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MEETING OF THE OIE *AD HOC* GROUP FOR THE REVISION OF CHAPTER 7.7., STRAY DOG POPULATION CONTROL¹

Paris, 5–7 November 2019

1. Welcome and introduction

The OIE *ad hoc* Group for the revision of Chapter 7.7, Stray dog population control, (the *ad hoc* Group) met for their first meeting at the OIE Headquarters on 5–7 November 2019.

The *ad hoc* Group participants list and the agenda are presented in Annexes I and II, respectively.

Dr Matthew Stone, OIE Deputy Director General for International Standards and Sciences, welcomed participants and thanked them for their availability and contribution to the work of the OIE. He extended his appreciation to their institutes and national governments for allowing their participation in this meeting.

Dr Stone pointed out that the Code Commission, in its September 2018 meeting report, recommended that a general review of Chapter 7.7, Stray Dog Population Control, be conducted to address the following aspects:

- to review the terminology;
- to clarify the roles and responsibilities of stakeholders during the implementation;
- to ensure consistency with updated Chapter 8.14, Infection with rabies virus;
- to reflect new developments in dog population management and animal welfare monitoring.

Dr Stone also noted that the Code Commission recommended the *ad hoc* Group to consider within its scope, the Global Strategic Plan (GSP) which aims to end human deaths from dog-mediated rabies by 2030: 'Zero by 30'.

2. Presentation of OIE standard-setting process

Dr Francisco D'Alessio gave a presentation on the OIE standards setting process. He explained that the revision or elaboration of the new chapter of the OIE *Terrestrial Animal Health Code (Terrestrial Code)* is done in a 2 to 4-year cycle. The OIE convokes *ad hoc* groups to develop or revise the content of the chapters, always defining the scopes according to Member Countries' need to combat animal diseases, zoonoses and to promote animal welfare.

¹ Note: This *ad hoc* Group report reflects the views of its members and may not necessarily reflect the views of the OIE. This report should be read in conjunction with the February 2020 report of the Terrestrial Animal Health Standards Commission because this report provides its considerations and comments. It is available at <http://www.oie.int/en/international-standard-setting/specialists-commissions-groups/code-commission-reports/meetings-reports/>

3. Modus operandi of the *ad hoc* Group

Dr Leopoldo Stuardo, Chargé de mission, Standards Department, reminded the *ad hoc* Group that it had been convened at the request of the Terrestrial Animal Health Standards Commission (Code Commission) to undertake a thorough review of Chapter 7.7 of the *Terrestrial Code* given that this chapter had not been reviewed extensively since 2011. The main points to be addressed by the *ad hoc* Group are proposed in its Terms of Reference (ToR), presented in [Annex III](#).

Dr Stuardo informed the *ad hoc* Group that the Code Commission will review its report at its next meeting in February 2020.

4. Presentation of the Global Strategic Plan (GSP) to end human deaths from dog-mediated rabies by 2030

Dr Patricia Pozzetti, Chargée de mission, Science Department, presented the Global Strategic Plan (GSP) to end human deaths from dog-mediated rabies by 2030. She pointed out that the strategy is based on a three-phase approach that began in 2018 and will finish in 2030. It contains a range of activities to be implemented by key stakeholders on rabies control strategy. Three objectives have been set to be achieved in each phase of the strategy which will contribute to dog-mediated human rabies elimination by 2030, (i) Objective 1 - to effectively use vaccines, medicines, tools and technologies to reduce the risk of human rabies; (ii) Objective 2 - to generate, innovate and measure impact by using effective policies, guidance and governance by harmonizing international recommendations and ensuring the availability of reliable data to enable effective decision-making; and (iii) Objective 3 - to sustain commitment and resources through multi-stakeholder engagement.

Dr Pozzetti emphasised that ‘Dog Population Management’ (DPM) is an integral part and a key component of rabies control programmes. She also mentioned that major activities set up in the GSP such as “*Encourage and educate about responsible dog ownership; Conceptualize cultural differences that impact the societal role and value of dogs (e.g. ecology, human interaction); etc.*”, depend on clear standards that support its implementation. Therefore, the revision of Chapter 7.7 will contribute to the implementation of GSP activities that will guide countries on achieving dog-mediated rabies elimination by 2030.

5. Confirmation of the agenda and the ToR of the Group

The *ad hoc* Group adopted the proposed agenda and noted the ToR.

