RAAD VOOR DIERENAANGELEGENHEDEN

# SHINING A LIGHT ON THE KILLING OF ANIMALS

*Shifting views, changing discussions*

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# Contents

# Summary

The killing of animals is an inseparable part of our dealings with animals. It is an uncomfortable topic that raises many questions. The fact that the killing of animals is handled differently in different situations makes it more complicated. Consider, for example, the killing of an animal that is causing a nuisance, compared to the euthanising of a beloved pet. Are these differences problematic, and should we make changes? Or are they justified, because the interests and values to be weighed up in each situation are different?

In 'The State of the Animal in the Netherlands' (2019), the Council on Animal Affairs (RDA) observed that people's attitudes towards animals have changed. Dutch people now have more respect for animals, and breaches of animal welfare are seen as less acceptable. Humans increasingly empathise with animals and believe that animals have rights, such as the right to live with dignity and the right to proper care. What does this changing human-animal relationship mean in terms of opinions about the killing of animals? That question is not easy to answer. This is a broad and wide-ranging topic, within which the differences between reasons to kill are not black and white. In this advisory report, the RDA describes the 'landscape' of the killing of animals based on five different reasons: preventing or controlling nuisance, ending suffering, not fulfilling the intended purpose, animal disease control and killing for human use. The report examines a range of situations and the specific questions, conflicts and dilemmas involved.

The aim of this advisory report is to illustrate the complexity and provide tools to make it easier to discuss the wide variety of views and actions relating to the killing of animals. The RDA hopes that the report will provide an impetus for a wide-ranging debate that does justice to individual situations and incidents. The RDA also wants to highlight ways that animal welfare could be improved in situations involving killing.

Every year, millions of animals are killed because they are causing a nuisance. This includes brown rats that can damage buildings and present a risk to public health, high-risk dogs that can cause biting incidents with serious consequences and geese that damage crops. In all cases of nuisance, factors that are considered include the extent of the nuisance or danger, possible non-lethal alternatives, how animal-friendly the method of killing is and any emotional connection. The consideration of these factors determines whether the animals will be killed and the extent to which the killing will be accepted. Weighing up these factors can be difficult; for example, it may not be known what the number of involved animals is, or the alternatives could produce unknown results and/or be more time-consuming. There may not be an unambiguous policy, and it is not always clear who is responsible. In addition, the cause of the problem is often not addressed, increasing the likelihood that the nuisance will continue. The RDA advocates careful consideration of all factors when controlling nuisance caused by animals and has developed a proposal for an assessment framework. This framework recognises the intrinsic value of animals and is based on the 'no, unless' principle: animals should not be killed unless there are serious obstacles to choosing non-lethal methods.

Ending unbearable suffering with no prospect of improvement is often seen as a legitimate reason to kill: euthanasia as an animal welfare measure. This is applied in a range of situations, such as pets experiencing unbearable suffering with no prospect of improvement, sick or injured production animals that can no longer be treated, high-risk dogs in a shelter that cannot be adopted and wild animals in need of help. At first glance, euthanasia appears to be well regulated. But thorny issues

arise with this topic too. For example, it is difficult to define the degree of suffering. When is an animal suffering so much that killing is the most animal-friendly solution? Another thorny issue concerns unequal treatment in comparable situations. In all cases, thinking about killing begins with the interests of the animal, but factors such as financial importance, emotional connection and a lack of knowledge mean that one animal may be put out of its misery sooner than another. To prevent such unequal treatment, the RDA recommends that more assessment frameworks be developed or existing assessment frameworks be updated.

Each year, millions of animals are killed because they are an unwanted by-product of animal husbandry systems or because they disrupt the natural balance. Examples include male chicks of laying hens, the surplus of animals bred for research and zoos, pedigree rabbits that do not have the desired breed characteristics and raccoons that live as exotic species in the Netherlands. Support for the killing of unwanted animals depends on the situation. Acceptance appears to be greater when the killing serves a useful secondary purpose, such as to provide food for other animals. Support also depends on how important the primary purpose is considered to be, the number of animals involved, the method of killing and possible alternatives. Alternatives to killing are available or conceivable in all cases, but they almost always raise new questions about practical feasibility, financial costs and animal welfare. Media attention contributes to the public debate. As a result, however, not all species of unwanted animals receive equal attention, for example because of lack of registration. In addition, public debates do not always allow space for the complexity of the subject. The reality is nuanced, and the killing of unwanted animals requires careful discussion and a proper weighing up of the various factors. The RDA believes that there is a need to look more at the individual animal and less at the animal's contribution to the system. Based on this, systems could potentially be adjusted to prevent the killing of unwanted animals wherever possible.

In the context of animal disease control, it sometimes happens that groups of production animals may be killed if they constitute a health risk to humans and/or other (production) animals. In practice, this is known as 'culling'. Although there are statutory and procedural rules in place, the killing of large numbers of healthy animals remains a sensitive issue. Public acceptance of the culling policy should also not be taken for granted as much, because animal welfare and the value of animal lives occupy an increasingly prominent place in public debate. Over the past 25 years, the Netherlands has faced a number of outbreaks, the most recent being bird flu in poultry and the coronavirus in minks. The culling of animals has both advantages and disadvantages. Quickly killing animals in infected populations avoids a number of animal welfare issues. But the process of culling can also involve animal welfare complications and risks, such as stress and anxiety. Support for culling partly depends on the magnitude of the threat to public health and the extent to which the killing method used is animal-friendly and effective. The RDA recommends ongoing investment in the prevention of the introduction and spread of infectious diseases. In this regard, it is important to also look at the possible infection pressure from non-captive animals and from humans to animals. In addition, the use of vaccinations in captive (and potentially also in wild) animal populations deserves attention, with a view to altering the infection dynamics in populations.

The largest category comprises animals killed for human use. This includes production animals in livestock farming, fish and game for consumption and laboratory animals for research. The difference between this and the other reasons for killing is that, in this category, it is decided in advance that the animals will be killed. The RDA considers this to be a social reality and does not reflect on the desirability of such killing in this advisory report. This report limits its discussions to the welfare of production animals on the final day of their lives. This covers collection from the farm, transport, and arrival and reception at the slaughterhouse, up until the moment of death.

This process is subject to all kinds of rules and laws concerning animal welfare, food safety and working conditions. For the largest groups of production animals (pigs and chickens), work is being done on additional protocols. However, there are many differences between establishments in terms of the development and application of these protocols. Throughout the sector, the RDA observes that improvements have been made and will continue to be made with regard to animal welfare, but there are also establishments where there is a lack of willingness to improve and where animal welfare is of secondary importance. The best approach in this regard consists of encouraging further changes while cracking down on animal welfare breaches. For qualitative improvements to be made in the slaughterhouse chain, the central focus must be on both human actions and the needs of the individual animal.

Based on the five investigated reasons for killing, the RDA has drawn four overarching conclusions:

1) The killing of animals is a wide-ranging and uncomfortable topic that raises many questions. The subject is in flux, and there is more to it than has emerged in the media and in public debate. For example, many methods have been developed to avoid the killing of animals, and animal welfare is increasingly being given prominence in new developments and legislation concerning killing.

2) Whether killing should be taken for granted is up for debate. Killing is seen as an action that requires more attention and discussion, with regard to both the execution of the action and the systems and practices that result in animals being killed.

3) Discomfort around killing can hamper conversations on the topic. Such discomfort must not stand in the way of developments in the areas of prevention, careful consideration and responsible implementation. Therefore, a broader debate on this topic is essential.

4) The statutory duty of care encompasses not only concern for the lives of animals, but also responsibility for limiting the killing of animals and carefully weighing all factors before making a decision to kill. This also means that the killing must be carried out by qualified persons at the right time.

In line with these conclusions, the RDA has come up with four recommendations that are relevant to each of the reasons for killing described above.

1) Aim for prevention: less killing
   The changing position of animals in society and the discomfort around the killing of animals require killing to be reduced or avoided through prevention. This can be achieved by removing the necessity of killing or by developing alternative solutions. This primarily applies to animals that are suffering, causing a nuisance, unwanted or being culled. With production animals and laboratory animals, killing is sometimes necessary to achieve the intended purpose.

2) Careful consideration should form the basis for all decisions
   Recognition of the intrinsic value of animals means that killing should never be taken for granted. Each situation requires careful consideration, explicitly stating which interests are being taken into account and how animal welfare factors into the decision. An assessment framework may provide clarity in this process.

3) Think in terms of animal welfare
   It is necessary and possible to think less in terms of the system and more from the perspective of the (individual) animal. The killing of animals often forms part of a specific system that sees animals as unwanted, threatening, less cuddly or less worthy of protection. That can hamper efforts to reduce killing and safeguard animal welfare.

4) Make sure killing is carried out responsibly
   In every situation, it is important that killing is carried out with the greatest possible care by competent people. When choosing a method of killing, the priority should be ensuring it has the smallest possible negative impact on the people and animals concerned. In this regard, regulations should be investigated to address conflicts that hinder animal welfare improvements.

These four recommendations concern everyone: all levels of government, sector parties, academia and citizens. Although the advisory report does not offer any simple solutions to the thorny issues, it may facilitate a broader debate about the killing of animals. The RDA looks forward to continuing the discussion with all interested parties.

# Definitions and acronyms

## Assessment framework

An assessment framework helps people make decisions by providing insight into the various factors to be considered, identifying alternatives and assigning specific weight to various elements. It aids preparation and contributes to the quality of decisions but does not necessarily lead to a decision.

## Animal-friendly

The term 'animal-friendly' sounds contradictory in the context of the killing of animals. What are 'animal-friendly killing methods'? In this advisory report, the Council on Animal Affairs takes 'animal-friendly' to mean that the killing is done in a careful way (with care and attention for the animal), so that the animal has as little awareness of the killing process as possible.

## Animal welfare

In 2018, the Council on Animal Affairs published a conceptual framework[1] to provide clarity around frequently used terms related to animals and the relationship between animals and people. The conceptual framework has the following to say about welfare: For the time being, the Council uses the following definition, which takes the animal's perspective: "Animal welfare is the quality of life as experienced by the animal itself." An animal is in a good state of welfare if it is free to engage in patterns of behaviour that are normal for its species and if it is able to respond appropriately to the challenges presented by the circumstances in which it finds itself.

## Euthanasia

Euthanasia is derived from the Greek words *eu* (meaning 'good') and *thanatos* (meaning 'death'). In this report, the term is used to describe the premature ending of the life of an individual animal in a way that minimises or eliminates pain and stress.[2] In contrast to the euthanasia of humans, in this case, the term does not refer to ending a life at the express request of the animal itself or to assisting an animal in ending its own life. In this advisory report, a good death equates to the humane, premature ending of the life of an animal.

## Acronyms

- AI: avian influenza;
- CAS: controlled atmosphere stunning;
- $CO_2$: carbon dioxide;
- Ctgb: Board for the Authorisation of Plant Protection Products and Biocides;
- EFSA: European Food Safety Authority;
- EU: European Union;
- HPAI: highly pathogenic avian influenza;
- HR dogs: high-risk dogs;
- ICT: information and communication technology;
- IPM: integrated pest management;
- KDS: Animal Sector Quality Inspection Foundation;
- KLN: Kleindier Liefhebbers Nederland, an association for people in the Netherlands who keep small animals;
- KNMvD: Royal Dutch Veterinary Association;
- CSF: classical swine fever;
- LNV: Ministry of Agriculture, Nature and Food Quality;
- LPAI: low pathogenic avian influenza;

- FMD: foot-and-mouth disease;
- NGO: non-governmental organisation;
- NVD: Dutch Zoo Federation
- NVWA: Netherlands Food and Consumer Product Safety Authority;
- PCR test: polymerase chain reaction test;
- RDA: Council on Animal Affairs;
- Royal GD: Royal GD, an animal health and animal production organisation;
- RIVM: National Institute for Public Health and the Environment;
- R number: reproduction number of a virus;
- SARS-CoV-2: severe acute respiratory syndrome coronavirus 2;
- SMART: Specific, Measurable, Achievable, Realistic and Time-related (for formulating the goal of a procedure);
- TNR: Trap-Neuter-Return;
- UU: Utrecht University;
- WBVR: Wageningen Bioveterinary Research;
- WUR: Wageningen University & Research.

## Sources


1. Council on Animal Affairs (RDA), 2018. *Denkkader Dierenwelzijn* [Conceptual Framework on Animal Welfare]. RDA, The Hague. 30 pages.
2. AVMA, 2020. *Guidelines for the Euthanasia of Animals: 2020 Edition*. 121 pages.

# 1. Introduction

***Killing is an inseparable side effect of our dealings with animals. As people, we often play an active role in this: for example, we kill animals to put an end to nuisance, to avoid further suffering by an animal or to produce food. Although killing is not necessarily accompanied by suffering, it is seldom without problems. It is surrounded by thorny issues and sensitive questions. Because the interests of animals in Dutch society are being taken into account increasingly often and are given greater weight, opinions on how, when, by whom and whether animals may be killed are changing. In this advisory report, the Council on Animal Affairs systematically explores all the issues around the killing of animals, where the areas of tension are and how we can safeguard animal welfare in relation to the killing of animals.***

## 1.1 Thorny issues

People kill animals every day. Nearly everyone in the Netherlands is involved or has an interest in this issue, whether as an animal owner, a veterinarian or a consumer of meat and fish. The killing of animals raises many questions and can be an uncomfortable subject to discuss. This is apparent from the various terms people use for killing, such as putting down, euthanasia, culling, extermination and slaughter. These terms help us differentiate between different practices and methods of killing, but we also use them to soften or disguise the confronting and irreversible nature of killing. The conscious decision to end the life of an animal obviously feels uncomfortable for many people.

The uncomfortable nature of the killing of animals also becomes clear in another way: we seldom communicate actively and transparently on this topic. For example, veterinarians and wildlife rehabilitation professionals seldom display their knowledge about and experience of the killing of animals. Conversations about the killing of animals usually take place in the privacy of the relationship between owner and veterinarian, or between professionals. When the killing of animals becomes part of the public debate, it is usually in relation to a specific situation: wild animals being shot in a nature preserve, abuses being uncovered in a slaughterhouse or neglected animals being put out of their misery.

There is also a complicating factor: people have different ways of dealing with the killing of animals. These differences exist between people: some undergo training to be able and allowed to kill animals, while others do not want any part of it. Even more striking are the differences between the situations animals find themselves in. For the killing of a rat that is being used for scientific research at a university, it is laid down in law who may kill the animal and when. If a rat is running around outside the university building and causing a nuisance, fewer regulations apply and the welfare of the animal during the killing is secondary. Finally, if a rat is being kept as a pet, in many cases, the owner will consider the welfare of the rat before deciding to have it euthanised. Accordingly, there is no single practice when it comes to killing animals, and that troubles people and raises questions. Are these differences problematic, and should we make changes? Or are they justified, because the interests and values to be weighed up in each situation are different?

Weighing up these interests and values is never simple. Sometimes, this is because factual information is missing, but usually, fundamental questions are involved. How bad is it for humans to kill an animal? Should we be killing animals? Under what conditions may we kill animals? A variety of answers could be given to these questions, as reflected in the public debate on the killing of animals. This illustrates the fact that the killing of animals is a complex subject. Discussions on this subject seem to produce more questions than answers, particularly when we look at animal welfare.

## 1.2 Shifting views

As the starting point for our advisory report on the killing of animals, it is useful to start with current legislation. The provisions of Dutch legislation focus on the killing being performed swiftly and painlessly, so as not to compromise the animal's welfare. This translates into requirements relating to the act of killing and related responsibilities, such as the prohibition on the killing of dogs, cats and geese by private individuals (Section 2.10(1) of the Animals Act[1] and Article 1.9 of the Animal Keepers Decree[2]). The legislation does not assess the act of killing itself as either positive or negative. Killing can thus be welfare neutral, provided it is performed with care. However, the killing of animals is not entirely without problems, nor is it merely a question of proper execution. In Annex 1, RDA member Bas Haring considers this issue in greater detail.

Society's current views on the killing of animals are not limited to animal welfare issues. This is apparent from the public survey conducted on behalf of the RDA by the research agency Kantar Public in 2018.[3] The survey addressed the way people in the Netherlands deal with and think about animals. A number of the survey questions were about the killing of animals. The survey results illustrated the fact that, these days, the killing of animals is not accepted as a matter of course. For example, only 20 percent of respondents agreed with the statement "Humans have a right to kill animals of any species, provided the death is quick and painless for the animal concerned", while 50 percent disagreed or completely disagreed.

In its 2019 advisory report 'The State of the Animal in the Netherlands', the RDA observed that, over the past few decades, Dutch people have changed their attitudes to animals.[4] Dutch people now have more respect for animals, and breaches of animal welfare are seen as less acceptable. Increasing numbers of people consider animals to be partners in the sense of companions in our lives, fellow inhabitants of our planet and part of a shared ecosystem. Humans increasingly empathise with animals and believe that animals have rights, such as the right to live with dignity and the right to proper care. What does this changing human-animal relationship mean in terms of opinions about the killing of animals?

## 1.3 Various reasons for killing

The topic of 'the killing of animals' is broad and wide ranging. In this advisory report, the RDA discusses the topic based on five different reasons why people kill animals. These five reasons are on a continuum from killing for the sake of human interests to killing for the sake of the interests of the animal itself. This classification also clarifies whether the killing is considered necessary to achieve a goal or whether it is of secondary importance to achieving a goal (collateral damage). For instance, killing for food production primarily serves human interests and is necessary for the production of meat. When killing animals to prevent serious suffering, people choose euthanasia for the sake of the animal. In practice, these differences between the reasons to kill are not black and white. However, the classification based on the five reasons provides a structure for tackling the subject. In each situation, killing has a particular function and practice and is associated with

specific questions, conflicts and dilemmas. In Chapter 2, we discuss killing to **prevent or control nuisance**. This relates to the killing of individual animals or groups of animals that are causing such a nuisance to people or that scare people so much that material damage or physical or mental harm arises. Examples include brown rats and aggressive dogs. Chapter 3 looks at killing to **end unbearable suffering with no prospect of improvement**. Examples include pets with a painful and incurable tumour and young production animals that are not viable. In Chapter 4, we deal with the killing of **animals that do not, or cannot, fulfil their intended purpose**. These are animals that, according to humans, do not fit into a particular system, or animals that disrupt the balance of an ecosystem at a systematic or individual level. Examples include day-old male chicks and wild raccoons. Chapter 5 is about killing **as part of animal disease control**. This relates to production animals that constitute a health or economic risk to humans or other animals. Examples include animals killed during an outbreak of bird flu in the establishment and the killing of minks at infected establishments during the coronavirus outbreak. Chapter 6 deals with killing **for human use**. In this chapter, we mainly look at situations where killing is necessary to achieve a human goal. Examples include killing pigs for meat and killing mice to test a drug.

