skin conditions.
What is the welfare status of owned dogs and how prevalent are welfare problems? Do owners provide their dogs with the resources they require for good welfare?	Direct observation of owned dogs for health status and behavioural response to owner (to explore the previous treatment of the dog by the owner). Questionnaire for owners regarding the provision of resources such as health care, food, water and shelter.
What is the welfare status of dogs affected by the current control measures? For example, what is the welfare status of dogs in shelters? What euthanasia methods are used, if any?	Direct observation of dogs in shelters, using the same criteria used for other categories of dogs to allow for comparison. Discussions with shelter authorities on the resources provided and methods used for euthanasia.
What are the survival rates of different types (confined, unowned or owned roaming) or age groups of dogs? Survival can indicate welfare status, as a short average survival would suggest poor health.	Survival of unowned roaming populations is hard to measure without following a sample of individuals over time. A questionnaire for owners asking about dogs in their household that have died over the past year can provide an estimate of survival of owned animals and the reasons why animals died (note that the survival of young puppies and adults should be dealt with separately, as these figures are often very different).

4. What is currently being done both informally and officially to control the dog population, and why?

SUB–QUESTIONS	SUGGESTIONS FOR TOOLS/METHODS
Do people think there is a problem with dog population management locally? What problems are caused by the dogs themselves?	Discussions with small groups of people from a range of backgrounds. Keep groups informal, allow discussion around topics and guide with well-placed prompting questions. Ask the relevant local authorities about the nature, number and geographical location of complaints.
What is currently being done to manage the dog population?	Discussions with all relevant stakeholders to understand past, current and any future plans for dog population management. Consider local government, veterinary organisations, NGOs and dog owners themselves.
What legislation exists that relates to dog population management?	Collect information from both central and local government on legislation relating to dogs – it is possible that relevant regulations exist in more than one Act (e.g. disease control, veterinary regulations, environmental regulations).

ANNEX B: Creating a multi-stakeholder committee

The following is an example of a process that can be used to achieve stakeholder involvement and buy-in; such a process can be adapted for different-sized programmes (from small community projects to national programmes).

- Create a working group of people with an interest in and responsibility for dog population management (see Section A for a list of possible stakeholders). This working group would have responsibility for designing and carrying out the initial data collection and assessment of the local dog population.
- Following an initial assessment, this working group can be evolved to a formal committee with representation from each relevant stakeholder. The committee should at the very least have terms of reference, a list of membership and a role for members, a commitment to regular meetings, updates of an action plan and a clear aim. It may be possible to base this committee on similar models, for example those created for improving human health. It may also be relevant to invite experienced members of those committees onto the dog population management committee.
- Each member of the committee is responsible for representing the needs of their stakeholders with regards to dog population management, for example public health organisations would require control of zoonotic disease, NGOs would require an improvement in welfare, the municipal council may require a reduction in nuisance reports. A set of objectives can be drafted based on the data produced by the initial assessment and the needs of each stakeholder. The programme plan can form around this with clear understanding of the aims and what will be seen as success or failure by each stakeholder (see Section D for more information on creating the plan).
- The financial commitment required to make the programme successful, both in the short and long term, should be discussed and agreed by the committee. This should include the expected investment by each stakeholder.
- The responsibility of each committee member in carrying out, monitoring and evaluating the programme needs to be made clear. Once the programme is launched, regular meetings will be required to update on progress and discuss the results of monitoring and evaluation and hence any changes needed to the programme.
- The committee will essentially be permanent as dog population management is a permanent challenge, although the membership will inevitably change and evolve.

The following are suggestions for improving the functioning of the committee:

- Seminars or workshops can be used to inspire and develop the programme at key points, including the planning stage. This sort of event can also draw on expertise not normally present in the committee.
- Clarifying roles, including details such as administrative issues (e.g. minutes and meeting arrangements), will help create realistic expectations. These should also be regularly reviewed and rotated, if appropriate.
- As far as possible the committee should be transparent, to encourage public confidence in the programme.
- The committee will inevitably experience differences of opinion, so clear guidance and an understanding of how such situations will be managed will help maintain cohesion.

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