6. Review of the background discussion paper and other relevant documents

Dr Paolo Dallavilla, the Chairperson, presented the ToRs and a background discussion paper (attached for information only in [Annex IV](#)) developed by the OIE Secretariat and reminded members that the main objectives of reviewing Chapter 7.7 were to provide clear guidance on DPM considering animal welfare aspects, to support implementation of disease control programmes, in particular for rabies control, to give recommendations on DPM in case of disaster management, and to provide tools for interventions where dog populations pose a risk to human and animal health, welfare and security.

The *ad hoc* Group confirmed that it was necessary to identify inconsistencies within Chapter 7.7 as well as with other chapters of the *Terrestrial Code*. In addition, it should align Chapter 7.7 with Chapter 8.14, Infection with rabies virus, Chapter 4.18, Vaccination, Chapter 7.1, Introduction to the recommendations for animal welfare, Chapter 7.6, Killing of animals for disease control purposes, Chapter 8.5, Infection with *Echinococcus granulosus*, Chapter 8.6, Infection with *Echinococcus multilocularis*, and Chapter 3.4, Veterinary Legislation, as well as ensure harmonisation of definitions in the Glossary of the *Terrestrial Code*.

The *ad hoc* Group agreed that DPM is fundamental to achieve the goal of the GSP ‘Zero by 30’ and agreed to consider the GSP requirements when reviewing Chapter 7.7.

7. Revision of Chapter 7.7, Stray dog population control

The *ad hoc* Group considered Chapter 7.7 and proposed the following amendments to the structure, terminology, scope, content, objectives and content in view of the recommendations in the ToR.

a) Chapter structure

The *ad hoc* Group agreed that an introduction to the chapter should be drafted to contextualise the positive and negative aspects of the presence of dogs in society, noting that dogs play an important role as companion animals and supporting psychological state of humans but also have the potential to impact public health, and animal health and welfare.

The *ad hoc* Group discussed Chapter 8.14 regarding the recommendations for the endorsement of an official rabies control programme to support the strategy to end human death from dog-mediated rabies. Considering that DPM is an essential component for the success of rabies control programmes, the *ad hoc* Group debated whether it would be more appropriate to move aspects of animal welfare from Chapter 7.7 (especially euthanasia) to Chapter 7.6, Killing of animals for disease control purposes.

Firstly, the *ad hoc* Group discussed the merits of moving or not some recommendations (e.g. euthanasia) from Chapter 7.7 to Chapter 7.6, Killing of animals for disease control purposes; moving the recommendations on stray dog population control to a new chapter in Section 4., Disease prevention and control, as this text may support rabies and other disease control programmes; and keeping the 'animal welfare' recommendations in Chapter 7.7 to be renamed accordingly.

The *ad hoc* Group pointed out that DPM is an important component of disease control programmes, but also contributes to improving animal welfare, public perception and public safety (including road traffic accidents and dog bites regardless of disease risk). Therefore, the *ad hoc* Group expressed its concern that, by separating the two concepts, Member Countries could consider the use of euthanasia as the only aspect related to animal welfare in the chapter.

The *ad hoc* Group agreed that not considering aspects of animal welfare in DPM can create conflicts and deter the community from implementing rabies control programmes. Therefore, based on these considerations, the *ad hoc* Group agreed to reject the proposals which proposed to move parts of Chapter 7.7 to other chapters.

The *ad hoc* Group then discussed a second option which proposed to add all aspects of DPM to the new chapter under development 4.Y, Official control programmes for listed and emerging diseases, in Section 4, Disease prevention and control, leaving Chapter 7.7 with welfare recommendations. Chapter 4.Y includes recommendations on what to consider when designing official control programmes and could also incorporate the concepts of DPM into different articles such as culling of animals, movement control, vaccination, etc.

The *ad hoc* Group emphasised that DPM has many beneficial impacts, not only on controlling diseases such as rabies, but also on societal behaviour changes with respect to dog welfare and responsible ownership, and therefore both aspects should be considered and ideally in the same chapter.

Therefore, this second proposal was rejected by the *ad hoc* Group.