Certain issues come up in each chapter, but how much weight they are given and the extent to which they are discussed in detail depend on the situation:

- Was the killing foreseen: was it decided beforehand that these animals would be killed by people?
- What number of animals is involved in each case: are large numbers involved or only a single animal?
- What killing methods will be used, and what will be the effects on the animal and the dangers for other animals and for humans?
- What realistic alternatives are available: alternatives that avoid killing, are good for the animal and are feasible and effective?
- What interests would be harmed if the animal was not killed, such as economic interests, public health or the interests of an animal that is suffering?
- Who decides when to kill, and who is responsible for taking care with regard to animal welfare during the act of killing?
- Is there equal treatment of different animal species or in different situations?
- What (other) factors influence public opinion, such as cuddliness or media attention?

These questions form a common thread running through this advisory report, since they play a role in exploring the various reasons why and situations in which animals are killed. They also play a role in the public debate about the killing of animals and support for the practices of killing. This structure, based on the five reasons and the questions listed above, will not result in an exhaustive discussion of all aspects of the killing of animals or all of the purposes for which humans kill animals. For example, the category of animals that are bred and killed to provide food for other animals is not covered. With this advisory report, it is *not* the ambition of the RDA to present an exhaustive consideration of all aspects of the killing of animals. Our aim is to illustrate the complexity and provide tools to make it easier to discuss the wide variety of views and actions relating to the killing of animals. We show what happens in various situations in the Netherlands, where the areas of tension are and how animal welfare in relation to killing can be improved. Because the nature of the reasons for killing differs significantly, we have taken a different approach to each chapter, ranging from an overall exploration of the role the topic plays in society, to a highly detailed description of cases, to a more concrete elaboration of the theme with suggestions for alternatives to killing and ways to make animal welfare more of a central concern.

The RDA hopes that the report will provide an impetus for a wide-ranging debate about the killing of animals that does justice to individual situations and incidents. We also want to highlight ways that animal welfare could be improved in situations involving killing.

## Sources


3. Animals Act (*Dierenwet*): *https://wetten.overheid.nl/BWBR0030250/2021-07-01*.
4. Animal Keepers Decree *(Besluit houders van dieren): https://wetten.overheid.nl/BWBR0035217/2022-01-01*.
5. Kantar Public, 2018. *The State of the Animal in the Netherlands. Report issued in December 2018, commissioned by the Council on Animal Affairs*. Kantar Public, Amsterdam. 38 pages.
6. RDA, 2019. *The State of the Animal in the Netherlands*. RDA, The Hague. 205 pages.

# 2. Killing to prevent or control nuisance

***Every year, millions of animals are killed because they are causing a nuisance for humans or because humans are afraid of them. This includes rats that present a threat to public health and geese that damage crops. There are around 3.4 million killings per year of mice and rats alone. Given the shifting relationship between humans and animals in Dutch society, people increasingly feel uncomfortable about the killing of animals to limit nuisance – particularly if non-lethal alternatives for limiting nuisance exist. In addition, policies around animal nuisance are often unclear, and approaches vary by municipality or province. In this chapter, the RDA illustrates the diversity of approaches to animal nuisance for four animal species. We note that nuisance prevention is a growing trend. We also present a proposal for an assessment framework that may help ensure careful and transparent decision-making around dealing with animal nuisance. The assessment framework should encourage the parties involved to consider non-lethal alternatives first and to take animal welfare into account when selecting a method of killing.***

*In this chapter, we define animals that are causing a nuisance as 'individual animals or groups of animals that cause such a nuisance to people or scare people so much over a period of time that material damage or physical or mental harm arises'.*

## 2.1 Urban pigeons

According to estimates by Sovon, the Dutch Centre for Field Ornithology, the breeding population of urban pigeons in the Netherlands in the period 2013–2015 consisted of 10,000–20,000 animals, with the winter maximum being 25,000–75,000 animals.[1,2] Urban pigeons can cause a significant nuisance. The nuisance is mainly due to their droppings, both from the smell and from the damage they can cause to buildings and vehicles, as well as the risk of disease. In addition, their nests can block gutters and cause insect nuisance, their cooing can result in noise nuisance and they can cause damage to crops and buildings.[3,4] Moreover, pigeons can carry pathogens such as psittacosis or *Salmonella*, which present a risk to public health.[5,6]

Municipal councils are responsible for dealing with pigeons that cause a nuisance in public areas.[7] Citizens or organisations can report a nuisance to their local council. At present, councils mainly deal with the pigeon problem by removing nests or discouraging nest-building with nets, spikes or tension wire on balconies and façades. They can also ban the feeding of pigeons and inform people that they can prevent pigeons from becoming a nuisance by removing their rubbish. The Assen City Council, for example, has plans to combine a feeding ban with the relocation of breeding sites, so that the population can be kept under control through the manipulation of eggs.[8] To that end, they want to install a pigeon house with nesting boxes on the roof of the town hall. Kites shaped like falcons or reflective pyramids or cards can also have a preventative effect. These non-lethal methods are proven to be effective.[9,10] When the results of non-lethal methods are inadequate, councils may ultimately decide to kill the pigeons. The most common method is to catch and gas the pigeons.

The Nature Conservation Act[11] and the Birds Directive[12] state that it is prohibited to kill bird species that occur naturally in the wild in the Netherlands. Municipal councils can obtain an exemption from this prohibition if there is no other satisfactory solution and killing is necessary to protect other interests, such as public health, air traffic safety or the protection of flora and fauna (Section 3.3 of the Nature Conservation Act and Article 9 of the Birds Directive). Urban pigeons are covered

by this exception, so councils have permission to kill pigeons if non-lethal methods are producing inadequate results.[13] The point at which the decision to kill is made differs by municipality. Given the same level of nuisance, one council may weigh up the various factors differently to another council. In addition, municipal councils do not always state a measurable goal before they tackle the problem of nuisance pigeons. Ideally, the goal of the intervention would be a measurable reduction in the number of pigeons: for example, a 75 percent decrease. In practice, this is difficult because it is not known how many pigeons there are. The goal can also be quantified as a reduction in the number of reports of nuisance, for example from 10 to 3 reports per month.

## 2.2 Brown rats

People have been sharing their living environment with brown rats since time immemorial. These rodents eagerly take advantage of the food that people carelessly leave lying around or deliberately leave out for other animals. Brown rats pose a potential risk to public health due to the diseases they can spread, such as Weil's disease (leptospirosis).[14] They can also cause damage to buildings and property through gnawing or soiling.[15] There are no central records of reports of rats causing nuisance in the Netherlands. Pest control companies and municipal councils can submit reports at *www.rattenmonitor.nl*, but this is not done well (yet). We therefore lack sufficient information about the number of animals concerned. According to a rough estimate based on calculations from the United Kingdom, around 3.4 million rats and mice are killed in the Netherlands each year because they are causing a nuisance (or appear likely to cause a nuisance).[16]

When rats cause a nuisance in public areas, the municipal council is responsible for dealing with the problem. On private property, it is up to the owners to take action. In the first instance, people may choose to take a preventative approach in the form of removing food and places where rats might nest. In city parks, for example, councils can ban the feeding of ducks or install rat-proof rubbish bins. Visitors to a park or city square can be informed, with flyers, for example, that rats will become a nuisance if they leave food waste lying around. Practical experience suggests that these preventative methods are effective.

In practice, out of fear of a rise in rat numbers, councils and individuals generally do not dare to take an exclusively preventative approach. Many individuals buy snap traps or pesticides but do not address the cause of the nuisance. An environment with sufficient food and shelter will remain attractive for rats. Many councils engage professional pest control companies, which start by looking for the source of the nuisance, such as places where houses connect to the sewerage system or where storm drains empty into the sewers. Professional pest control companies may use a wide range of control methods, such as drowning, baited snap traps, tunnel traps or cage traps with a pressure plate. However, these methods are labour intensive, and there is a risk of bycatch. Pesticides containing anticoagulants disrupt blood clotting so that the rats die from internal bleeding. These products are more effective because they take four to six days to work. The animals do not associate the product with illness and death, which means there is a high uptake within the population. However, some rats may be resistant to such products, reducing their effectiveness.[17] Moreover, anticoagulants are harmful for non-target animals and the environment. There is a new pesticide on the market with cholecalciferol as its active ingredient. This substance causes internal problems such as kidney failure. It has less of an effect on non-target animals than existing anticoagulants, and there is no resistance to it.[18]

A 2018 report by the Centre for Sustainable Animal Stewardship discussed the impact of rat eradication methods on animal welfare.[19] Rodenticides are not animal-friendly, either for rats or for other animals. With pesticides containing anticoagulants, for example, the rats die from a stomach or brain haemorrhage, and any suckling young are also killed. Some snap traps can kill rats quickly, but others lack sufficient impact force to kill the animal immediately. Moreover, limbs can become trapped in the clamp, and non-target species can also be caught. Glue traps are extremely inhumane and officially banned in the Netherlands but are still sold and used. Leaving animals to die in cage traps from deprivation (hunger, thirst, stress) is animal abuse and is a criminal offence in the Netherlands, but it is difficult to monitor.

Because of the negative effects on the environment, since 1 January 2017, rodenticides based on anticoagulants and cholecalciferol may only be used outdoors by certified professionals.[20] These professionals must be well versed in integrated pest management (IPM).[21] According to the principles of IPM, the initial focus must be on preventing the nuisance, for example by making the environment unattractive and repelling the animals. Next, non-chemical products may be used. Only if the effect of these products is inadequate may chemical products such as rodenticides be used. These professionals must also work in accordance with an IPM protocol that meets the requirements of the Board for the Authorisation of Plant Protection Products and Biocides (Ctgb).[19]

According to the Ctgb guidelines, private individuals may not use chemical products to control rats in outdoor spaces. From 2023, they will not be able to do so in indoor spaces either.[22] To make it possible for agricultural establishments to stop using chemical products, more work must be done on prevention and natural methods of control, such as biological barriers and natural predators of pests such as owls, bats and swallows.[23]

Rat policies differ from one municipality to the next: some take action the moment a rat is spotted, while others only act once there is a serious nuisance because they believe rats are part of the city.[24] Various people may be involved in deciding whether or not to take action: private individuals, business owners, pest control specialists, farmers, officials and so on. Accordingly, there is a broad range of opinions on the problem and the possible solutions. It is important for there to be support among residents and within the municipal council for the selected approach. Some citizens expect their municipal council to take certain actions that are not actually possible or would have no effect, such as using chemical products without addressing the primary causes (food and living environment). Communication with all parties concerned, in multiple languages if necessary, is therefore extremely important in this situation.

## 2.3 High-risk dogs

Even pets can become a nuisance. In some cases, such as high-risk dogs, that is a reason to kill an animal. A high-risk dog can be defined as a dog that is at high risk of causing a biting incident in everyday situations in which people would not normally expect it to be a problem.[25] No up-to-date figures are available, since biting incidents are not uniformly recorded. In 2008, Cornelissen and Hopster estimated that approximately 150,000 people are bitten by a dog in the Netherlands each year.[26] Of that number, approximately 5,000 people receive medical care, 230 people are admitted to hospital and, on average, one person dies. No nationwide figures are available on biting incidents in which an animal was the victim, but 158 biting incidents are reported to the Amsterdam police each year, and in more than half of these cases, the victim was an animal (usually another dog).[27]

In theory, any dog can bite a human or another animal. Whether that actually happens depends on factors such as breed or type, upbringing and circumstances. With high-risk dogs, the likelihood of biting incidents is higher and the impact of a bite greater because these dogs were originally bred to fight with bulls, boars or other dogs.[28] They are selected for their strength and fighting spirit, and they attack quickly, even seemingly without warning. The risk of serious injuries from a bite is also higher because these are heavy, powerful dogs, and in an attack, their powerful jaws often do not let go. For this reason, injuries inflicted by high-risk dogs are usually more serious than those inflicted by other dogs.

In 2017, the RDA released an advisory report entitled 'Dog bites exposed'.[29]In this report, the RDA recommended a number of preventative measures to reduce the risk of serious biting incidents, such as:

- Keep high-risk dogs on a short leash in public areas and muzzle them when letting them off the leash. Municipal councils could consider banning high-risk dogs from certain areas or instituting muzzle orders for certain areas.
- Provide easily accessible information to people with children who are considering buying a dog (whether it is high risk or not). This could include information about breeds, breeders and safe ways for children to interact with a dog, through channels such as midwifery practices, primary schools and pet shops.
- High-risk dogs that have bitten people or other dogs, causing serious injuries or death, should be euthanised. This recommendation led to heated debate in the media at the time.

Some of the above recommendations have since been acted upon by the relevant parties. For example, the Dutch Society for the Protection of Animals and HAS University of Applied Sciences have been researching a test that breeders can use to assess the risk of problem behaviour. On the instructions of the Minister of Agriculture, Nature and Food Quality, a system for recording biting incidents has been developed, and a pilot has been carried out by the police and a number of municipal councils. In addition, dog-rearing learning objectives have been drafted for dog owners, based on scientific research. These should be included in the Animal Keepers Decree policy rules.

To prevent biting incidents, prospective owners of high-risk dogs could also, in theory, go through a selection process. This could be linked to training owners in how to rear and handle these dogs. However, this would be difficult to regulate and monitor, since anyone is free to buy a dog. On this point, in 2017, the RDA wrote: "High-risk dogs require extremely responsible and disciplined owners and supervisors. In the opinion of the RDA, municipal councils have a range of options for imposing requirements on both owners and dogs. The purpose of such requirements would be to prevent a high-risk dog posing a threat to people, dogs and other animals." The RDA also expressly called on breed associations for high-risk dogs to organise training and education for dogs and their owners.

In theory, a ban on the breeding of high-risk dogs could be a long-term solution. However, such a ban would be sensitive and provoke protests from people or agencies that breed or work with these animals. In the past, we have seen evidence that a ban would not work, because breeds or types can be crossed with each other.[28] A strict policy and strong enforcement would therefore be necessary to make a ban effective. The question is how feasible that would be.

If a dog has caused a serious biting incident, the victim may make an official statement. The municipal council can then take immediate safety measures, such as ordering the dog to be muzzled and/or kept on a leash, having the dog tested for aggression, recommending or requiring

the owner to take a course with the dog or having the dog seized.[30] in consultation with a dog behaviour therapist and/or veterinarian, the owner may make the decision to have the dog put down to protect the safety of people and other animals.[29] In general, the dog would then be killed by a veterinarian using a euthanasia drug. Each owner has to come to this decision for themselves, weighing up their own interests and financial resources. Some people may decide to have their dog killed because they have a young child, for example, and are afraid that the child is in danger. Other people are so attached to their pet that they would do anything to keep it alive. In some cases, a court may order the dog to be killed without the owner's agreement.

However, it may be possible to come up with alternatives to killing a dog that has caused a serious biting incident. For some dogs, their prospects might be better with a different owner and in a different living environment. However, owners do not always want to let their dog go to a new owner for fear of new incidents. They would rather the dog be killed. Moreover, the disadvantage of this approach is that the biting incident has already taken place. It is therefore only effective in preventing the dog in question from biting new victims. Another alternative is to re-educate or retrain the dog and the owner (or new owner), but here, too, there is the downside that a biting incident has already occurred. Furthermore, retraining offers no guarantees that the dog will not bite again. Financial factors can also play a role, because training costs money, and not every owner will want to pay or be able to pay.

Public opinion on dog bites is partly influenced by media attention. Dogs such as pit bulls and bulldogs, for example, have often been in the news for biting incidents. They are under scrutiny, and there is tension between opponents and enthusiasts of the breeds and types concerned. We will return to high-risk dogs in Chapter 3, in the context of suffering, and look at high-risk dogs that spend a long time in animal shelters.

## 2.4 Greylag geese

In the 1970s, the greylag goose was a rare breeding bird in our country and was on the Red List. The growth of the greylag geese population is largely thanks to the creation of the Oostvaarders-plassen nature reserve, an area that contains sufficient water, food and resting places for these birds.[31] Since the reserve was created, the population of greylag geese has grown rapidly, by more than five percent per year.[32] After a count in 2013–2015, the greylag geese population was estimated at 510,000–580,000.[32] In the 1980s, most greylag geese still spent the winter in Spain; today, the majority of them remain in the Netherlands.

An abundance of food makes the Dutch farming landscape (particularly meadows) extremely attractive to greylag geese. This causes a nuisance for farmers. The most frequent complaints are that the geese's grazing reduces the harvest and that their droppings make the grass unattractive to cattle.[33] In the period 2009–2018, on average, geese were responsible for 78 percent of crop damage. Greylag geese accounted for the largest percentage of this damage (40 percent).[34] In 2019, too, the majority of damage was caused by greylag geese (10.8 million euros).[35] Moreover, large numbers of geese can pollute water; they also contribute to the growth of blue-green algae, damage nature reserves and cause hazardous situations for both ground and air traffic. Geese also present a potential risk to human and animal health (bird flu, botulism).

Greylag geese used to be protected by the Flora and Fauna Act[36] and currently enjoy national protection under the Nature Conservation Act[11] and European protection via the Birds Directive.[12] They are also listed in the Bern Convention,[37] the Bonn Convention[39] and the African-Eurasian

Migratory Waterbird Agreement.[39] Provincial authorities and wildlife management units are responsible for dealing with the geese nuisance. Their policies do not permit intervention unless specific interests are harmed, no other satisfactory solution is available and the conservation status has not worsened. There are various non-lethal measures to prevent or resolve nuisance caused by geese, such as chasing them away with dogs, setting up shelter areas, teaching geese that certain areas are unsafe or unattractive (using lasers, ribbons or scarecrows), shaking, piercing or collecting eggs or designating breeding grounds.[35] However, non-lethal alternatives not sufficiently effective, and populations are therefore also controlled through shooting or through capture and killing with carbon dioxide ($CO_2$).