Following discussions on these options, the *ad hoc* Group agreed to propose to keep Chapter 7.7 but to revise its structure, update its content, harmonise terminology, create cross-references with other relevant chapters to address the proposed wider scope, including animal-based indicators and to add new recommendations as needed.

b) Terminology

The *ad hoc* Group discussed whether the term ‘Stray dog population control’ was still appropriate. The *ad hoc* Group agreed that this term as currently defined in Chapter 7.7 is no longer considered suitable. Indeed, the term ‘control’ could be interpreted as measures to eliminate dogs, whereas ‘management’ implies a proactive process of addressing sources of future free-roaming dogs and not just the current stray dog population. Furthermore, the term ‘stray dog’ does not represent all dogs that should benefit from management to reduce risks to public health or animal health and welfare.

Based on these considerations, the *ad hoc* Group proposed using the term ‘dog population management’ (DPM) rather than ‘stray dog population control’ throughout the chapter, including in the title. The *ad hoc* Group considered that the term ‘dog population management’ had a broader scope and included a range of actions to improve health and welfare of free-roaming dogs to reduce problems these dogs may cause and to reduce free-roaming dog population turnover. The *ad hoc* Group noted that DPM applies not only to the current stray dog population, but also to confined and roaming owned dogs.

The *ad hoc* Group also suggested that the different categories of dog populations, in relation to their kind of ownership and level of freedom to roam, be defined better in the glossary and revised chapter.

Following the discussions on the roles and responsibilities during the implementation of DPM, the *ad hoc* Group agreed to follow current definitions of ‘Competent Authority’, ‘Veterinary Authority’, ‘Veterinary Services’ used in the *Terrestrial Code*. The Secretariat explained that the current definition of ‘Veterinary Services’ includes all actors working on implementation of public health, animal health and animal welfare measures, comprising professionals from different Competent Authorities, Non-Governmental Organisations, and private sector. It also noted that the Competent Authorities involved in DPM can vary from country to country, and as it requires a ‘one health approach’; different authorities could also share responsibilities.

To define better the competencies required to develop and implement DPM, the *ad hoc* Group agreed to identify the actions that make up a DPM strategy, then to define which actors (Competent Authorities, non-governmental organisations and other stakeholders) would be responsible for the implementation of each activity. The *ad hoc* Group agreed that this point should be addressed when the DPM components are clearer.

Finally, the *ad hoc* Group proposed using the term ‘free-roaming dog’ instead of ‘stray dog’ throughout the chapter and proposed a revised definition for the Glossary to remove the concept that a dog is controlled ‘by a person’. This is in line with the wording in the ‘Zero by 30’ GSP and the World Health Organization’s Expert Consultation on Rabies², which both use the term ‘free-roaming dog’. Considering the *ad hoc* Group’s recommendation to no longer use the term ‘stray dog’, it requested the Secretariat to review the use of the term ‘stray dog’ throughout the *Terrestrial Code* (e.g. 3.4, 8.5, 8.6, user guide and Section 7) and assess the impact of this change. The proposed revised definition of ‘free-roaming dog’ is presented in Annex V of the Report.

c) Scope and context

The *ad hoc* Group agreed that the scope should provide recommendations for DPM whilst promoting dog welfare and minimising the impact of free-roaming dog populations on public health, animal health, animal welfare, the environment and society.

² World Health Organization. (2018). WHO expert consultation on rabies: third report. World Health Organization. <https://apps.who.int/iris/handle/10665/272364>.

d) Objectives

Considering the recommendation of the Code Commission, the *ad hoc* Group agreed to add objectives that contribute to the implementation of the 'Zero by 30' GSP as stated under sections 3 and 5 of this report, and thus to dog-mediated human rabies elimination since rabies control improves with well-implemented DPM.

The *ad hoc* Group proposed to revise the objectives in the current chapter noting that they should describe the benefits of implementing DPM measures. That is, DPM would be considered as an input and the benefits as outcomes of its implementation. The *ad hoc* Group proposed to harmonise terminology, update some concepts, for example to minimise dog population turnover, i.e. a well-implemented DPM strategy would contribute to the health of vaccinated dogs that would have longer life and reduce unwanted births, which would maintain the population's vaccination coverage, thereby also contributing to accelerated rabies control.

e) Chapter content

The *ad hoc* Group agreed that the revised chapter should clarify that dogs are not a problem for rabies if they are vaccinated and if there is DPM in place. A vaccinated dog population is key to achieving the end of human death from dog-mediated rabies by 2030 as described in the 'Zero by 30' GSP. Conversely, removal of vaccinated dogs may be counterproductive as it may lead to decreasing population immunity, thereby reducing both the likelihood of disease elimination as well as overall efficacy of the rabies control programme.

The *ad hoc* Group was reminded that the revised chapter should provide clear guidance to countries to integrate DPM as a key component of their national disease control programmes, while ensuring sustainability of the actions. Ultimately, countries should seek endorsement by the OIE of their official control programmes for dog-mediated rabies.

The *ad hoc* Group was informed that, for the OIE to endorse an official rabies control programme, countries should provide evidence of the implementation of dog population management activities as part of the official rabies control programme. Therefore, the revised chapter should also provide clear guidance to countries on how to implement DPM as part of their rabies control programme.

The *ad hoc* Group noted that there was a need to check whether the recommendations in this chapter were in line with general OIE Standards such as the required minimum length of vaccine efficacy, particularly when recommendations for vaccination of free-roaming dogs differ from the global minimum standards for owned dogs.

The *ad hoc* Group asked that the Code Commission clarify whether they would consider moving some newly proposed information, specific to the control of rabies in free-roaming dog populations (e.g. how to conduct effective rabies vaccination campaigns and assess coverage) to Chapter 8.14, Infection with rabies virus. In the interim, the *ad hoc* Group agreed to include the new information in Chapter 7.7 with clear cross-references to Chapter 8.14, noting that this text could easily be moved to Chapter 8.14 if necessary. Considering that free-roaming dog vaccination guidance necessary to support the 'Zero by 30' GSP is presently not included in Chapter 8.14, the *ad hoc* Group requested guidance from the Code Commission on the level of detail required regarding rabies control strategies to be included in Chapter 7.7.

The *ad hoc* Group reviewed the Guiding Principles and agreed to add recommendations in the chapter that DPM should consider the different goals between communities and therefore be individually tailored to address local communities' needs as well as national needs; the direct benefit of good dog management on human health and animal health and welfare; that DPM is a permanent community service and therefore must be sustainable and adapted over time at local and national level for long term community benefit rather than being a finite activity; and the fact that DPM must be humane and ethical.

It was proposed to combine Articles 7.7.5, 7.7.7 and 7.7.8 into one article on assessment, monitoring and evaluation as the methods involved are linked.

The *ad hoc* Group proposed reordering the articles to improve the flow of information and provided a title for each article to clarify the content presented. The *ad hoc* Group did not reach a consensus on whether additional information related to the management tools should appear under their respective article or in a separate section. The Group discussed the possibility to create a new section for recommendations applicable to several articles e.g. 'Capture and handling' or 'Dog Housing'. However, for the purpose of this meeting, the *ad hoc* Group decided to focus on agreeing the content of each article and leave the decision on where this content should feature once it has been drafted. It was also discussed to add other articles related to 'access to veterinary care' and 'estimation of dog population size'.

8. Any other business

None

9. Next steps

The *ad hoc* Group requested advice from the Code Commission at its February 2020 meeting on the following proposals:

- a) Keep Chapter 7.7 but revise the structure, check cross-references and add content as needed to meet revised scope,
- b) Change the title of Chapter 7.7 from 'Stray dog population control' to 'Dog Population Management' to reflect the wider scope,
- c) Use the term 'free-roaming dog' instead of 'stray dog' throughout the chapter and in other *Terrestrial Code* chapters, as appropriate, and revise the definition of 'free-roaming dog' accordingly in the Glossary,
- d) Include new information specific to the control of rabies in free-roaming dog populations in Chapter 7.7. Enquire whether this content should be moved to Chapter 8.14 and provide guidance as to the level of detail required regarding rabies control strategies to be included in Chapter 7.7,
- e) Review, update and develop minimum standards for existing control measures (i.e. dog catching, housing, restraint) to be included in Chapter 7.7.