In each province, wildlife management units have drawn up a plan to limit the geese nuisance. Gelderland, for example, has drafted a wildlife management plan for 2020–2026, which states a preference for shooting to limit damage.[34] Other provinces also use this method. In a 2012 advisory report on the killing of geese,[40] the RDA expressed a preference for capturing geese and gassing them with $CO_2$, because this compromises the animals' welfare less than shooting. However, the RDA expected that shooting would be considered acceptable by the public if it were only a short-term measure. Ten years have now passed, and shooting is still being carried out. The goal of the provinces is to return the damage caused by greylag geese to 2005 levels.[34] With the exception of Zeeland, so far, not a single province has achieved this goal.[35]

Under the initiative of the European Goose Management Platform (under the umbrella of the African-Eurasian Migratory Waterbird Agreement), in 2021, an Adaptive Flyway Management Program was established for the greylag goose.[41] The ultimate goal is adaptive management, tailored to each country and based on modelling and monitoring, with the state of the population being evaluated in a cyclical way. Work is underway to develop the population models. The evaluation may lead to management practices being adjusted for the next cycle.

## 2.5 Reflection and recommendations

In this chapter, we have given a number of examples of animals that are killed because they are causing a nuisance. These animals are killed because they harm or risk harming the interests of humans, other animals or the ecosystem. Those interests may be economic, but they may also relate to public health, animal health, biodiversity, safety or food security. As the relationship between people and animals changes, we can see that the way in which Dutch people weigh up the various competing interests is also changing. It is clear that the killing of animals that are causing a nuisance is no longer uncontroversial, and support very much depends on the circumstances: how significant is the nuisance, are there realistic non-lethal alternatives and is the method of killing animal-friendly?

### *Thorny issues*

- The level or the risk of nuisance or danger weighs heavily in the decision of whether or not to kill an animal and determines the degree to which citizens will accept the killing. But how do we define 'nuisance', and can we determine varying degrees of nuisance? With pigeons, for example, a little bit of cooing can be nice, and a small amount of poo is not serious, so when does it become a nuisance? To determine the seriousness of the problem, a nuisance risk analysis should be performed. We will return to this in Annex 2.
- It can be a challenge to articulate a clear and measurable goal for an intervention. With urban pigeons, for example, the ideal goal of a systematic intervention would be a measurable reduction in the number of pigeons, but this is difficult in practice because it is not known how many

pigeons there are. The goal could then be quantified as a reduction in the number of nuisance reports, for example from 10 to 3 reports per month;

- In many cases, non-lethal alternatives are available and prevention can provide a solution. Prevention is becoming a trend in dealing with animal nuisance. Examples include the removal of food and nesting sites for urban pigeons and brown rats in public spaces. However, the 'easy' option of killing is still often chosen, particularly in the case of rats and mice, but also in the case of greylag geese. This may be because it is unclear or uncertain whether the alternatives will be effective, because they are sometimes more expensive or time-consuming, because people are not even aware that alternatives exist or because the objective is not being achieved with the selected non-lethal alternatives. In addition, the alternatives to killing are not without challenges, and killing can sometimes be more animal-friendly than the non-lethal alternatives;
- The use of fast and painless killing methods is by no means universal, for example in dealing with the nuisance caused by brown rats.
- There is confusion around how the rules should be applied, and council officials lack basic knowledge about how to tackle animal nuisance. Partly for these reasons, parties such as municipal and provincial authorities take different approaches to dealing with animal nuisance. This unequal treatment creates tension.
- It is not always clear who has the right to decide that the nuisance is bad enough to justify killing and who is responsible for preventing and addressing animal nuisance. In this regard, the distinction between the private and public domains is important. On their own property, people can decide for themselves, unless the animals concerned are protected or private individuals are not authorised to use the pesticides involved. People may also experience a nuisance that is not on their own property, where the municipal or provincial authorities are responsible for dealing with it. Some citizens expect their municipal or provincial council to take actions that are impossible or would have no effect.
- We have noticed unequal treatment between animal species: ducks in a city pond are desirable, while brown rats are undesirable. People feed both species, without seeming to realise it.
- With high-risk dogs, lack of knowledge, experience and suitability is a contributing factor, as is the emotional connection with the animal and the fear of new incidents occurring. As a result, a nuisance may be caused unnecessarily, and irresponsible or hasty decisions may be made about the killing of a dog.
- In many cases, action is taken only once the nuisance has already developed, and the cause of the problem is not addressed. The greylag goose is a good example. The vast Dutch meadows are extremely attractive to geese. The landscape might attract fewer geese if multiple crops were grown on a piece of land. Wageningen University & Research (WUR) is currently conducting experiments to test this theory.[42]
- The various parties involved, such as municipal and provincial authorities, wildlife management units and game management units, do not always work together, which means everyone develops their own policies. This is not necessarily a bad thing, but in some cases, such as with the greylag goose, collaboration could contribute to solving the problem.[33] Interviews conducted for the advisory report 'Animals in the House of Thorbecke' (2022) revealed that municipalities have a desire for collaboration.[43] We also observed from those interviews that some municipal authorities take a more active approach to animal nuisance than others. The same applies to provincial authorities.[43]

### *Assessment framework*

To address the thorny issues outlined above, we have developed a proposal for an assessment framework (see Annex 2). It is based on the work of Yeates[44] and Van Gerwen[19] and on the flow chart in the RDA advisory report 'Weighing Wildlife Welfare'.[45] The assessment framework may help

decision-makers to carefully weigh up the various factors involved in tackling animal nuisance, levelling the playing field for decisions throughout the country and ensuring greater consistency. We would like to make it clear that this is only an initial proposal, which should be developed in greater detail by experts and tailored to each sector or animal group.

In the assessment framework, we recognise the intrinsic value of animals. It is based on a 'no, unless' principle: animals should not be killed unless there are serious obstacles to choosing non-lethal methods. The assessment framework was developed with mammals and birds in mind, but it could also be used for other types of animals. In Annex 2, we apply the assessment framework to a number of cases. Authorities that apply the framework should always draw on both theoretical and practical expertise to select a suitable approach, ideally in collaboration with all of the parties that have a role to play. It is important for stakeholders to support the approach. Accordingly, there should be communication with all parties at every stage, using a communication plan for guidance. In the example of pigeons causing a nuisance, municipal councils could initiate a discussion between experts, housing corporations, residents and other affected parties (such as business owners). Together, they can select a method of control that is accepted by all parties concerned.

## Summary of the RDA's key recommendations:

### *For the central government and provincial and municipal authorities:*

1) Focus on the *prevention* of animal nuisance wherever possible, for example by taking measures when new buildings are built or existing buildings are renovated and by providing information to citizens. This is consistent with the current trend of integrated pest management.
2) Professionalise national record-keeping on all animals that cause nuisance and keep records organised to enable the extent of the nuisance to be determined. The RDA considers this to be the collective responsibility of the central government and provincial and municipal authorities.
3) Ensure better alignment of the policies of various municipal and provincial authorities, to prevent unequal treatment of animals causing nuisance and confusion about the approach.
4) Expand the assessment framework for professionals. In doing so, draw on both theoretical and practical expertise and coordinate with stakeholders, so that the assessment framework can be used in practice to arrive at transparent decisions that take account of animal welfare.

### *For all stakeholders:*

5) Start by looking for the cause of the nuisance, before looking for solutions. Formulate measurable goals before starting an intervention.
6) Ensure collaboration between relevant parties.

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# 3. Killing to end suffering

***Many people consider the ending of unbearable suffering with no prospect of improvement to be a legitimate reason to kill: euthanasia as an animal welfare measure. At first glance, the killing of animals experiencing unbearable suffering with no prospect of improvement appears to be well regulated, but thorny issues arise with this topic too. For example, one animal may be put out of its misery sooner than another. In this chapter, the RDA looks at four sub-topics and illustrates the thorny issues and possible pathways to improve animal welfare. The sub-topics shed light on the euthanasia of animals in different situations: companion animals at veterinary clinics, production animals on farms, high-risk dogs in animal shelters and animals in the wild. The RDA has identified a need for assessment frameworks that are in line with current trends in practice and society.***

*In this chapter, we define suffering as 'physical pain or mental stress that has such an impact on welfare that the animal experiences unbearable suffering with no prospect of improvement'.*

## 3.1 Euthanasia of companion animals

### *The owner's perspective*

In its advisory report 'The State of the Animal in the Netherlands', the RDA observed that Dutch people increasingly consider their pets as part of the family. They have a higher social status than they did around 25 years ago.[1] What happens when something is wrong with a beloved pet and it is suffering? Most owners will start by seeking veterinary care for their pet. Because of the close bond between owner and pet, the demand for high-quality veterinary care has increased in recent years, and modern veterinarians need a lot of equipment. This has resulted in an increase not only in the costs of advanced veterinary care, but also in basic costs. Over time, many people seem willing to make relatively large financial sacrifices to extend the life of their pet.[2] However, sooner or later, factors such as quality of life, expected remaining lifespan, the treatment burden for the pet and the costs of the veterinary care will need to be considered. When the owner eventually makes a decision about euthanasia, as well as the perspective of the animal, various other factors must be considered, such as the emotions of the owner, their financial and social situation, pressure from family and friends or an approaching holiday or pregnancy.

For some owners, large financial sacrifices are not feasible. Accordingly, a situation can arise in which an animal can be treated, but the owner cannot pay. In that situation, the owner may decide, in consultation with the veterinarian, to euthanise the animal even though it is not yet experiencing unbearable suffering with no prospect of improvement. Looking at the trends over the past few years, the RDA expects that the cost of veterinary care will continue to rise in the future. It is therefore important to make future owners aware of these costs and encourage them to prepare, for example by taking out insurance (see the recommendations in Section 3.5). Another thing owners need to be aware of is that, due to their duty of care to the animal, the additional veterinary care will also lead to an increase in care activities to be performed by the owner, such as giving medicine, changing dressings and providing an intensive level of care through a prolonged illness.

On the other hand, because of the increase in treatment options, a situation could also arise in which an owner pushes for treatment even though it is not in the interests of the pet. For example, it may be that the pet would have a low quality of life following the treatment. Some owners find it too difficult to say goodbye to their pet, while others do not sufficiently grasp the fact that their pet is suffering. For example, many people appear to misunderstand their cats' facial

expressions.[3] Owners can learn to recognise their pet's pain signals using photos, videos and other communication tools.[4] Another trend is the increasing number of people who want to have their beloved pet euthanised at home, in a familiar environment. This creates new challenges for veterinarians; in a home environment, there are fewer opportunities to get assistance from or speak with a colleague than in the clinic.

### *The veterinarian's perspective*

In practice, it is ultimately the owner who decides whether a pet will be euthanised. When making that decision, most owners follow the advice of their veterinarian. Conversations about euthanasia require veterinarians to have good communication skills, particularly if their opinion differs from that of the owner. These skills are covered during training, but of course they also depend on the personal qualities of the veterinarian. No figures are available, but every veterinarian who treats pets probably has disagreements with owners about euthanasia several times a year.

In 2010, the Royal Dutch Veterinary Association (KNMvD) developed an assessment framework that veterinarians can use to systematically consider all the options (in addition to euthanasia).[5] The tool focuses on preventing animals from being euthanised prematurely, but it also allows scope for recommending euthanasia if the owner cannot afford the costs and there is no alternative. The KNMvD has the impression that many veterinarians do not know about and/or no longer use the assessment framework (*personal communication with Joost van Herten, KNMvD*). It is probably also not a useful starting point for a conversation with the owner. Its obvious defects include the following:

- Some questions do not always have a clear answer, such as "Does the animal's suffering have no prospect of improvement?" This means that the eventual recommendation partly depends on the estimation of the individual veterinarian, which means differences in assessment can arise between veterinarians (which can in fact never be completely prevented).
- The criterion "quality of life/future prospects" is missing from the consideration of whether to continue with treatment.
- The assessment framework provides no guidance for situations in which owners cannot bring themselves to say goodbye to their pet and the animal is in danger of suffering for an extended period of time.

The RDA assumes that this last point is a new trend that has arisen since the publication of the assessment framework in 2010. That would fit with the changing relationship between people and animals that we described in 'The State of the Animal in the Netherlands'. This points to a need to update the assessment framework. It is important for a veterinarian to be able to apply a clear assessment framework as part of the conversation with the owner and to use the framework to justify the decision afterwards. The purpose of an assessment framework is not to allow the veterinarian to make an entirely objective assessment but to show that they carefully considered all the factors. This is increasingly important, because of the tendency in society to doubt the opinions of experts. It is also in line with the professional standard of being able to justify one's actions. Both aspects are important with respect to the killing of animals because, legally, the owner of the animal makes the final decision.

## 3.2 Euthanasia of production animals

Severe suffering can also be a reason to kill an animal in the livestock farming sector. This includes young animals that are not viable, or are seriously ill or injured, and older animals that can no longer be treated and/or are in constant pain. In such a situation, a farmer may request the assistance of a

veterinarian to carry out euthanasia. The farmer may also kill the animal personally, because, unlike with many pets, production animals may legally be killed by the owner. According to EU Regulation 1099/2009,[6] farmers may kill suffering animals on their farm, subject to a number of conditions, including the following:

- As much as possible, farmers must avoid allowing the animal to experience pain, stress and suffering during the killing.
- Before being killed, animals must be stunned, and they must remain in a stunned state until death occurs.
- Annex 1 of EU Regulation 1099/2009 lists the methods of killing and/or stunning that are permitted for each animal species.
- The farmer must possess the knowledge and skills required to kill the animal humanely and efficiently, including selecting the right method of euthanasia and having the skills to adequately carry it out.
- The farmer must be able to assess whether the animal is properly sedated and whether death has occurred.

The Netherlands Food and Consumer Product Safety Authority (NVWA) ensures that farmers comply with these rules. In 2019, the KNMvD claimed that it is not clear that these rules are sufficient to ensure the welfare of animals around the time of death.[7] Moreover, the decision of whether an animal must be killed due to suffering is difficult and subjective. As a result, two assessment frameworks for euthanasia were recently developed in the pig farming industry, one for piglets[8] and one for pigs aged two months or older.[9] These are well used in practice. Such assessment frameworks could also be developed for other animal species (see 3.5).

## 3.3 Euthanasia of high-risk dogs in animal shelters

In 2.3, high-risk dogs were defined as dogs that are at high risk of causing a biting incident in everyday situations in which people would not normally expect them to be a problem.[10] With high-risk dogs, the risk of serious biting incidents and serious injuries is high.[11] In 2.3, high-risk dogs were discussed in the context of animals that cause nuisance. In this chapter, we will discuss the potential suffering of high-risk dogs after they have been taken to an animal shelter.

High-risk dogs that live in an animal shelter (or 'animal rescue centre') are in a special situation. Typically, these animals are physically healthy, but if they have a history of biting, it is difficult to responsibly place them in a new home due to their unpredictable and potentially dangerous behaviour. They can therefore remain in the shelter for a long time. It is nearly impossible for a shelter to provide these powerful and energetic dogs with a living environment that meets their needs. The animals usually live separated from other dogs in a small space with few distractions. They have limited opportunities to engage in species-specific behaviour such as walking, running, sniffing, playing and social interactions. Although they do not experience physical pain, we can assume these animals suffer under such restrictions. There are no easy ways to improve the welfare of these animals. Shelters run by the Dutch Society for the Protection of Animals now use a welfare assessment to monitor the welfare of dogs during their stay.[12] Based on this assessment, steps can be taken to improve their welfare.

Many animal shelters struggle with the question of whether these dogs should be euthanised. They are not sick, but their welfare is impaired, and they have little prospect of an enjoyable life. Some animals can be rehomed following an intensive training programme, but due to the cost, this path is not available for all dogs, and some dogs continue to exhibit unpredictable and dangerous

behaviour. At that point, there do not seem to be any realistic alternatives to killing. Some in society are critical of this approach; critics believe that shelters want to save money or free up space. Shelter staff also struggle with this issue, because they have developed a bond with the animals due to their long stay. Because of the assumption that the public will not accept euthanasia for this reason, shelters usually do not share information about it, such as the number of animals involved.

Around half of the shelters in the Netherlands are run by the Dutch Society for the Protection of Animals. The rest are mainly stand-alone, independent foundations. As a result, approaches vary considerably. Shelters run by the Dutch Society for the Protection of Animals follow a national euthanasia protocol, which applies to all animals including high-risk dogs. Part of the protocol is that a decision to kill is made by a euthanasia committee. Depending on the issues involved, this committee may comprise a veterinarian, the manager of the shelter, the staff member responsible for caring for the animal and a behavioural specialist. Other shelters take a different approach, sometimes even from case to case. More guidance in the form of a uniform process or standard procedure would be desirable for these other shelters.

The same need for uniformity applies to a standard procedure (preferably one based on science) to determine whether a dog is suitable to be rehomed. The Dutch Society for the Protection of Animals is already working on such a procedure. With potentially dangerous dogs, keeping and collecting information is vital. That is especially difficult in an animal shelter, because the background of many animals is unknown. When determining whether a dog is suitable to be rehomed, multiple perspectives are important, such as the welfare of the dog itself and of other animals, the realistic commitment that will be required from the next owner and an estimate of any risks to society (see 3.5).

## 3.4 Euthanasia of animals in the wild

Because of the growing urbanisation of our country, people and animals come into conflict with each other with increasing regularity. Literally, such as when a deer runs into a car or a pigeon flies into a window, or figuratively, such as when people come across an injured or helpless animal in the wild. The Nature Conservation Act[13] provides for a 'hands-off duty', meaning that people should leave nature alone wherever possible. However, if an animal needs help, the duty of care in the Nature Conservation Act (Section 1.11) and the Animals Act[14] (Sections 1.4 and 2.1(6)) comes into play. This duty requires people who find an animal in need of help to provide assistance. Suffering can be a reason to intervene and put an animal out of its misery. The authorised methods of killing animals in the wild are prescribed by law. In practice, however, it is difficult to decide how best to act when a wild animal has been found that may be in need of help. First, it must be possible to approach the animal to assess whether help is required. Next, the animal must allow itself to be captured in order to receive help.