.../ Annexes

Annex I**MEETING OF THE OIE AD HOC GROUP FOR THE REVISION OF
CHAPTER 7.7, STRAY DOG POPULATION CONTROL****Paris, 5–7 November 2019**

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**MEETING OF THE OIE AD HOC GROUP FOR THE REVISION OF
CHAPTER 7.7, STRAY DOG POPULATION CONTROL**

Paris, 5–7 November 2019

Adopted agenda

1. Welcome and introduction
 2. Presentation of OIE standard-setting process
 3. *Modus operandi* of the *ad hoc* Group
 4. Presentation of the Global Strategic Plan to end human deaths from dog-mediated rabies by 2030
 5. Confirmation of the Agenda and the Terms of Reference of the Group
 6. Review of the discussion paper and other relevant documents
 7. Discussion on the revision of Chapter 7.7, Stray dog population control
 8. Any other business
 9. Next steps
 10. Draft a report of the *ad hoc* Group meeting
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OIE AD HOC GROUP FOR THE REVISION OF CHAPTER 7.7, STRAY DOG POPULATION CONTROL

Draft Terms of Reference

Taking into account:

- The background history of the OIE regarding animal welfare standards and the adoption in 2009 of Chapter 7.7, Stray Dog Population Control, as an important tool to fight against zoonotic diseases and other nuisances produce by this specific dog population,
- The recommendation of the Code Commission from its February 2018 and September 2018 meeting, to conduct a general revision on Chapter 7.7, Stray Dog Population Control,

“The OIE Headquarters noted that as part of the global rabies eradication strategy, there have been discussions within the OIE on the need to update Chapter 7.7 on Stray dog population control to improve responsible dog ownership, monitoring and evaluation of stray dog control schemes. The Code Commission considered the request and with the understanding that rabies control is a priority area of work for the OIE, it proposed to add the revision of the chapter to its work programme and requested the OIE Headquarters seek expert advice in order to progress with revision of the chapter. The Code Commission emphasised that the chapter is not only for animal welfare issue but also for the disease control purpose such as rabies and echinococcosis and requested the OIE Headquarters that these aspects be considered while selecting the experts for the revision of the chapter.”

- The inconsistencies and the new areas of research that are inadequately addressed in the current version of Chapter 7.7,
- The need for consistency with Chapter 8.14, Infection with rabies virus, and other dog-mediated zoonotic diseases, such as Chapter 8.5, Infection with *Echinococcus granulosus*,
- The importance of this standard in the Global Strategic Plan to end human deaths from dog-mediated rabies by 2030, ‘Zero by 30’, of United Against Rabies collaboration (WHO, FAO, OIE and GARC), and
- The need to have clear guidelines on how to manage dog population, in the context of disease control.

The *ad hoc* Group is requested to review and revise, as relevant, the current Chapter 7.7 and in doing so, address the following points:

1. To review the terminology used throughout Chapter 7.7 doing cross reference with other related chapters when applicable, and notably within the chapter regarding the use of the terms ‘Control’ versus ‘Management’.
2. To discuss the feasibility to relocate this chapter to the disease control section of the *Terrestrial Code* and reposition the part concerning the use of euthanasia in dogs in a separate animal welfare chapter or eventually merged with an existent one.
3. To review the dog population control programme objectives to align them to the strategic activities of the OIE, notably the Global Strategic Plan to end human deaths from dog-mediated rabies.
4. To clarify the responsibilities and competencies of the stakeholders involved in stray dog population activities.
5. Review and give more details on the aspects to be considered for the development of a dog population control programmes, such as:
 - Identifying the sources of stray dogs,
 - Estimating the existing number, distribution and ecology,
 - Regulatory framework, and
 - Resources available to authorities.

Annex III (contd)

6. To review, update and complete the existing control measures such as:
 - Education and legislation for responsible ownership,
 - Registration and identification of dogs (licensing),
 - Reproductive control,
 - Removal and handling,
 - Capture and return, rehoming or release:
 - Minimum standards for housing;
 - Management; and
 - Considerations on the method chosen;
 - Environmental controls,
 - Control of dog movement – international (export/import),
 - Identify the methods, procedures or practices unacceptable on animal welfare grounds,
 - Regulation of commercial dog dealers,
 - Reduction in dog bite incidence,
 - Euthanasia,
 - Restraint, and
 - Special equipment.
 7. To update the methodologies of monitoring and evaluation of dog population control programmes.
 8. To update the methods for estimating the size of dog population
Any amended text must be:
 - Based on scientific evidence (scientific references must be provided and included in the draft text);
 - Aligned and harmonised in structure with other *Terrestrial Code* animal welfare chapters and Chapter 8.14, Infection with rabies virus; and
 - Use criteria that address the outcomes at the animal level (animal-based).
 9. Outputs of the *ad hoc* Group:
 - A report of the *ad hoc* Group together with revised draft Chapter 7.7, Stray dog population control, to be provided to the Code Commission for their consideration at its February 2020 meeting.
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DISCUSSION PAPER ³

PROPOSAL FOR REVISION OF CHAPTER 7.7, STRAY DOG POPULATION CONTROL, OF THE *TERRESTRIAL ANIMAL HEALTH CODE*

Introduction

The purpose of this paper is to inform the Code Commission on findings regarding the Secretariat review of Chapter 7.7, Stray Dog Population Control, of the *Terrestrial Code* and to guide the work of the *ad hoc* Group that will be convened to perform this work.

The September 2018 report of the Code Commission indicated the following:

“The OIE Headquarters noted that as part of the global rabies eradication strategy, there have been discussions within the OIE on the need to update Chapter 7.7 on Stray dog population control to improve responsible dog ownership, monitoring and evaluation of stray dog control schemes. The Code Commission considered the request and with the understanding that rabies control is a priority area of work for the OIE, it proposed to add the revision of the chapter to its work programme and requested the OIE Headquarters seek expert advice in order to progress with revision of the chapter. The Code Commission emphasised that the chapter is not only for animal welfare issue but also for the disease control purpose such as rabies and echinococcosis and requested the OIE Headquarters that these aspects be considered while selecting the experts for the revision of the chapter.”

Summary

A review of Chapter 7.7, Stray Dog Population Control, and a comparison with other relevant *Terrestrial Code* chapters highlighted the need to clarify and harmonise the terminology used in the chapter, the need to be consistent with Chapter 8.4, Infection with rabies virus, the need to review the roles and the responsibilities of the different parties involved in the implementation of dog population control regarding zoonotic diseases, and finally the update of the tools to help the implementation of the chapter, such as the methods to estimate the size of dog populations.

Justification for revisions to Chapter 7.7, Stray Dog Control

Following a review of the chapter, the Secretariat recommends the below sections of the chapter be reviewed and incorporated into a draft Term of Reference for an *ad hoc* group to undertake this work. The draft ToR is presented as an annexe to this document.

1. Review of the terminology

Clarity of wording and consistency in the use of terminology are vital for Chapter 7.7 to be easily understood and correctly interpreted. The current title is on ‘stray dog population control’ and already in the preamble we find the terms ‘dog population management’ and then ‘dog population control’. They are used as synonyms, which is conceptually incorrect, and it adds confusion to the text. In Article 7.7.4 we also find ‘dog control schemes’, even more confusing. The control measures listed in Chapter 7.7 are comprehensive in nature, working with the wider dog population in order to limit the source of stray dogs rather than only tackling the symptom of the current stray dog population; this fit better with the concept of ‘dog population management’ than ‘stray dog population control’, which appears limited in scope.

³ Document prepared by the former Members of the OIE *ad hoc* Group on Stray Dog Population Control, Dr Elly Hiby, ICAM, Dr Paolo Dalla Villa (IZ&AM- Teramo) and Dr Leopoldo Stuardo, OIE Standards Department and with the collaboration of Dr Patrica Pozzetti, OIE Science Department

Annex IV (contd)2. Clarification of the roles and responsibilities in the implementation

The revision has the opportunity to clarify which body/entity should be responsible for managing these 'dog population control programmes' (Veterinary Authorities/Veterinary Services/Competent Authorities) or simply the 'authorities' mentioned in Article 7.7.5), mentioned in Article 7.7.4. There is a possibility to introduce the concept of establishing (A) 'National guidelines/plans' to be managed by Veterinary Authorities/Competent Authorities at Country level, providing support to different (B1, B2, B3, etc.) 'Dog population control programme(s)' developed and implemented at regional/local level by Veterinary Services/Municipalities/NGOs/stakeholders, and strictly related to the given socio/cultural/economic context.