Accordingly, in 2012, the RDA drafted an advisory report entitled 'Duty of Care, Naturally'.[15] This report offered an assessment framework with tools to ensure the responsibilities for the welfare of wild animals are consistently defined. A follow-up advisory report, 'Weighing Wildlife Welfare',[16] was released in 2017. In this report, the RDA explored the practical applicability of its 2012 assessment framework. The flow chart used in both advisory reports helps with weighing up the various factors involved and determining what steps can be taken. The flow chart distinguishes between different kinds of suffering and provides guidance on what to do and when. In the flow chart, the first question is whether an intervention is necessary, and the second question is what should be done. The ability of an animal to adapt to the challenges posed by its environment plays an important role in the decision-making.

Suffering has a function for the individual, as a response to pain and stress. Dying also has an ecological function. Moreover, the decision of whether or not to intervene affects not only the animal concerned, but the entire ecosystem, for example because the remains of dead animals can be a source of food. Sufficient attention is not always given to this point when the suffering of animals in the wild is discussed in the media (or on social media). In the advisory reports mentioned above, the RDA also raised the importance of human emotion when a person encounters a suffering animal. The simple application of the 'hands-off duty' with regard to animals in the wild is not sufficient; animals in the wild also have intrinsic value. Moreover, at an emotional level, the question of whether humans caused the suffering plays an important role in the decision to intervene. Causing suffering can make people feel guilty, which in turn makes them want to intervene. The assessment framework and the accompanying flow chart are primarily intended as a tool for policymakers and land managers who have to make decisions about animals in the wild. This approach is well suited for diligent, measured decisions made in advance but is not suitable for ad hoc decision-making. Accordingly, in 2022, the RDA will publish an advisory report at the request of the Minister of Agriculture, Nature and Food Quality about caring for wild animals in need of help.[17]

## 3.5 Reflection and recommendations

In this chapter, thinking about killing starts with the animal: the focus is on the interests of the animal being killed. However, the financial interests of the animal's owner can play a role as well. The severity of the suffering influences the decision to kill, but the degree of suffering is not easy to define or estimate. When is an animal experiencing such unbearable suffering with no prospect of improvement that killing is the most animal-friendly solution? That estimation is best made in consultation with animal ethicists and professionals.

A thorny issue that came up many times in this chapter is the unequal treatment of different suffering animals in comparable situations. Some animals are left to suffer for too long while others are killed too soon. With companion animals, for example, one owner might rush to a decision to let the animal be put down due to financial considerations, while another owner might wait too long, resulting in the animal experiencing unnecessary agony. For the other sub-topics, too, we showed that unequal treatment can arise because the rules are not known or not followed, and/or because existing assessment frameworks need to be updated. To prevent unequal treatment, the RDA recommends that more assessment frameworks be developed or existing assessment frameworks be updated.

### Summary of the RDA's key recommendations:

#### *Euthanasia of companion animals*

1) Make prospective owners aware of the financial consequences of acquiring a pet, such as the possibility of high veterinary costs. Ensure that veterinarians, breeders and other parties involved encourage owners (or future owners) to anticipate these costs, for example by taking out pet health insurance or setting aside savings.
2) Develop communication materials to help owners recognise signs of suffering in their pets. Information about recognising signs of suffering[18] must be made more accessible and easier to understand. Veterinarians could help with this. More visual material should be made available to help owners better interpret the behaviour, stance and expressions of their pets, for example in the form of videos in the waiting rooms of vet clinics or apps that help people to recognise pain in animals.[19,20] The RDA considers this to be the collective responsibility of the professional body for veterinarians, research institutions and the government.

3) Provide veterinarians with additional communication support for conversations about euthanasia with pet owners. Although veterinarians receive communication skills training as part of their study programme, we believe that additional support and training opportunities would be desirable, even if only to refresh existing knowledge and skills. Through existing infrastructure for continuing education for veterinarians and other lifelong learning, a communication workshop could be offered, for example, or guidelines for conversations, along with suggestions for questions, opening phrases and similar.
4) Update the assessment framework for the euthanasia of companion animals based on new insights. This assessment framework should also contain a definition of the quality of life of the animal (following an operation or other treatment). Research institutions could play a central role in this task, in conjunction with veterinarians.

### *Euthanasia in the livestock farming sector*

5) Develop assessment frameworks for different animal species, based on the example of the decision support charts used in the pig farming sector. We know from the experience of the pig farming industry that, if a decision support chart is presented attractively, it is more likely to be accepted and used. The RDA considers that the livestock farming sector could play a coordinating role in this task, with support from the government and substantive input from research institutions.
6) Include a euthanasia policy in the farm health plan. To the extent that this is not already the case, each livestock farm should include a euthanasia policy in its farm health plan. This policy should include day-to-day monitoring of animals that may be suffering (such as animals with fractures or that can no longer stand up), immediate contact with a veterinarian when an animal is suffering, and ensuring the animal is treated or euthanised as quickly as possible (by the farmer or the veterinarian).

### *High-risk dogs in animal shelters*

The RDA recommends that *all* shelters apply the standard procedures for high-risk dogs set out below, not just shelters run by or affiliated with the Dutch Society for the Protection of Animals. This recommendation is in line with the recommendations of a report published by HAS University of Applied Sciences in 2020.[21] Where necessary, shelters can further develop and refine the standard procedures in collaboration with research institutions and relevant parties, such as veterinarians and behavioural specialists.

7) Use a science-based tool to determine whether a dog is suitable to be rehomed. This will help to estimate the likelihood that a dog can be rehomed, taking into account factors such as the risk of biting incidents and the commitment that will be required from the next owner.
8) Require shelters to follow a standard procedure for every individual animal. The above tool to determine whether an animal can be rehomed could play a role in this. Other assessment tools could also be used, such as a risk assessment, aggression test or welfare assessment.
9) Set up a euthanasia committee at each shelter, comprising at least one member of staff who works with the dogs at the shelter, the shelter veterinarian and at least one dog behaviourist. The euthanasia committee should assess only situations in which putting an animal down is being considered due to non-physical suffering. For animals experiencing physical suffering, the shelter staff can assess the situation in consultation with the shelter veterinarian.
10) Require the euthanasia committee to keep records for each animal, setting out the results of the various assessment tools and the steps taken.

### *Animals in the wild*

For decisions concerning wild animals in need of help, we refer to the requested advisory report about caring for wild animals in need of help, to be published in 2022.[17]

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# 4. The killing of animals that do not fulfil their intended purpose

***Each year in the Netherlands, millions of animals are killed because they are an unwanted by-product of our animal husbandry systems, such as day-old male chicks in the laying poultry system. Other animals are killed because they disrupt the balance of nature in the Netherlands, such as raccoons and American crayfish. In this chapter, the RDA uses five categories as the basis for discussing a disparate set of issues and sensitivities around the killing of these unwanted animals. We show that the extent to which people accept the killing of unwanted animals depends on a variety of factors and that public debate does not always give sufficient attention to the complexity of the subject. The RDA observes that the thinking on this topic is too often from the perspective of the system. There should be a greater emphasis on the individual animal, and systems could perhaps be adjusted to reduce the killing of unwanted animals.***

*For this report, we define unwanted animals as 'animals that, according to humans, do not fit into a particular system, or animals that disrupt the balance of a system at a systemic or individual level'.*

## 4.1 Day-old male chicks

In the Dutch laying poultry sector, around 45 million male chicks are born each year.[1] These male chicks obviously cannot lay eggs but were bred for egg production at the expense of meat production. Because of their relatively low production of meat, there is no market for these male chicks; they are thus an unwanted by-product of the laying poultry system. Accordingly, people are employed as chicken sexers to determine, based on the shape or colour of their feathers, whether a chick is male or female. Female chicks are prepared for transport to laying farms, and male chicks are killed, since only a small number of them are necessary for reproduction, or are fattened.

In the Netherlands, day-old male chicks are killed by gassing almost immediately after hatching. A conveyor belt takes the chicks to a room filled with $CO_2$. Here, they are stunned within seconds and die within minutes.[2] To prevent the growth of bacteria, the chicks go to the $CO_2$ room only once they are dry, and after being killed, they are chilled in a well-ventilated room. Day-old male chicks are recorded, and there are laws and regulations about hygiene[3] and animal welfare.[4] Hatcheries are responsible for meeting these requirements, and monitoring is conducted by the NVWA.

Approximately 15 percent of the dead day-old male chicks are sold on the Dutch market. The remainder are exported to countries such as Belgium, Germany, France, Italy, Spain and the United Kingdom.[1] In the European Union (EU), around 8,000 tonnes of male chicks are sold each year.[5] The animals primarily serve as food for other animals. Around 1.5–2 percent of day-old male chicks in the Netherlands end up with private individuals, who feed them to dogs, cats, birds and reptiles. The majority end up with professional animal keepers such as falconers and zoos. There is therefore a market for dead day-old chicks.

### *Methods to prevent the killing of day-old male chicks*

In the Netherlands, experiments have been conducted into dual-purpose breeds.[6] These are chicken breeds that produce fewer eggs than laying breeds, but have a better fattening ability, which means both hens and roosters can be put to good use.[7] The downside is that the costs are higher, because fewer eggs are being laid per hen. This is not always cost effective. Even with non-dual-purpose

breeds, it is possible to link the sale of eggs to the use of male chicks. In this situation, the male chicks are kept alive until the age of twelve to sixteen weeks when their meat is made available to consumers. This prevents the male chicks from being killed on their first day of life, but there are disadvantages – such as a poor footprint score, because more feed is required per kilogram of meat.[8] In addition, it is debatable whether the animals are any better off in terms of welfare. For example, swift, careful killing soon after hatching presents fewer welfare risks than rearing the male chicks in current production systems. Nevertheless, for many years now, the killing of day-old male chicks has incited public debate. This is more about the purpose (or lack thereof) for which these animals are killed than about the impact on animal welfare.

The birth of day-old male chicks can be prevented by in-ovo sexing. Multiple companies are working on innovative technologies to determine the sex of embryos while they are still in the egg.[9-11] The hatching process can then be aborted for male chicks, so that they are not born unnecessarily. In Switzerland and Germany, there is now a ban on the killing of day-old male chicks, and bans are anticipated in France and Italy.[12-14] Work is also being done on such a ban in the Netherlands.[15] This means that, in the future, current purchasers of day-old male chicks will have to look for alternatives. That could include foreign suppliers, but it is likely that increasing numbers of countries will impose bans. Another alternative is to use other feed animals. Day-old male chicks are attractive food for carnivores because they provide complete nutrition. It seems logical to replace them with other animals that similarly provide complete nutrition, such as mice or rats, for example from the surplus of laboratory animals. However, this source cannot supply sufficient animals to make up for the loss of day-old male chicks. Animals might therefore need to be bred specially for this purpose.

### *Other methods of killing*

The methods used to kill day-old male chicks have been the subject of intense public debate. In addition to gassing with $CO_2$, there are a number of other methods of killing day-old male chicks:

- Day-old male chicks can be crushed (shredded) in a shredder. The animals are killed within a few tenths of a second.[2] This is a fast and practical method, but it is not a pretty sight. It is sometimes called gruesome and is the subject of considerable public resistance. In addition, chicks killed by crushing no longer make suitable food for all predators. This method is no longer used in the Netherlands.
- Gassing with nitrogen works based on the same principle as gassing with $CO_2$. There are actually no advantages to using nitrogen over $CO_2$, because it takes longer for nitrogen to have an effect.[16] Accordingly, it is not a realistic alternative for the killing of day-old male chicks.
- In the case of killing with high-expansion foam, the animals are prepared as if for transport. The room then fills up with oxygen-free foam, which is filled with nitrogen. The animals quickly lose consciousness and die within minutes. This method is not suitable for the euthanasia of day-old male chicks because the foam makes the animals wet. This can promote bacterial growth, which has negative consequences for consumption. However, the method can be used in specific cases, for example if all the animals in an establishment have to be culled.

### *Thorny issues*

- The current laying poultry system produces a large stream of day-old male chicks. The animals appear to be useless, because the killing of day-old male chicks serves no primary purpose. In spite of the sales potential as animal feed, many people consider this a pointless death of millions of male chicks.
- The alternatives give rise to questions, including in relation to animal welfare. The alternatives of fattening male chicks and breeding dual-purpose breeds are still in their infancy. In addition,

male chicks currently serve a secondary purpose as food for carnivores. An alternative would have to be found if the stream of male animals disappeared due to in-ovo sexing or fattening.
- The methods of killing have been the subject of intense public debate. The use of shredders, for example, is probably faster than the current $CO_2$ method, but it is not a pretty sight and is therefore no longer used in the Netherlands. Moreover, it is still unclear whether there might also be economic reasons for choosing a certain method of killing, because the end product sells better. With a shredder, for example, the product can only be sold as processed meat.

## 4.2 Surplus laboratory animals

In 2019, 81 institutions and companies in the Netherlands held a permit to perform animal testing, breed laboratory animals and/or supply laboratory animals.[17] Nowhere near all of the animals bred for animal testing are actually used in experiments. The remainder are 'surplus animals'. Of the animals present in a permit-holding institution in 2019, 442,767 died or were killed as surplus animals, while 448,656 were used in animal testing. In other words, in the Netherlands, almost as many laboratory animals are killed as surplus as are used for research and education.

Animals intended to be laboratory animals can be or become surplus animals if they:
- were bred and then were found not to meet the requirements of the experiment (for example, they had the wrong sex, genotype, phenotype or nature);
- were supplied with the wrong genotype or age;
- were bred in larger numbers than were necessary for the experiment;
- had to be killed and destroyed because an infection was detected in the laboratory animal facilities;
- after being used for breeding, are no longer necessary or usable;
- exhibit the wrong behaviour for the experiment (for example, if only extremes are required, or if the animals are too aggressive for education);
- have grown too old.

Since the keeping of laboratory animals involves considerable expense, surplus animals are killed. Animals may also be killed due to animal welfare considerations, such as infected animals that cannot be housed with other animals, or animals with a genetic modification that causes distress. Laboratory animals are killed by a veterinarian or a specially trained animal caretaker by means of a euthanasia drug, shooting, decapitation, electrical stunning or gassing, depending on the species.[18] The killing of surplus laboratory animals is reported to the Animal Welfare Body and/or included in the permit application. The Animal Welfare Body is the body that conducts local monitoring of the welfare of the animals; its staff also advise on various matters relating to animal testing. The NVWA is the national statutory enforcement body that monitors compliance with the rules. A small percentage of these animals fulfil a secondary purpose after death, such as anatomy education, tissue culture or animal feed. These days, attempts are also made to offer healthy surplus laboratory animals for adoption, provided the animals meet certain preconditions, such as no genetic modification, a good nature, females only (for mice) or at least two animals per adopter.[19,20] For now, this only involves small numbers of animals. For example, in 2019, 3 mice, 1 dog, 31 cats, 23 horses and 12 zebra finches were adopted.

### *Thorny issues*

- These animals are bred specifically for research but are then found to be unsuitable for that purpose and are killed. Almost as many animals are killed as surplus animals as are used for experiments. This is well known within the sector but not by the general public;

- If laboratory animals have to be killed without achieving their intended purpose, this may give rise to emotional issues for animal caretakers, biotechnicians, researchers and other people involved.

## 4.3 Pedigree rabbits

No precise numbers are available with regard to rabbit breeding in the Netherlands because there is no obligation to keep records. In addition to hobby breeders and wholesalers that breed pedigree rabbits for the pet market, the Netherlands has several thousand pedigree rabbit breeders that try to breed rabbits with the best breed characteristics. In this report, we will focus on the latter group, leaving the first two groups out of consideration. Around 2,500 pedigree rabbit breeders are affiliated with Kleindier Liefhebbers Nederland (KLN), and around 160 of them breed designer breeds. These breeders select rabbits for their appearance, with the aim of breeding rabbits that comply with the breed characteristic requirements laid down by the KLN's standards committee. Some of these rabbits are shown in exhibitions. It is not known how many rabbits exactly these breeders breed, but a calculation by KLN suggests over 90 thousand pedigree rabbits per year (*personal communication with Harry Arts, KLN*). As soon as the rabbits are born, the breeder determines whether they have the desired appearance. The number of baby rabbits that do not meet the requirements differs for each breed, and there is uncertainty about the precise numbers. The report 'From matchmaker to snuggler' by Utrecht University[21] estimates that only 1 of every 20–50 baby rabbits meets the requirements, but the parties concerned estimate that more rabbits make the grade: 9 out of 10 rabbits for 1 breed, half that for another.

Some of the rabbits that do not meet the requirements are sold to wholesalers or pet shops. How many rabbits are sold in this way depends on the breed. For example, there is a lot of interest in dwarf rabbits as pets, which means nearly 100 percent are resold. This percentage is much lower for other breeds; for checkered giant rabbits, for example, it is only 5 percent. For many other rabbits that do not possess the breed characteristics, there is no market, and keeping them would involve significant costs. Accordingly, most unwanted rabbits are sent to slaughter or killed by the breeder. This is done in a variety of ways, including a fatal blow to the head, decapitation, drowning, with a club, against the wall or using a bolt gun. When breeders kill their animals themselves, there is no monitoring, no records are kept and the animals serve no secondary use. Animals sent to slaughter are usually used for animal feed.

### *Thorny issues*

- The rabbits are killed even though they are healthy. The problem appears to lie in the strict breeding goals that are difficult to achieve. If a large percentage of rabbits do not meet the requirements, the bar is set high. In addition, many of the animals are killed without a secondary purpose, even though, in theory, they could be sold to pet stores.
- Because no records are kept in the rabbit sector, the precise numbers involved are not known, no monitoring can be carried out and there is no supervision of animal welfare at the time of killing. The method of killing does not always comply with the legal requirements set out in the Animal Keepers Decree.[22] In society, and even within the sector, little is known about how many unwanted rabbits are killed. There has also been little attention for this issue in the media. Partly for this reason, there has not yet been any major public debate on this subject.