3. Consistency with updated Chapter 8.14, Infection with rabies virus

The recently updated Chapter 8.14, Infection with rabies virus, notes the contribution of dog population control to rabies prevention and control; the implementation of a dog control programme is required for achieving the status of freedom from dog-mediated rabies and for endorsement of an official control programme for dog-mediated rabies. However, references from the stray dog population control chapter to rabies control are minimal. Therefore, the following articles are recommended to be reviewed:

- Article 7.7.3 Dog population control programme objectives
 - Objective 4, 5 and 6 are all related to public health including rabies; these could be combined, or if kept separate, objective 6 should note non-zoonotic disease risks such as dog bites and road traffic accidents rather than citing 'parasites' as an example.
 - Clarify the potential for dog population management to contribute to control of dog-mediated rabies by improving and maintaining vaccination coverage, however note that 1) this is not due to reducing dog population size or density which does not affect rabies control and 2) vaccination should remain the main priority of rabies control; maintaining consistency with the most recent WHO Expert Consultation on Rabies (TRS 1012), page 90.
- Article 7.7.6 Control measures
 - Could be improved to not overlap but complement Chapter 8.14, Infection with rabies, and Chapter 8.5, Infection with *Echinococcus granulosus*.
 - Dependent on changes to roles and responsibilities, there may be a need to clarify which control measures are more suited to national plans implemented by competent authorities (e.g. legislation, capacity building of professionals and public education) and which are more suited to control programmes implemented at regional/local level (e.g. reproduction control, removal and handling).
 - Changes to practices in dog breeding and sale in recent years (e.g. increasing use of internet sales, cross border and international sales) requires a review and update of paragraph 9 regarding regulation and control of breeding/sale.
 - Review the wording of this article to ensure clarity, as some of the measures (e.g. paragraph 10) appear as an outcome statements rather than control measures.

Annex IV (contd)4. Update to reflect new developments in Dog Population Management and animal welfare monitoring

In recent years, the use of animal-based measures for animal welfare monitoring has become common place for many species. Although the body of research for dogs has lagged behind some species, there have been developments that could be expressed more clearly in the text, in order to identify Animal based Measurable (ABMs) for stray, 'community' or sheltered dogs. In addition, there has also been publication of a guidance document for monitoring and evaluation of dog population management (ICAM 2015⁴) that has highlighted recommended indicators and methods of measuring these. Information Technologies can support such methods facilitating data collection and allowing for a more efficient data handling⁵. The following articles are recommended to be reviewed:

- Article 7.7.7 Monitoring and evaluation
 - This article would benefit from establishing where responsibility for M&E lies. The guidelines noted in the current Article 7.7.7 are concerned with monitoring and evaluation within Dog Population Control Programmes. Competent Authorities have the responsibility to ensure there is sufficient capacity and support for M&E at these regional/local implementation levels; they also have the opportunity to compare results of such M&E across different Dog Population Control Programmes within their country.
 - This chapter could benefit from being combined with the concept of initial assessment to design evidence-based dog control – either by including more details in this article or combining it with Article 7.7.5. The monitoring and evaluation text could encourage the use of simple and cost-effective indicators that can be repeated to show trends over time – in particular it should recommend tracking changes in dog population density rather than expecting Dog Population Control Programmes managers to invest in repeated robust estimates of population size which can be very resource heavy. Refine wording around animal based versus resource-based indicators of welfare.
- Article 7.7.8 Estimating population size
 - Could be combined with Article 7.7.7 as this is part of initial assessment and leads into monitoring and evaluation. Or if Article 7.7.7 is combined with Article 7.7.5, then this article should also be combined alongside.
 - Restructure and clarify wording to make recommendations clearer and note the option to rely on resource-efficient monitoring of dog density as a measure of dog control success instead of estimates or following baseline estimates where these are required for initial target setting/budgeting.

⁴ ICAM Coalition, 2019. Humane Dog Population Management 2019 Update. Accessible at: <https://www.icam-coalition.org/download/humane-dog-population-management-guidance/>

⁵ Shanis Barnard¹, Carla Ippoliti, Daniele Di Flaviano, Andrea De Ruvo, Stefano Messori, Armando Giovannini & Paolo Dalla Villa. Smartphone and GPS technology for free-roaming dog population surveillance - a methodological study. *Veterinaria Italiana* 2015, 51 (3), 165-172. doi: 10.12834/VetIt.233.2163.3

REVISE GLOSSARY DEFINITION

~~STRAY DOG~~ FREE-ROAMING DOG

means any dog not under direct control ~~by a person~~ or not prevented from roaming. Types of ~~stray dog~~ free-roaming dog includes:

- a) free-roaming owned dog not under direct control or restriction at a particular time,
 - b) free-roaming dog with no owner,
 - c) feral dog: domestic dog that has reverted to the wild state and is no longer directly dependent upon humans.
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