## 4.4 Surplus animals in zoos

In total, around a hundred thousand animals are kept in zoos in the Netherlands, not including insects and other invertebrates (Dutch Zoo Federation, NVD). Although zoos used to have an almost exclusively recreational function, they are now required by law to actively contribute to education, nature conservation and biodiversity (Article 4.10 of the Animal Keepers Decree).[22] Zoos breed animals for population management and biodiversity purposes.[23] To this end, they exchange animals among themselves, sometimes with the goal of reintroducing animals to the wild. In addition, many zoos aim for the highest possible standards in the area of animal welfare. Being able to exhibit species-specific behaviour – including reproductive behaviour – contributes to animal welfare. This is another reason why the decision may be made to allow animals to reproduce.

In the wild, many young animals die from disease, from dehydration, as prey, in fights, from malnourishment or from underdevelopment. In zoos, a relatively high proportion of young animals survive the critical first phase, thanks to the absence of natural predators and constant access to fresh, clean food and water and veterinary care. For economic and/or practical reasons, these animals cannot all be retained by the zoos, and some are therefore unwanted. In the zoo sector, unwanted animals are usually referred to as 'surplus animals'. Each year, approximately 0.6 percent of zoo animals are killed for non-medical reasons (NVD). Around half of those are surplus animals from breeding programmes. Another group of animals are specially bred as feed animals (mainly small rodents), but it is questionable whether we have a clear picture of this category of animals. Accordingly, we are talking about the killing of around three hundred surplus animals per year in the Netherlands, of which some are fed to other animals.

Each zoo has its own assessment framework for the killing of surplus animals. The decision to kill depends on the sex and ancestry of the animal and the space available in that zoo or another zoo. The interests of the animal are also taken into consideration. For example, zoos may decide to euthanise an animal from a social species if the animal has to be isolated from the group to prevent inbreeding and there are no prospects of moving the animal to another suitable home. The decision to kill is usually made by the person at the zoo who is involved in the breeding programme, in close consultation with behavioural biologists, animal caretakers and veterinarians. The animals are killed by a veterinarian (by means of a euthanasia drug) or a specially trained animal caretaker (by shooting). The method of killing depends on the species, the history (in the case of disease) and the intended use of the dead animal. For example, animals that will be fed to predators after being killed are mainly killed with a gun.

### *Methods to prevent killing*

- Contraception – via surgery or hormone drugs – could prevent surplus animals from being born, but it may disrupt behaviour. Moreover, the health and welfare of the animals may be jeopardised to some degree by physiological side effects such as liver and kidney problems, hormonal disruptions and a decline in fertility, which can sometimes be permanent.
- One alternative is transport to another zoo or sanctuary. However, high-quality zoos relocate their animals exclusively to locations where the animal enclosures comply with specific animal welfare requirements and where animals can exhibit their species-specific behaviour in groups with a natural composition. If such locations are not available, many zoos make the decision to euthanise the animals, based on the principle 'Better to euthanise the animals after a short, good life than place them in suboptimal conditions'.

- Reintroduction of threatened animal species into the wild is a complex process and only possible in close collaboration with official reintroduction programmes set up and managed by the International Union for Conservation of Nature and Natural Resources (One Plan Approach). There are several successful examples of reintroduction, but the number of eligible species is extremely small.

In summary, a surplus of animals probably cannot be prevented without compromising animal welfare. However, zoos can make decisions about their collection to minimise the number of surplus animals. To that end, they should pursue a consistent collection policy, appropriate to their collection plans, educational objectives and the zoo's space and facilities.

### *Thorny issues*

- Although alternatives to killing are conceivable, they give rise to all kinds of practical objections, such as problems relating to animal health and welfare and/or population loss (loss of viability and/or genetic diversity in populations).
- There is a tension between the interests of collection management and species conservation and the interests of individual surplus animals.

## 4.5 Raccoons

Raccoons are often seen in the Netherlands these days.[24] Most of them come from Germany, where raccoons are now common in the wild. The number of raccoons in the Netherlands is expected to increase in the future, as a result of the influx from Germany. This may lead to damage to native flora and fauna. Raccoons also cause nuisance because they chew holes in rubbish bags, damage property, attack pets (such as tame rabbits) and climb into houses through the chimney. Raccoons can also present a risk to public health, because they can transmit roundworm infections. In humans, this does not often result in disease, but when it does, it can cause neurological symptoms, which can be fatal.[25] Raccoons can cause damage to native flora and fauna; for that reason, they are on the European Union list of invasive exotic species.[26] The EU Invasive Species Regulation[27] requires EU Member States to implement eradication or control measures against the invasive exotic species on the list to prevent the species from spreading.

In the Netherlands, since 1 January 2017, provincial authorities have been responsible for implementing these rules.[28] Provincial authorities are required to take measures at an early stage (before the species spreads further and becomes established) to remove the animals from the natural environment using lethal or non-lethal methods. Various provincial authorities are now looking at what methods they can employ to comply with the European requirement to control and eradicate. One possibility is shooting. A permit is required for hunting, and in practice, the killing of raccoons through hunting is proving to be a challenge. Raccoons are primarily active at night; moreover, they cannot be shot close to urban areas (which is where raccoons spend a lot of their time). If shooting raccoons directly is not possible, the animals must be captured first and then killed. In that case, there is a risk of compromising animal welfare associated with approaching and catching the animals. Killing the animals will be effective only if small numbers are involved and if we can be certain that no new animals will arrive from neighbouring countries or provinces. However, in the current situation, that is extremely unlikely, since large numbers of raccoons live in Germany and are able to cross the border into the Netherlands.

### *Methods to prevent killing*

Possible alternatives to killing include capture, neutering and release, and permanent capture. Neutering and release is not permitted by the European Invasive Species Regulation. Permanent capture means keeping them in captivity for the rest of their lives, including neutering them or taking other measures to prevent reproduction. Problems are associated with both options, relating to cost, feasibility and animal welfare. As with animals that are causing a nuisance (Chapter 2), prevention can also be used: making the environment unattractive to raccoons.[29] This may include reducing the available food supply in the form of human waste.

### *Thorny issues*

- The killing of raccoons is socially sensitive because they are cuddly animals and because non-lethal alternatives exist.
- In addition, the other options for dealing with the issue are not without problems and challenges either, due to the expense, feasibility and impact on animal welfare.

## 4.6 Reflection and recommendations

For most of the unwanted animals in this chapter, it was decided in advance that they would be killed. Day-old male chicks, surplus laboratory animals, pedigree rabbits that do not possess the desired breed characteristics and surplus animals in zoos are not useful for the animal husbandry systems into which they are born. In the case of the raccoon, the fact that it is classified by law as an undesirable exotic species provides an *a priori* reason to proceed with control and/or eradication. Many Dutch people find it painful to think that animals are killed because they are unwanted, particularly if this occurs shortly after their birth and if large numbers of animals are involved. That pain appears to be lessened when the dead animals serve a useful secondary purpose, such as to provide food for other animals. Support for the killing of unwanted animals very much depends on the situation: how important do people consider the primary purpose for which these animals were produced, what number of animals is involved, are there any realistic alternatives, is the method of killing fast and painless and is there a body monitoring animal welfare at the time of killing? How cuddly the animals are can also play a role. Alternatives to killing are available or conceivable in all cases, but they almost always raise new questions about practical feasibility, financial costs and animal welfare.

In summary, the thorny issues around the killing of unwanted animals are as follows:

- One consequence of breeding goals that are relevant to people is that some of the offspring will not meet the breeding goal and will be killed.
- System thinking determines how the killing will take place in practice. Instead of considering the individual animal, this approach looks at the animal's contribution to the system.
- There is a tension between collectives of animals and the value and interests of individual animals. Decisions to protect ecosystems or animal populations appear to come at the expense of individual animals.

Media attention contributes to the public debate about the killing of unwanted animals. However, not all unwanted animals receive equal attention. The case of pedigree rabbits, for example, has all the right ingredients to cause a public outcry. It concerns extremely cuddly animals that are killed soon after birth for a reason that most people would not find particularly legitimate, namely an undesirable appearance. Moreover, in many cases, the dead rabbits do not serve any secondary purpose. However, this subject has attracted very little media attention, because it is happening under the radar due to the lack of record-keeping. By contrast, the killing of surplus animals in

zoos regularly receives attention in the media and appears to be socially sensitive, even though comparatively small numbers of animals are involved.

The current public debate does not always allow space for the complexity of the subject. This is partly a reflection of the fact that it can be difficult to get a clear picture of all aspects of the matter. At the same time, that cannot be a free pass to reduce the discussion to seemingly simple contrasts. The reality is nuanced, and the killing of unwanted animals requires careful discussion and a proper weighing up of the various factors. With day-old male chicks, for example, we can see that killing with a shredder has given rise to considerable opposition, even though it is faster than the current $CO_2$ method. The debate about alternatives to killing is also complex. Within current systems, keeping animals alive is not always desirable for the animals themselves. With surplus animals in zoos and with raccoons, for example, we can see that the alternatives to killing come with practical objections and risks to animal welfare. The killing of animals is often discussed and assessed in terms of animal welfare, but in practice, the arguments relate to opinions about the value of animals, the extent to which they are worthy of protection and the value of their lifespan. The Animals Act, in which killing is considered to be welfare neutral (provided it is carried out in a swift and painless manner), provides only limited scope for these considerations.

In this chapter, we also discussed the fact that monitoring and record-keeping are not well regulated in all sectors. The person doing the killing is not always authorised, or else no authorisation is required. This varies considerably between categories: with raccoons, it is clear when they may be killed, but not always by whom; with day-old male chicks, the 'when and who' are clearly organised within the system; with rabbits, everything is much less clear, and less monitoring is carried out. With laboratory animals, monitoring, execution and record-keeping are subject to legal requirements, and the person doing the killing must hold an authorisation.

## Summary of the RDA's key recommendations:

1) Research into which systems could be adjusted to minimise the birth of unwanted animals and thus reduce the killing of animals. This could include adjusting breeding goals: establish less rigid breeding goals so that more animals meet the requirements (for example, for pedigree rabbits) and take into account the killing of animals that do not meet the goals when determining breeding goals. The aim should be to think less in terms of the system and more from the perspective of the animal. Both the government and sector parties have responsibility in this area.
2) Through scientific research, explore what adjustments in breeding are possible to address the issue of unwanted animals. For example, using more modern technology such as in-ovo sexing for day-old chicks.
3) As sector parties (including poultry, laboratory animals and rabbits), improve communication with the public, with the aim of making the full story readily available, explaining why a decision to kill is made and starting a discussion about the reason for targeted breeding.
4) In some sectors, better record-keeping and government oversight would be desirable. The RDA recommends that the government systematically investigate which sectors require greater regulation. To be able to implement the above recommendations, it is necessary to know what kind of numbers are involved and in what ways animals are being killed. Good record-keeping is therefore essential.
5) In relation to unwanted wild animals, focus on prevention by making the environment unattractive to that species or by making a certain area more attractive so that the animals start living there instead. However, the latter is not an option if the animals are classified by law as an undesirable exotic species. Governments and conservationists can play an important role in this method of prevention.

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# 5. Killing in the context of animal disease control

***The culling of production animals in the context of animal disease control is now a familiar phenomenon in the Netherlands. With culling, a flock of animals are killed to prevent transmission to other flocks or to protect public health. Although there are statutory and procedural rules in place for the culling of animals, the killing of large numbers of healthy animals remains a sensitive issue. Public acceptance of the culling policy should also not be taken for granted as much, because animal welfare and the value of animal lives occupy an increasingly prominent place in public debate. In this chapter, the RDA uses two recent case studies as the basis for discussing the infectious animal diseases policy. The RDA recommends continually investing in the prevention of the introduction and spread of animal diseases, paying attention to interactions between wild and captive animal populations, implementing vaccination strategies rapidly and conducting research into genetic resistance to infectious diseases.***

*In this chapter, we define culling as the killing of a flock, herd or other group of animals to protect other animals or society, or to prevent a welfare problem among the affected animals.*

## 5.1 Laws and regulations

In the past 25 years, the Netherlands has faced outbreaks of classical swine fever (CSF, in 1997 and 1998), foot-and-mouth disease (FMD, in 2001), bird flu caused by highly pathogenic avian influenza (HPAI, since 2003), Q fever (2007–2009) and SARS-CoV-2 in minks (2020). To stop the spread of these infectious animal diseases as quickly as possible, millions of animals were culled on infected farms, neighbouring farms, contact farms and suspected farms. In March 2021, the television programme Zembla reported that nearly half a million animals were culled because of bird flu in a five-month period.[1] In 2017, a food safety issue arose involving fipronil in chicken eggs. It led to a total of 3.5 million chickens being killed on poultry farms.

The EU has established specific laws and rules for a number of animal diseases that could present a threat to animal health or public health, including in relation to food safety and zoonotic infectious diseases. These rules include a reporting obligation and requirements regarding diagnostics and control. In the Netherlands, the reporting obligation for a number of animal diseases is enshrined in Section 5.3 of the Animals Act (*Wet dieren*).[2] As well as a reporting obligation, an infectious disease must be subject to an obligation to control before mandatory culling can take place. Within the EU, an obligation to control has been agreed in respect of a number of animal diseases and zoonoses, including CSF, FMD and HPAI. In the Netherlands, the obligation to control is a measure described in Section 5.4 of the Animals Act.

Animal diseases for which there is an obligation to control must be controlled in accordance with European regulation 2016/429,[3] which has been incorporated into the contingency plans of the Ministry of Agriculture, Nature and Food Quality. These contingency plans are the Ministry's detailed guide to effective and meticulous action. The Dutch contingency plans are regularly updated following evaluations of recent outbreaks, amended regulations and new insights. The most recent versions can be found on the central government website.[4] These contingency plans form the basis for the operational contingency plans prepared by the NVWA,[5] which is responsible for the control of animal diseases subject to a control obligation.

The culling of production animals due to FMD in 2001 and bird flu in 2003 led to greater awareness of animal welfare and better communication about the large-scale killing of animals. Research has been conducted into methods of culling on farms to find a method that minimises the negative consequences for people and animals. In addition, in 2017, a permanent welfare committee was established to monitor animal welfare during culling. At present, this committee comprises eight members appointed by the responsible official from the Ministry of Agriculture, Nature and Food Quality.[6] They exercise oversight of infectious disease outbreaks and monitor the consequences of culling activities and other control measures for animal welfare.[6] The committee reports its findings and any recommendations to the responsible official on a weekly basis.

## 5.2 Poultry and bird flu

Highly pathogenic avian influenza is an infectious viral disease that has regularly emerged in our country in recent years. The formal definition of HPAI is: an Influenza A virus that, following the experimental infection of 8 chickens, leads to the death of at least 6 of the 8 animals within 10 days. Until the start of this century, HPAI was primarily introduced through the transport of infected captive animals or animal products. Recently, however, a new epidemiological situation has arisen. As well as strains of low pathogenic avian influenza (LPAI), HPAI strains are now also frequently endemic in wild bird populations. Ducks and wild waterfowl can be infected with HPAI without severe symptoms. HPAI outbreaks will therefore occur more frequently in the Dutch poultry sector. When they contract an HPAI infection, laying hens, turkeys, and chickens kept for meat production become seriously ill and die in large numbers. The prompt culling of infected flocks can therefore prevent welfare issues in the affected animals. In rare cases, people can also become infected with the avian influenza virus. To date, this has only happened following direct and intensive contact with infected birds. There is a small risk that the HPAI virus may mutate in an infected person into a variant that can be transmitted from person to person. That could lead to a flu pandemic.

Rules concerning the control of HPAI in poultry are laid down in European Regulation 2020/687.[7] In the case of infections with certain types of LPAI (which could potentially mutate into HPAI), people may also decide to cull flocks in areas with a lot of poultry farms. When a suspected HPAI infection is found, it triggers a process of clinical assessment, diagnosis and farm closure. If a positive diagnosis is made, the animals on the farm will be culled. The various stages are set out in the avian influenza contingency plan:[8]

- A suspected case is usually reported by the animal owner, the veterinarian or a diagnostic laboratory with a pathology facility;
- Following this report, an expert team will visit the farm. This team will consist of three veterinarians: one from the NVWA, one from Royal GD Animal Health Service and the practising veterinarian for the affected farm.
- Based on the clinical symptoms, the team may decide to take samples and close the farm.
- Wageningen Bioveterinary Research (WBVR) will test the samples for HPAI.
- If a positive diagnosis is made, the NVWA will carry out culling on the farm in accordance with a set protocol.
- The chickens will be killed by gassing the entire shed with $CO_2$. In doctoral research completed in 2006, Gerritzen concluded that this is a swift, safe method with minimal impact on animal welfare.[9] Compared to capture and gassing in separate gas containers, gassing in the shed results in less stress for the animals and less exposure of workers to a possible zoonotic virus.
- The destruction company Rendac will transport the carcasses in sealed equipment to a destruction facility. The farm will then be cleaned and disinfected.

- A protection zone and a surveillance zone will be designated within a radius of 3 and 10 kilometres respectively around the farm. For farms in the surveillance zone, restrictive measures will apply to the transport of animals and animal products. Farms in the protection zone will be subject to a transport ban and must be tested for HPAI. They will be assessed daily on the basis of centrally compiled farm data and clinical symptoms. In the Netherlands, preventative culling on farms close to infected farms used to occur almost as a matter of course. These days, the preference is to wait for the lab results and use scientific risk analysis and calculations (with disease spread models) to determine whether culling should be carried out. Apart from culling, the policy includes additional measures such as emergency vaccination, transport bans and intensified hygiene measures on farms. From the perspective of ensuring effective control, these measures may be applied in specific situations and circumstances.
- Repopulation of the sheds can take place once the region has been infection free for a specific period.

### *Alternatives to culling*

The main alternatives to culling are prevention through strict hygiene protocols and preventing introduction from wild bird populations. Significant preventative steps have been made in recent decades by improving farm hygiene and increasing the professionalism of poultry farmers.[10] Nevertheless, in 2017, the European Food Safety Authority (EFSA) stated that further hygiene improvements on poultry farms are important for preventing the introduction of AI.[11] Nowadays, with improved monitoring and a rapid response to infections in captive poultry, outbreaks are quickly detected and limited in terms of scale to a small number of affected farms. It is possible to limit the culling of non-infected flocks by placing farms in a one-kilometre radius in quarantine and conducting intensive monitoring for clinical symptoms.

To limit the impact of HPAI infections, it is important to keep a strong focus on preventing introduction from wild bird populations. Monitoring in wild bird populations could be improved so that it quickly becomes clear where the virus is circulating, for example by carrying out more monitoring in living populations, setting up a network of monitoring sites and expanding the exchange of data between Western European countries. It is also necessary to manage the risk of contact between wild and captive bird populations and reduce it where required. According to the contingency plan, the responsible official can respond to a threat of HPAI by imposing an indoor confinement requirement.[12,13]This is regarded as a key measure for preventing the transmission of HPAI from wild birds to poultry with outdoor access. Of course, keeping poultry confined has animal welfare consequences, because the animals have less room to move around indoors. In the future, when creating new nature reserves and livestock farms, spatial planners should take into account the possible introduction of infectious diseases from wild bird populations, for example by not positioning new poultry farms near wetland areas or not creating new wetland reserves in areas with a lot of poultry farms. This was also recommended in a report about zoonotic diseases that was released in 2021.[14] Reducing the density of poultry farms (i.e. ensuring a greater distance between individual farms) might also decrease the risk of spread.

Preventative vaccination of captive animals might also offer an alternative to culling. In the past, the EU had a non-vaccination policy for AI, FMD and CSF, because the advantages of preventative vaccination did not outweigh the disadvantages of export restrictions on food products from vaccinated animals. The European Animal Health Regulation (Regulation (EU) 2016/429)[3] provides for the possibility of vaccination against diseases subject to a control obligation, such as HPAI, both as a preventative measure and as a control measure. More than 20 years ago, this policy was relaxed in response to public opposition to mass culling. Emergency vaccinations are now permitted under strict conditions. In practical terms, vaccinations are mainly arranged in

response to FMD and CSF outbreaks. Vaccinations against AI are currently (in early 2022) not used to respond to outbreaks. The conditions for vaccination against AI are currently being worked out by the EU in coordination with the Member States, for incorporation into future regulations.[15] Member States can apply to the EU for an exemption to pre-emptively vaccinate animals against AI. This has been done in the past for zoos, hobby poultry farmers and commercial poultry farms with outdoor access. Zoos have frequently used this option, but commercial poultry farms have done so only rarely. In the Netherlands, preparations are being made for an experiment in which AI vaccines are given in a controlled setting.[16] In addition to vaccination of captive poultry, vaccination of resident wild bird populations is also worth considering. The RDA recommends starting further research in this area (see 5.4).

Finally, in terms of prevention, selection based on susceptibility to infection could also be considered. Different types of birds have different levels of susceptibility to infectious diseases and exhibit different clinical symptoms.[17] Ducks, for example, generally show fewer or no clinical symptoms when they become infected with avian influenza viruses. Genetic differences in susceptibility to infection and severity of symptoms can offer the possibility of increasing the resistance of poultry through selection.

## 5.3 Minks and the coronavirus

Although a ban on the breeding of fur animals was scheduled for January 2024, when the SARS-CoV-2 virus reached our country in 2020, the Netherlands still had more than a hundred mink farms. These fur animals proved to be susceptible to the coronavirus. Minks were infected by people on several farms. On two farms, it is likely that mink-to-human infections occurred after introduction to the farm.[18] On 20 May 2020, SARS-CoV-2 was therefore designated as an infectious animal disease subject to a reporting obligation. Shortly afterwards, the Ministries of Health, Welfare and Sport and Agriculture, Nature and Food Quality decided to cull the minks on the infected farms.[18] This created the opportunity to take appropriate action, including a transport ban and the killing of sick animals and those suspected to be sick, under Section 22 of the Animal Health and Welfare Act.

Next, all mink farms in the Netherlands underwent one-off serological screening, and an early-warning system with the following elements was imposed:

- Each week, minks that died on a farm underwent PCR testing for SARS-CoV-2.
- If the PCR test was positive, confirmation would be carried out by WBVR.
- If a coronavirus infection was confirmed, the Ministry of Agriculture, Nature and Food Quality would issue a decision mandating culling on the farm.
- Under the supervision of the NVWA, mink farm staff would conduct the culling by gassing the minks in 'gas boxes' filled with carbon monoxide. The farm would then be cleaned and disinfected;
- The destruction company Rendac transported the carcasses in sealed equipment to the destruction facility.

On the advice of the *Zoonosis outbreak management team*, the government ultimately decided to bring forward the fur farming ban that had been scheduled for 2024.[18] Since 8 January 2021, keeping minks for fur production has been prohibited. Accordingly, all Dutch mink farms have been empty since early December 2020. Minks on infected farms were culled, while non-infected farms were shut down after the last animals were killed for their fur.

## 5.4 Reflection and recommendations

In the Netherlands, production animals are killed if they present a danger to the health of other animals (such as AI, CSF and FMD), a danger to public health (such as fipronil and Q fever) or a combination of the two (SARS-CoV-2 and HPAI). The swift culling of infected flocks or herds is desirable from an animal welfare perspective if animals are affected by the disease. During the fipronil affair, the culling of the animals was not legally required. But because eggs and meat could no longer be sold for human consumption for public health reasons, many farmers decided to cull their animals to prevent significant financial loss.

As we have discussed in relation to the examples in this chapter, the laws and procedures around culling are extensively prescribed in regulations and contingency plans. There is also a permanent welfare committee that monitors animal welfare during culling. Quickly killing animals in infected populations avoids a number of animal welfare issues. But the process of culling can also involve animal welfare complications and risks. In spite of all the measures put in place, culling causes stress and anxiety for the animals concerned. Accordingly, the welfare committee and other experts are continually engaged in monitoring and improving killing methods. In addition, other aspects of animal disease control continue to undergo development, such as culling no longer being required by default in the event of an HPAI infection and the development of new AI vaccines. These developments are occurring at a rapid pace, and many of the recommendations made by the RDA in 2018 concerning policies on culling and vaccination in relation to animal disease outbreaks[19] have already been actioned.

Despite this, the killing of large numbers of healthy animals remains a sensitive issue, particularly in the media, and one that tends to give rise to opposition. Support for the culling of animals partly depends on the magnitude of the threat to humans. A threat to public health is the most accepted reason for culling. The media regularly question the extent to which the killing methods used are animal-friendly and effective. In recent years, for example, video footage has appeared of animals being killed with carbon monoxide or carbon dioxide in gas boxes, causing quite a commotion.[20] The way the welfare committee operates has also been criticised. This illustrates the fact that, although procedures are set out in contingency plans following discussions with stakeholders, this does not guarantee public support when the time comes for culling to actually be carried out. Transparent communication and an open dialogue during 'peacetime' are therefore required.

With regard to FMD, introduction from other captive animals or animal products is the main cause of infection transmission in the Netherlands and Europe. For AI, CSF and African swine fever, non-captive animal populations are the key source of infection. This means that more attention should be given to interactions and opportunities for contact between captive and wild animal populations. In addition, the introduction of infectious diseases from the human population to animal populations appears to play a role. The use of vaccination in captive – and potentially also in wild – animal populations deserves attention. Vaccination could alter the infection dynamics in populations. In many cases, vaccination reduces the severity of clinical symptoms and substantially improves the welfare of the infected animals. However, the key reason to use vaccination for these infectious diseases is to reduce transmission. Vaccination should lead to an R number of less than 1, both within and between farms. (The R number, or reproduction number, is the number of animals that are infected by an individual.) At present (in 2022), research is being conducted into the effectiveness of AI vaccines in reducing transmission.

## Summary of the RDA's key recommendations:

1) Continually invest in preventing the introduction and spread of infectious diseases. In doing so, ensure that the measures taken are adapted to the situation at hand. Because of the changing epidemiology of bird flu, it is now necessary to actively prevent introduction from wild bird populations, for example. The same applies to the introduction of African swine fever from wild boar populations to pig farms.
2) Pay greater attention in research and policymaking to interactions and opportunities for contact between captive and wild animal populations. Wild animal populations are increasingly found to be the source of outbreaks of infections in populations of captive animals.
3) In the near future, implement vaccination strategies in captive animal populations and potentially also in wild animal populations. Vaccination is particularly valuable for altering the infection dynamics in populations (lowering the R number) and in many cases can also reduce the severity of clinical symptoms and thus improve the welfare of the animals.
4) Through scientific research, acquire knowledge about the genetic basis of differences in susceptibility to infection and disease progression between and within various types of wild birds and poultry. In the future, it is possible that this knowledge could be used to breed animals that are more resistant to infectious diseases such as bird flu. This could form part of the solution to many issues in the area of animal welfare and animal health.

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# 6. Killing for human use

***Animals killed for human use make up by far the largest category in this advisory report. The topic ranges from the killing of production animals, fish and game for consumption to the killing of laboratory animals for scientific or toxicology research. Although most Dutch people consider the killing of animals for human use to be legitimate, discussions often arise in society about whether we actually should be killing animals for this purpose and about the way in which the killing is carried out. Because of the scale of this topic, in this chapter, the RDA will concentrate on a sub-topic, namely the welfare of production animals on the final day of their lives. Through innovations and investments by the companies concerned, part of the sector has been able to implement improvements in the area of animal welfare, but other parts of the sector have not. The RDA notes that further improvements are both possible and desirable in the areas of collaboration and information sharing, research and innovation, and regulation and supervision.***

*We define 'animals killed for human use' as animals in respect of which it was already decided before they were bred that they would be killed for human use. In this chapter, we focus on the killing of production animals in the livestock farming sector, particularly poultry and pigs (due to the larger numbers of animals slaughtered in these sectors). In text boxes, we briefly mention a number of issues that play a role in relation to fish, laboratory animals and insects.*

## 6.1 The final day

When production animals are born, it has already been decided that they will be killed. This applies, for instance, to pigs, chickens and cattle kept for meat production, but also to dairy cattle and laying hens kept for milk and egg production. In this chapter, we will not go into the arguments supporting the decision to kill (as we did in some of the other chapters). We consider this a social reality: animals are going to be killed. A careful reflection on and discussion of the desirability of this situation would go beyond the scope and feasibility of this advisory report. Accordingly, in this chapter, we will focus on the welfare of production animals on the final day of their lives. To identify the issues involved, we conducted 14 interviews with a total of 19 people from the science community, government agencies, the business community and NGOs (see the Publication Details section). This chapter contains a variety of statements and observations based on these interviews, without referring to specific people.

According to Statistics Netherlands, every year in the Netherlands, 600 million chickens and other poultry, 16 million pigs and 3 million cows, calves and sheep are slaughtered for their meat.[1] The Dutch meat industry partly consists of internationally oriented companies. Most Dutch people like to eat meat, dairy and eggs and accept that animals will be killed for these products. In spite of this, there is growing public concern about the course of events on the final day of animals' lives, including transport to the slaughterhouse and the use of stunning in the slaughter of animals.

Some companies in the industry have innovated and invested in adjustments that promote animal welfare. For example, they lower the stress levels of pigs with certain techniques or render poultry unconscious with a new stunning technique that uses $CO_2$, so that the animals no longer have to be taken out of the crates (see 6.5). At the same time, however, the RDA observes that other companies in the industry either *cannot* or *will not* invest and appear to have little regard for animal welfare; furthermore, it seems that little effort has been made to raise the issue with these companies.

## 6.2 From farm to slaughterhouse

In the past, it was usual for animals to be slaughtered on the farm. In 2022, that is extremely rare. These days, almost all slaughtering in the Netherlands takes place in slaughterhouses, where regulations make it easier to guarantee food safety. In 2018, the Netherlands had 209 approved slaughterhouses, of which 179 were red meat slaughterhouses (for cattle, pigs, sheep, goats and horses) and 30 were slaughterhouses for poultry.[2] In most sectors, the journey from farm to slaughterhouse comprises the following steps: collection of the animals, loading, transport (potentially via an assembly centre), arrival at the slaughterhouse, unloading, waiting, moving, stunning and bleeding. Larger animals such as pigs and cattle must walk into and out of the lorries on their own. Smaller animals such as chickens and rabbits are transported in containers. This means they must first be caught on the farm by a catching team and placed in the containers.

### *Legislation and regulations*

The journey from farm to slaughterhouse is subject to a wide range of laws and regulations, to safeguard animal welfare, food safety and the working conditions of the workers involved (see Table 1 for the rules relating to animal welfare). For animal welfare and food safety, the NVWA is the key supervisory body. The NVWA is also responsible for the live (*ante mortem*) inspection and the carcass (*post mortem*) inspection. The live inspection of poultry and rabbits can be performed at the farm, with all animals in the flock or group being inspected at once. For live inspections of red meat animals, an NVWA veterinarian inspects each animal individually. The main purpose of this inspection is to determine whether the animals are fit for slaughter (from both a food safety and animal health perspective).

**Table 1.** Legal basis for animal welfare requirements during the supply, unloading, moving, lairaging, restraining, stunning and killing of ungulates and farmed game in a slaughterhouse (Source: NVWA[3]).

| **EU legislation** |
|---|
| • Council Regulation (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport and related operations and amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97;<br>• Council Regulation (EC) No 1099/2009 of 24 December 2009 on the protection of animals at the time of killing;<br>• Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs;<br>• Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food of animal origin;<br>• Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products, amending Regulations (EC) No 999/2001, (EC) No 396/2005, (EC) No 1069/2009, (EC) No 1107/2009, (EU) No 1151/2012, (EU) No 652/2014, (EU) 2016/429 and (EU) 2016/2031 of the European Parliament and of the Council, Council Regulations (EC) No 1/2005 and (EC) No 1099/2009 and Council Directives 98/58/EC, 1999/74/EC, 2007/43/EC, 2008/119/EC and 2008/120/EC, and repealing Regulations (EC) No 854/2004 and (EC) No 882/2004 of the European Parliament and of the Council, Council Directives 89/608/EEC, 89/662/EEC, 90/425/EEC, 91/496/EEC, 96/23/EC, 96/93/EC and 97/78/EC and Council Decision 92/438/EEC;<br>• Commission Implementing Regulation (EU) 2019/627 of 15 March 2019 laying down uniform practical arrangements for the performance of official controls on products of animal origin intended for human consumption in accordance with Regulation (EU) 2017/625 of the European Parliament and of the Council and amending Commission Regulation (EC) No 2074/2005 as regards official controls. |
| **Dutch legislation** |
| • Animals Act (*Wet dieren*);<br>• Animal Keepers Decree and Regulation (*Besluit en Regeling houders van dieren*);<br>• Enforcement and Other Matters (Animals Act) Decree and Regulation (*Besluit en Regeling handhaving en overige zaken Wet dieren*);<br>• Animal Welfare Policy Rules 2009 (*Beleidsregels dierenwelzijn 2009*). |

After the animals are killed, inspection assistants inspect the carcass and all organs. In poultry slaughterhouses, this is done by workers employed by the slaughterhouse or external inspectors brought in by the slaughterhouse. In red meat slaughterhouses, the independent organisation KDS (Animal Sector Quality Inspection Foundation) performs the *post mortem* inspection, under the constant supervision and responsibility of an NVWA veterinarian. This *post mortem* inspection focuses on food safety, animal health and the hygiene of the slaughter process. In large and medium-sized slaughterhouses, a veterinarian from the NVWA is legally required to be present. In 2018, this was the case for 23 of the 179 red meat slaughterhouses. Whether a slaughterhouse is under permanent supervision depends on several factors. The most important factor is the slaughter volume; other factors include whether the slaughterhouse slaughters animals on every day of the week and the belt speed. Between them, the slaughterhouses subject to permanent supervision slaughter approximately 90 percent of the red meat animals in the Netherlands.[4] In addition, large and medium-sized slaughterhouses employ at least one in-house animal welfare officer to monitor animal welfare.

### *Ritual slaughter*

The laws and regulations prescribe that, in principle, animals should be stunned before being killed. The killing without stunning of sheep, goats, cattle and poultry in ritual slaughter relates to a very specific situation with corresponding considerations. The Dutch government and the religious communities concerned signed a covenant in 2012,[5] which was reviewed in 2021. The covenant and an addendum[6] were incorporated into the Animal Keepers Decree[7] in 2018. With the exception of stunning, ritual slaughter must comply with the normal laws and regulations for the entire journey from farm to slaughterhouse. Accordingly, we will not discuss ritual slaughter as a separate topic in this advisory report.

The European Court of Justice recently ruled that EU Member States are allowed to prohibit or place restrictions on killing without stunning.[8] The increase in public attention on animal welfare means that a reassessment of the practice of killing without stunning is required. Until the slaughtering of non-stunned animals is prohibited in the Netherlands, the preference is for reversible stunning, or alternatively stunning immediately after the cutting of the animal, and to limit the number of animals slaughtered without being stunned to what is required for the religious communities concerned.

### *Pigs and chickens*

Pigs and chickens make up the majority of the animals killed in the Netherlands for meat production. Detailed laws and regulations are in place, and these sectors are also working on additional protocols. However, the efforts made to develop and implement these protocols vary significantly between establishments. In recent years, some establishments in these sectors have also invested in acquiring knowledge and skills with regard to animal welfare on the final day of life. This knowledge enables them to analyse data. An example of this is a camera system that has been developed for better monitoring of animal welfare in slaughterhouses.[9] However, such developments are far from being commonplace in these sectors.

With regard to pigs and chickens, the EFSA recently published four reports about welfare in European slaughterhouses.[10-13] Table 2 provides a summary of the key risks identified in these reports. These are the most common risks across Europe; they do not present a risk to the same degree in every country. In the Netherlands, the sectors have been working for some time with various stakeholders on reducing these risks. In a number of establishments, this has led to demonstrable improvements in the welfare of production animals on the final day of their lives, such as the multi-stage $CO_2$

stunning system for poultry that we will discuss in 6.5. These establishments, which are at the cutting edge of the Dutch slaughterhouse chain, can also be considered pioneers in the area of animal welfare at the European level. With respect to a number of the points in Table 2, there is still clearly room for improvement in the Netherlands – sometimes throughout the sector, sometimes for specific establishments. We will discuss some of these points in the remainder of this chapter.

**Table 2**. Most common risk areas in relation to animal welfare for pigs and poultry in European slaughterhouses, according to the European Food Safety Authority (EFSA).*

| | Hazard identification for slaughter | |
|---|---|---|
| **Phase** | **Pigs** | **Poultry** |
| Arrival | • prolonged waiting time to unloading;<br>• extreme weather conditions;<br>• water deprivation too long. | • prolonged waiting time to unloading;<br>• poor environmental temperature;<br>• overstocking (density). |
| Unloading | • improper design of unloading area;<br>• improper handling;<br>• animal not fit for transport. | • rough handling leading to fear and physical injuries (personnel);<br>• container tilting and birds bunching. |
| Lairage | • water deprivation too long;<br>• mixing of unfamiliar animals;<br>• inappropriate design of the lairage area. | • poor temperature (environment);<br>• poor air movement, ventilation;<br>• poor humidity. |
| Handling and moving of animals | • inappropriate handling;<br>• poor daily management of facility (slippery, dirty, wet);<br>• inappropriate design of gateway. | • rough (inappropriate) handling during removal from the crates;<br>• tipping or dumping on conveyors. |
| Restraint | • inappropriate restraint causing injury;<br>• inappropriate design of restraint for animal (too large/too small);<br>• inappropriate handling. | • improper shackle (resulting in compression of the legs);<br>• improper shackling. |
| Stunning (CAS) | • inappropriate parameters;<br>• time of exposure to gas too short;<br>• inappropriate lowering procedure of crates. | • different size of animals resulting in inefficient stunning;<br>• lack/poor calibration of monitors. |
| Stunning (electrical) | • inappropriate parameters;<br>• wrong positioning of the stunner/tongs;<br>• improper maintenance of the electrical equipment;<br>• poor electrical contact. | • different size of animals resulting in inefficient stunning;<br>• lack/poor calibration of monitors;<br>• pre-stun shocks. |
| Bleeding | • stun-stick interval too long;<br>• poor sticking;<br>• entering the scalding tank alive. | • poor neck cutting practice;<br>• neck cutting conscious birds;<br>• prolonged stun-to-neck cutting interval. |

### *Cows, calves, horses, sheep, goats, ducks, turkeys and rabbits*

In the Netherlands, meat is also produced from animals other than pigs and chickens, such as cows, calves, horses, sheep, goats, ducks, turkeys and rabbits. In absolute terms, these categories involve smaller numbers of animals than for chickens and pigs. In fact, there is no longer a slaughterhouse in the Netherlands for turkeys and rabbits. These animals are occasionally slaughtered at other slaughterhouses.[14] Each group of animals has specific problems with regard to welfare on the final day of life, deserving separate attention. For cattle, for example, there is a debate about whether the animals should be restrained before stunning. Some of these animal groups are subject to fewer laws and regulations than others, which can lead to irregularities. The EFSA recently published reports on the welfare of cattle[15] and sheep and goats[16] in European slaughterhouses.

## 6.3 People, systems and responsibilities

When we talk about animals that are used for human purposes, discussions often focus on animal husbandry systems, which have partnerships within the production chain and fixed routines and procedures. Part of the reason for those routines and procedures is to improve animal welfare. For example, in the Netherlands, all pig and poultry slaughterhouses and production chains must operate in accordance with statutory animal welfare protocols.[3,17] Key elements of correct compliance with these protocols include:

- appropriate design of the shed and the stunning and bleeding room in the slaughterhouse;
- properly functioning equipment for the stunning and killing of animals, including properly functioning mobile equipment for the stunning and killing of animals in an emergency and sufficient supplies of functioning back-up equipment;
- sufficient training and regular refresher training of workers who deal with animals;
- appointment of responsible animal welfare officers to continuously safeguard animal welfare in the slaughterhouse (in accordance with EU legislation, these officers are employed by the slaughterhouse);
- supervision of all aspects of animal welfare by an NVWA veterinarian.

In spite of these protocols, the NVWA still regularly observes infringements in establishments.[18] Protocols with established routines and procedures are important, but they must also be capable of adjustment if that would lead to improvements. Our knowledge of the behaviour and needs of animals is continually developing. Opinions in society and ICT and technological possibilities are also changing.

For the future, it is essential to continue to focus on education and training of slaughterhouse workers. After all, the amount of distress that a production animal experiences on its final day is influenced by the professionalism of the workers. In recent studies on the slaughter of pigs,[13] poultry[10] and cattle,[15] the EFSA concluded that the attitudes of the workers constituted the biggest risk of animal welfare being compromised (in 29 of the 30 risk areas identified for pigs, 29 of the 35 risk areas for poultry and 39 of the 40 risk areas for cattle). Working on a daily basis with animals that are being killed can make workers mentally numb. The treatment of animals is a fundamental concern, but it may also be influenced by the system within which workers have to operate. The time available to perform a certain task may be too short, fines for animal welfare infringements may be too low to be effective and the culture at the establishment may not always place sufficient value on the respectful treatment of animals.

The state and design of the buildings at older slaughterhouses may also need attention. We now know a lot about the ideal design of a slaughterhouse from the perspective of animal welfare, such as space for the animals to walk about by themselves, lie down and move out of the way; few disturbing noises, a minimum of glare and similar effects; no delays; and clear transit routes without sharp corners.[19] In an existing building, it can be difficult to adequately meet these requirements.

Through protocols and partnerships within the production chain, many parties are involved in questions about the killing of production animals. This gives rise to systemic responsibility: the responsibilities cannot be reduced to the individual responsibility of the partners in the production chain. Each party involved in the chain that works with animals has its own specific responsibilities, but those separate roles and responsibilities must be interconnected. Partners in the production chain can strengthen each other through collaboration. The same applies to chain partners that are further removed from the moment of death, such as retailers. In many sectors,

such collaboration is already taking place, but it could certainly be improved, particularly in terms of sharing information within the chain.

In addition, on the final day of production animals' lives, the responsibility for treating individual animals appropriately lies with whoever is in charge of the animal at the time. The animal owner is responsible for preparing the animal appropriately for transport to the slaughterhouse. The transporter and the driver are responsible for transporting the animal appropriately. The slaughterhouse is responsible for receiving the animal correctly and treating it properly. Moreover, the slaughterhouse is also responsible for carrying out the stunning and killing of the animal in a humane way. This applies irrespective of the presence of the authorities for inspection and supervision purposes. Developments in ICT and technology have created new possibilities to distribute these responsibilities differently within the production chain.

## 6.4 Transport

During transport, there is a substantial risk of animal welfare being compromised. It is almost impossible to transport animals that are not accustomed to being transported without compromising their welfare. The biggest problems arise during long-distance transport and transport at high ambient temperatures.

### *Long-distance transport*

The number of slaughterhouses in the Netherlands has decreased in recent decades, so that animals sometimes have to be transported over greater distances. Transport within the Netherlands or just over the border generally involves distances of less than a hundred kilometres. The biggest problems arise during long-distance transport abroad, transport at high ambient temperatures and transport of weaker animals such as old dairy cows. In some cases, Dutch production animals are transported to slaughterhouses abroad, mostly because of lower slaughtering costs in other countries. This is mainly done via assembly centres, which can significantly increase the transport time. For some animal species (such as laying hens), slaughter in another country (such as Poland) is the rule rather than the exception.

As well as the distance, the time required and the fitness to travel determine the burden that long-distance transport places on the animal. The transport of production animals has to comply with a large number of requirements, including ones relating to animal welfare. A number of these are only formulated as a minimum requirement, such as headroom during transport. There are also requirements that are not always in the interests of the animals. One example is the Driving Hours Act, which dictates that lorry drivers must rest for 45 minutes after 4.5 hours of uninterrupted driving. This means the animals have to spend longer waiting in the lorry. In practice, the fines for breaching this Act are higher than the fines imposed by the NVWA, so that drivers are more likely to choose to comply with the Driving Hours Act.

### *High-temperature transport*

Because of climate change, high ambient temperatures are going to be increasingly common. This will require outstanding transport facilities. In the Netherlands, a protocol is applied that dictates that the transport of animals at an ambient temperature of 27°C or above is subject to additional precautions, while transport at 35°C or above is not permitted. Poultry slaughterhouses have not yet signed up to this protocol. Such restrictions do not apply in other countries. It is important to harmonise these rules across Europe, so that businesses will less readily choose to transport animals across the border to a country with more lenient rules. There is also room for

debate about whether the limits of 27°C and 35°C are too high, since animals can experience heat-related issues even at lower temperatures.

### *Fitness to travel*

One specific problem is the transporting of animals that are not fit for transport. This aspect is monitored by both the slaughterhouse and the NVWA veterinary inspector. If this regulation is breached, the NVWA will always draw up a report on its findings. In recent years, disagreements have regularly arisen with regard to the fitness for transport assessment.[20] Such disagreements should now be a thing of the past, because on 14 October 2021, the EU guidelines set a fitness for transport standard for both domestic and export transport.[21]

Some farmers' groups and social organisations advocate slaughter on the farm as an alternative to live transport.[22] During the interviews that were conducted for this advisory report, interviewees repeatedly recommended that the Council investigate the possibility of slaughter/killing on the farm. This would render the transport of live animals to a slaughterhouse redundant. In this situation, there would have to be a 'killing unit' on each livestock farm, and/or mobile killing units or mobile slaughterhouses could be used.[23] This would obviously require major changes to the system, with new procedures needing to be developed to ensure food safety and prevent the spread of animal diseases, as well as regulations making it possible to slaughter multiple animals at the farm.[24]

## 6.5 Stunning

In the Netherlands, the number of animals involved is the main factor determining the method of stunning. For small numbers, electrical stunning (pigs) or a captive bolt pistol (pigs and cattle) is used. These methods are reasonably fast and painless, provided they are administered correctly, with appropriate, properly functioning equipment. In many European countries, chickens are also stunned electrically, using the electrical waterbath stunning method. Sometimes, chickens do not pass through the water bath, or are insufficiently stunned, and are therefore cut and bled while conscious. In the Netherlands, this system is only used around 14 percent of the time; it has largely been phased out for animal welfare reasons.

Because of the large numbers involved, in the Netherlands, pigs and chickens are mainly rendered unconscious through $CO_2$ stunning. With multi-stage $CO_2$ stunning, chickens lose consciousness fairly quickly. However, it should be noted that there are two systems. In one system, the chickens are stunned in the crate and removed afterwards. In the other system, the chickens are removed from the crate first and then stunned. Tipping the crates to get the chickens out can cause stress and injury. Accordingly, the latter system should be phased out.

In pigs, high concentrations of $CO_2$ stimulate the mucous membranes. This causes an autonomous reflex that makes the animal breathe more deeply, which in turn leads the animal to lose consciousness. This is a form of irreversible stunning. Public and professional criticism of the way in which pigs are currently stunned is growing, particularly with regard to the phase leading up to the loss of consciousness. In this phase, irritation of the mucous membranes makes breathing painful, and the pigs experience respiratory distress.[25] There is a strong need to make this process more animal-friendly or to develop an alternative method. A great deal of research has been done over the past 30 years into alternative methods of stunning, but it has not produced many new avenues. Alternatives such as stunning with inert gases and nitrogen have been around for a while but do not offer a substantial improvement compared to $CO_2$.[25] The use of low atmospheric

pressure stunning in poultry appears promising. Gradually reducing the air pressure lowers the oxygen concentration. This is comparable to stunning using a gas mixture with an increasing $CO_2$ content. However, this method does not appear to offer an improvement for pigs.

In the search for alternatives, as well as animal-friendliness, the effectiveness of the stunning must be considered. After all, if an animal-friendly method frequently fails to work, on balance, there is more animal suffering than with a less animal-friendly method that nearly always works perfectly. For example, pigs lose consciousness more quickly with electrical stunning but can experience more stress prior to the stunning. That may be because, in order to be stunned, they have to be removed from the group (which pigs do not like) or because workers respond with animal-unfriendly methods to drive pigs in the desired direction. Moreover, the percentage of animals that are not completely stunned with electrical stunning is higher than for stunning with $CO_2$. Different stunning methods are thus associated with their own forms of distress, which means comparing one method with another will always give rise to debate.

## 6.6 Technological innovation and data

Better meat quality and better animal welfare often go hand in hand.[26] Accordingly, in the world of intensive livestock farming and slaughterhouses, research is regularly conducted into new systems and innovations, partly to improve animal welfare. To research the possibility of major changes in the slaughterhouse chain, a substantial amount of work would be required from the scientific and business communities. All processes would have to be reviewed, including their connections to each other and in comparison to the European context.

For poultry, for example, a comprehensive modular system has been developed, based on a critical examination of the entire chain from farm to slaughterhouse. One of the biggest problems in the poultry chain is that wings and legs are regularly broken when catching teams catch the birds by hand and place them in transport containers.[27-29] This new system therefore introduces larger transport containers with wider openings. In addition, the animals remain in the same containers all the way to the slaughterhouse and after arrival, so they are handled less. Switching to this system would require a significant investment, which smaller slaughterhouses might find difficult to achieve. In this regard, therefore, a large scale can sometimes work to the advantage of animal welfare. Holding animals upright during capture (instead of holding them by the legs) can also lead to less stress and fewer injuries.

These days, sensors can be used to measure the health status of individual animals.[30] In the future, technological innovations may increasingly offer opportunities to improve the welfare of individual animals during transport and stunning. However, it is possible that such innovations will only be able to be implemented where large numbers of animals are involved, due to the cost and complexity of the technology. Here again, we can see that a large scale can work to the advantage of animal welfare, although technology may also quickly become cheaper.

In recent years, slaughterhouses have been collecting more and more data on factors that affect meat quality at the level of individual animals. These data could also be used to monitor and improve animal welfare in the journey from farm to slaughterhouse. As the supervisory authority, the NVWA has access to these data. Camera images are also used to perform a structural analysis of animal welfare risks in slaughterhouses. In the future, data will increasingly drive business processes and could help achieve qualitative progress. That will require a flexible working relationship between the supervisory authority and slaughterhouses.

## 6.7 Reflection and recommendations

Most Dutch people like to eat meat, dairy and eggs. These animal products are a source of high-quality protein and micronutrients, and most people accept the killing of animals for this purpose. At the same time, there is increasing concern about the consequences of meat consumption for animal welfare, public health and the environment (including the climate), and discussions in society about whether people actually should be killing animals for this purpose are becoming more frequent. In the Netherlands, we are seeing an increase in the number of flexitarians, who have three or more days in the week where they do not eat meat.[31] Meanwhile, meat substitutes have become a serious commercial market.[32] In spite of this, meat consumption has so far remained fairly stable.[33,34] Because of the shifting position of animals in Dutch society, the RDA expects that this subject will increasingly be the subject of debate in the future. We discussed this point extensively in our advisory report 'The State of the Animal in the Netherlands'.[35]

The RDA notes that some slaughterhouses in the sector have made significant improvements in the area of animal welfare through innovation and investment. A number of slaughterhouses are also willing to take further steps and will continue to develop and invest. At the same time, however, the RDA has the impression that, for other slaughterhouses, this willingness is absent and animal welfare is of secondary importance. Accordingly, we believe that the best approach includes a combination of encouraging the development and implementation of changes that promote animal welfare and cracking down on animal welfare breaches.

The RDA has identified a number of possibilities for making further qualitative improvements in the slaughterhouse chain. When considering possible improvements, the central focus must be on both human actions and the needs of the individual animal:

- education and training of the workers involved: through training and education, workers can learn (or be reminded) how simple actions can improve animal welfare, such as moving pigs in small groups and avoiding sudden noises. At present, only a one-off animal welfare training course is legally required for workers dealing with live animals (within three months after starting work). Animal welfare certification could also be considered. Providing training in Dutch could also have a positive impact; at the moment, the workers involved cannot always understand each other because they do not all speak Dutch;
- training and acclimatisation of animals: like people, animals could also be trained, so that they are better able to cope with the stress of the slaughter day.[36]Animals on large livestock farms are less accustomed to direct contact with people. As a result, interaction with people on the slaughter day causes extra stress. For example, if the farmer walked through the stalls once a day, the animals would become more accustomed to people and be less stressed on the final day;
- establishing responsibilities and sending feedback to the farmer: during the journey from farm to slaughterhouse, responsibility for the animals is transferred. At the farm, the farmer is responsible. For poultry, the transporter or the slaughterhouse is responsible during transit. For pigs, responsibility shifts from the farmer to the slaughterhouse only once an NVWA inspector has carried out the live inspection at the slaughterhouse. Until then, responsibility remains with the farmer. The farmer can only raise concerns with the transporter if the farmer is subsequently informed that there were problems on arrival. Differences in the condition in which animals arrive at the slaughterhouse are often traced back to specific drivers, catching teams or farms. Because of the shift in responsibility, it is not always clear when animal welfare breaches occurred and whose fault it was. As a result, action is not always taken when required. Better feedback to farmers about the condition in which animals arrive at the slaughterhouse would also be desirable;

- clarifying the role of the NVWA: in the Netherlands, the NVWA monitors both food safety and the welfare of production animals. This dual role can function well if both food safety and animal welfare are prioritised and it is clear how existing legal standards should be met and interpreted;
- critically assessing laws and regulations: some laws and regulations are an obstacle to improving animal welfare (see, for example, the Driving Hours Act in 6.4). If a slaughterhouse has to carry out renovations to achieve improvements in animal welfare, the long lead time required to obtain a permit in the Netherlands can also cause delays. When laws and regulations are amended or specific conditions are set in the Netherlands, harmonisation with other European countries is desirable to maintain a level playing field. At the national level, quality labels with standards that go beyond the statutory requirements may pre-empt legislative changes.

The RDA notes that public attention mainly focuses on sectors in which large numbers of animals are killed, such as poultry and pigs. That is why these sectors played the leading role in this chapter. However, these sectors are by far the most consolidated in terms of knowledge and skills, at the scientific level (including EFSA research) and in terms of the legislative framework. In other sectors, such as cows and calves, rabbits, fish, turkeys and other small animal species, there are issues at play that are specific to those animal groups. In spite of the fact that these sectors (with the exception of the fisheries sector) involve smaller numbers of animals, more attention should be paid to them, in terms of both research and European and national laws and regulations.

It should be clear that there is quite a lot of ground that we did not cover in this chapter. Not only with regard to the smaller sectors, or to fisheries and fish farming, but also with regard to the level of depth with which we discussed the various subjects. There is a great deal of high-quality knowledge available about the possibilities for promoting the welfare of animals on the final day of their lives. The real question is how all parties in the slaughterhouse sector can apply this knowledge better and more quickly. Since there is too little space within the scope of this advisory report to fully explore this topic, a more in-depth follow-up on the killing of animals for human use may be appropriate.

## Summary of the RDA's key recommendations:

### *Collaboration and sharing*

1) Form a 'coalition of the willing' among parties in the production chain that are willing to work to improve animal welfare in the slaughterhouse sector. Incidentally, the RDA considers all parties in the production chain to be jointly responsible for the system, including meat processors, the retail sector, the public and the government.
2) The slaughterhouse sector should use knowledge and experience from the larger animal sectors to improve animal welfare in smaller animal sectors.
3) The Ministry of Agriculture, Nature and Food Quality should define clear professionalism requirements with regard to the safeguarding of animal welfare.

### *Research and innovation*

4) Draw up best practice documents for the various animal species on the treatment of animals during the journey from farm to slaughterhouse and ensure that workers are sufficiently trained so that the best practice is followed.
5) The government should initiate research into:
   a. new systems, giving consideration to the various components as well as the system as a whole. In the research, give priority to the tracking of individual animals;

b. the design of an animal-centric slaughter process, from farm to slaughterhouse, in which all steps and actions are designed from the perspective of the animals;
c. the possibility of harnessing the increasing availability of data in the world of slaughterhouses, to improve animal welfare as well as meat quality.

**6)** Continue researching improvements in stunning, taking the method, risk of failure and stress into consideration in advance.

### *Regulation and supervision*

**7)** In consultation with sector parties, the government should organise a clearer division of responsibilities in the chain, so that, at every moment and for every step, it is clear who is responsible for animal welfare.

**8)** Define clear and uniformly enforceable animal welfare criteria for NVWA supervision.

**9)** The Minister of Agriculture, Nature and Food Quality should explore the possibility of a ban on long-distance transport, starting with specific, vulnerable animal groups such as end-of-career dairy cows and laying hens. When assessing the burden that long-distance transport places on the animal, consider three factors: distance, duration and fitness to travel.

**10)** Resolve any friction in laws and regulations (see examples in this chapter), or create additional laws and regulations (for smaller sectors, for example), so that they are no longer detrimental to animal welfare. The RDA considers this to primarily be the responsibility of the government.

## The killing of fish for consumption – A brief overview of the animal welfare issues

- In 2009, the EFSA concluded that the concept of welfare is relevant to all vertebrates, including fish.[37] These animals are entitled to a certain degree of protection, as enshrined in the Treaty of Amsterdam[38] and, later, the Treaty of Lisbon.[39] We know less about fish than about mammals and birds, because much less research has been conducted into fish.[37] In 2017, in a report on animal consciousness, the EFSA suggested that fish should be treated in the same way as mammals and birds, in relation to consciousness and welfare.[40] Based on the precautionary principle (the principle that even the *chance* of animal suffering must be avoided wherever possible), there are therefore good arguments to minimise potential suffering.[41]
- Fish quality labels do not impose animal welfare requirements, for example with regard to slaughter techniques.
- A legal obligation to stun before killing only applies to eels; it is no longer permitted to place live eels in salt baths.[42]
- Negative impacts on the welfare of fish occur not only during slaughter, but also during catching. The time between catching and killing can be long, even in inland fisheries.
- Since 2015, North Sea fishermen are required to land certain bycatch.[43] They are no longer allowed to throw these animals back into the sea. This obligation means that all bycatch dies, whereas fish that are thrown back into the sea have a chance of survival.
- Recommendations from the 2018 RDA advisory report 'The welfare of fish':[44]
  - Ensure a greater focus on fish welfare in the policies of the government and other parties. The government could play a leading role here, but all parties should be involved.
  - Give more substance and meaning to the recognition of the intrinsic value of fish.
  - Instead of considering the welfare of fish by way of exception, consider it *by default* when making decisions that affect fish. In the Netherlands, various initiatives to directly or indirectly improve the welfare of fish exist in practice.
  - Explicitly protect the view that fish are sentient beings, and act in accordance with that view when catching, keeping and buying fish.

  - Veterinary and zootechnical knowledge about fish in the Netherlands is restricted to a limited number of people. Fish owners usually cannot seek assistance from an ordinary veterinarian. Given the large number of captive fish in the Netherlands, the RDA recommends that more veterinary and zootechnical knowledge be made available in practice.
- According to the 2021 report 'Catching Up – Fish Welfare in Wild Capture Fisheries' by the Eurogroup for Animals,[45] fish are able to feel and can experience pain and fear. The report describes the possible effects of catching methods, equipment and handling on the welfare of fish caught in the wild, such as exhaustion, injury, being squashed, suffocation and being killed while still conscious. The authors suggest that fishing methods be reconsidered with fish welfare in mind.

## The killing of laboratory animals for human use – A brief overview of the animal welfare issues

- Laboratory animals are usually killed to answer scientific questions. Within the scientific community, there is considerable debate about the extent to which the results in various model animals can be translated to humans.
- Public debate centres on the question of whether animal testing is even desirable, and if so, what animal species should be used. The situation and self-interest of humans play a significant role in the debate. For instance, there appeared to be significant support for animal testing for the purpose of developing SARS-CoV-2 vaccines.
- In '*Zo Doende 2019*', an annual overview of animal studies and laboratory animals, the NVWA reported on animal testing conducted by permit holders in 2019.[46]Unlike the EU, the Netherlands classifies the killing of animals exclusively for the use of their organs, tissues or bodily fluids as animal testing. In 2019, Dutch permit holders used 48,706 animals (10.9 percent) for this purpose. Compared to other forms of animal testing, relatively high numbers of fish, mice and rats were used for this purpose. 'Killing with no prior handling' is normally done for the purposes of fundamental scientific research and the protection of animal species.[47]

## The killing of insects for consumption by humans and animals – A brief overview of the animal welfare issues

- Insects are a potential source of high-quality protein for both humans and animals. In the Netherlands, the keeping of insects as production animals has only developed in the past 20 years. Consequently, the killing of insects generally falls outside of existing laws and regulations on the killing of production animals.
- In 2018, the RDA issued an advisory report on the insect sector.[47] In that report, the RDA observed that suffering cannot be incontrovertibly demonstrated by scientific means among most invertebrate species, but neither can it be conclusively disproved. This is why, based on the existing evidence, the most recent scientific reviews and reports give invertebrates the benefit of the doubt when it comes to pain and welfare and call for application of the precautionary principle. This means that humans should ensure the welfare of farmed invertebrates and minimise their suffering. Accordingly, there is justification for treating invertebrates as sentient beings by taking their potential suffering into consideration in the production process, for example when choosing a method of killing.

- In 2013, Hakman et al. produced a summary of the possible killing methods for insects.[48] In practice, freezing is the method most commonly used in the Netherlands. Boiling or blanching and crushing have also been found to be suitable, particularly since these methods work quickly and are reliable. Because insects are small, when using these methods correctly, it is possible to quickly heat up, cool down or crush the entire body.
- Insects are not usually stunned before being killed, since the speed of killing minimises the risk that they will suffer pain. However, there are insect farmers who chill the insects before crushing or freezing them, because they consider this more animal-friendly.[49]

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# 7. Conclusions and recommendations

***The ambition of this advisory report was to explore the full breadth of the theme of the killing of animals and shake off the embarrassment about this subject. The RDA wanted to bring nuance to the conversation about the killing of animals and give animal welfare a more central place in this conversation. Although we cannot offer simple solutions to the thorny issues we have raised, the advisory report can facilitate a broader debate on the killing of animals; it also provides concrete recommendations to improve animal welfare in relation to killing.***

In this advisory report, we have described the 'landscape of the killing of animals in the Netherlands', from the extermination of pests to putting down a beloved pet, large-scale killing of unwanted by-products of our animal husbandry systems, culling of production animals and slaughter for meat consumption. We saw that support for killing depends on many factors: Was it decided beforehand that the animal would be killed? What interests would be harmed if the animal was not killed? Is this a mass killing, or is only one animal involved? Are any realistic alternatives available? Will a humane killing method be used? Is there any supervision of this killing? Are animals being treated equally? But also: Is the animal concerned cuddly, and is the case receiving a lot of media attention?

Now that we have considered all of the examples in this advisory report side by side, the subject sometimes seems to produce more questions than answers, particularly when we look at animal welfare. How should we approach the enormous diversity in practices around the killing of animals? Is it a disgrace that some animals are euthanised with great care and compassion, while others are killed with seeming nonchalance and with a significant compromise of animal welfare? Or is it understandable that we have ended up in this situation, due to traditions, habits and the multitude of interests?

However, the fact that the killing of animals is a wide-ranging and uncomfortable topic that raises many questions is not the only conclusion we can draw at the end of this advisory report. In general terms, the RDA has concluded that a lot more goes on and more discussions take place than we see in the media or in public debate. Many methods have been developed to avoid the killing of animals, such as the focus on prevention in pest control. In addition, there is an increasing emphasis on animal welfare in developments around the killing of animals, such as with methods to kill vulnerable animals on the farm. Moreover, legislation and covenants already contain animal welfare requirements in relation to killing.

Secondly, it is striking that, for each of the five discussed reasons why animals are killed, whether the killing should be taken for granted is currently up for debate. That does not mean that the killing of animals is seen as problematic or undesirable in all situations, but rather that it is an action that requires more attention and discussion. This applies to discussions about both the action of killing and the existing systems and practices that result in animals being killed.

Thirdly, the advisory report shows that there is no easy solution to the discomfort in talking about the killing of animals or the embarrassment about the question of what is right in this context. Nevertheless, it is important that this discomfort does not stand in the way of developments in the areas of prevention, careful consideration and responsible execution. A broader debate is needed on this topic.

Finally, the RDA has concluded that the 'duty of care' does not only mean that humans have an obligation to ensure that animals have a decent life. It also means that humans have a responsibility to ensure that the killing of animals is reduced, all factors are carefully considered before a decision to kill is made and the killing is carried out at the right time and by qualified people.

## General recommendations

In line with the above conclusions and observations, the RDA has come up with four recommendations that are relevant to each of the reasons why animals are killed. For the operationalisation of this advice and for recommendations that specifically apply to the various reasons, we refer to Chapters 2 through 6 of this advisory report.

### *1. Aim for prevention: less killing*

The changing position of animals in society and the discomfort around the killing of animals are the reasons for our recommendation to aim for prevention. Look for ways to prevent the killing of animals. Can the killing be reduced by simple means?

For example, for animals that are causing a **nuisance** (Chapter 2), prevention can often provide a solution, by providing information to citizens or by implementing measures when new buildings are built or existing buildings are renovated. This is consistent with the current trend of integrated pest management. For animals that are **unwanted** (Chapter 4), it may be possible to prevent these animals from being born in the first place. Through scientific research, explore what adjustments in breeding are possible to address the issue of unwanted animals. Making changes to systems could also ensure that animals are no longer unwanted. To prevent **culling** (Chapter 5), ongoing investment is required in the prevention of the introduction and spread of infectious diseases. In doing so, ensure that the measures taken are adapted to the situation at hand. Vaccination or selection to exclude certain traits could also be an alternative to the culling of healthy production animals. Sometimes, the killing of animals is intrinsic to achieving a purpose, such as meat production or some forms of scientific research (Chapter 6). Here, it is important to have a discussion about alternatives to animal products and animal testing. However, such a discussion is outside the scope of this advisory report.

### *2. Careful consideration should form the basis for all decisions*

Recognition of the intrinsic value of animals means that killing should never be taken for granted. This applies to all situations in which animals are killed, from veterinarians, who face questions about euthanasia almost on a daily basis, to slaughterhouse workers, who kill animals every day. Each situation requires careful consideration, with an explicit statement of which interests are being taken into account and how animal welfare factors into the decision. This kind of careful consideration will help us to responsibly deal with questions about the killing of animals, to start and continue conversations about it and to continue to actively look for improvements in the area of animal welfare. An assessment framework may provide clarity in this process.

In the case of animals that are causing a **nuisance**, in Chapter 2, the RDA recommended further development of an assessment framework for professionals. Such development should draw on both theoretical and practical expertise and involve coordination with stakeholders. In the case of animals that are **suffering** (Chapter 3), it would be appropriate to update the assessment framework for the euthanasia of companion animals based on new insights. For production animals experiencing severe suffering, assessment frameworks should be developed for different animal species, based on the example of the decision support charts used in the pig farming industry.

### *3. Think in terms of animal welfare*

The killing of animals is usually part of a certain system. As a result, animals may be seen as unwanted, threatening, less cuddly or less worthy of protection. Those existing systems and frames can hamper efforts to reduce killing and safeguard animal welfare. It is beyond the scope of this advisory report to debate the existence of certain systems. However, it is both necessary and possible to think less in terms of the system and more from the perspective of the (individual) animal.

For example, in the case of the euthanasia of companion animals that are **suffering** (Chapter 3), developing communication materials and making them accessible could help owners recognise signs of suffering in their pets. For high-risk dogs that have been living in a shelter for a long time, the RDA recommends that a euthanasia committee be set up in each shelter to assess situations where putting an animal down is being considered due to non-physical suffering. For animals that are **unwanted** (Chapter 4), the thinking is too often from the perspective of the system. There should be a greater emphasis on the individual animal, and systems could perhaps be adjusted to reduce the killing of unwanted animals.

### *4. Make sure killing is carried out responsibly*

In all situations, it is important that killing be carried out with the greatest possible care by competent people with a professional attitude and with compassion for the animal. When choosing a method of killing, the priority should be ensuring it has the smallest possible negative impact on the people and animals concerned. In this regard, it is also important to investigate whether regulations are hindering the improvement of animal welfare with regard to killing, as in the case of conflicting laws.

In the case of killing for **human use** (Chapter 6), efforts could be made to train and educate the workers involved. With regard to the killing of animals that are **unwanted** (Chapter 4), better record-keeping and government supervision would be desirable in certain sectors. The RDA recommends that the government systematically investigate which sectors require greater regulation. Good record-keeping is also crucial for this.

These four recommendations concern everyone: all levels of government, sector parties, academia and citizens. We cannot conclude this advisory report with easy answers, but we have identified areas of tension and areas where interesting developments are being seen. In each chapter, we showed how progress can be made through viable measures to better safeguard animal welfare and help guide ongoing discussions in society about the killing of animals. We hope this advisory report will contribute to the public debate about the killing of animals. We look forward to continuing our dialogue with you in the process.

# Annex 1: Reflection by Bas Haring

***It is clear that we, as people, feel embarrassed about the fact that animals are killed for our benefit. The RDA also has the impression that this embarrassment is growing – at least in the Netherlands, where the RDA operates. But where exactly does this embarrassment come from? After the facts, figures and recommendations, it is now time for reflection.***

This advisory report has a clear, but rather unpleasant title: 'Shining a light on the killing of animals'. Every sensible person knows that animals are killed. The meat that we eat has to come from somewhere, as do our leather shoes. And when you think about it, you will also realise that egg-laying chickens and milk-producing cows are not kept alive until they die of natural causes. But the killing of animals rarely happens close to home; most people will swat and kill insects but would not dare kill larger animals. And almost no one ever sets foot inside a slaughterhouse.

The only time I have personally been confronted with the killing of animals in a fairly direct way was when Rendac came to my house to collect a dead pig. (I used to have two pigs, and now I only have one. The pig died from natural causes, by the way.) The invoice from Rendac came with a price list, which I read out of curiosity. Collecting pigs costs around 5 euros per pig, while a cow, which is obviously a bit bigger, was just under 40 euros. Minks were on the list (but not anymore, in 2022), but instead of being charged by item, they were charged by 750 litre 'tipping container'. Cost: 38.27 euros. I estimate that more than a thousand dead minks would fit in one of those containers. That is less than four cents per mink. Apparently, dead minks are counted by the thousand. Somehow, I found that confronting. It is also characteristic of the killing of animals. It happens in vast numbers, more or less hidden from view, and we do not feel entirely comfortable about it.

To some extent, that discomfort is circumvented in this advisory report. It contains facts – about the killing of animals; it describes processes – how animals are killed; and it makes recommendations – broken down by the different roles that animals play in our lives, such as production animal, wild animal and pet. But the discomfort we feel and our concerns about the legitimacy of killing animals linger: how justified is it for us to kill animals? When can we do it, and when is it unacceptable?

That is the question I would like to focus on in this reflection. I am writing this reflection in the first person. Not because these are my personal musings – although in a way, they are – but to take you, the reader, through my thought process. Plus, I just like writing in the first person. The starting point for this reflection is the introduction to the advisory report. There is something there that intrigues me:

> *Killing can be welfare neutral, but it is not without problems.*

Obviously, there is a problem with killing, but what is it? Where does that problem come from? That the killing of people is 'not without problems' seems obvious. But it may be useful to determine why the killing of people is problematic. It may tell us something about the killing of animals. If you want to know the answer to a question – in this case, the question: 'What is the problem with killing animals?' – it can sometimes be helpful to first answer another, related question. Such as the question: 'What is the problem with killing people?'

My approach therefore is as follows: I will suggest a number of possible answers to the question of why killing is problematic in general and then look at what each answer means for the killing of animals. This will ultimately allow me to say something about the legitimacy of killing animals. To give you some idea, the following answers will be covered. Killing is problematic:

- because death may be accompanied by suffering;
- because of the suffering of those left behind;
- because of the fear of death;
- because, by killing animals, we are placing ourselves above them;
- because everything that is alive has a right to continue living;
- because killing puts the value of life into perspective;
- because killing definitively puts an end to the potential of life.

I do not claim that this list is exhaustive, and thus the conclusions I draw may be rejected. This reflection is more the start of a search for the legitimacy of the killing, or not killing, of animals. Also, note that I did not include the answer 'because it is written' in the list. I do not find that to be a serious justification for a moral position. I will start quite simply with the first answer from the above list: killing is problematic because death may be accompanied by suffering.

## Suffering

It seems obvious to me that suffering is problematic. Suffering can pretty much be defined as something we have a problem with. And if killing is accompanied by suffering, then killing is problematic. At first glance, it may seem that death and suffering go hand in hand, but on closer examination, that is not all that logical. There is a difference between dying and being dead. Being dead is definitely not associated with suffering. At least, not for the dead themselves: they are not suffering any longer.

Dying can be accompanied by suffering, but this does not necessarily have to be the case. Someone who is in a car accident and dies on impact presumably does not suffer much, if at all. And when a chicken's head is cut off, quickly and painlessly, the chicken does not suffer. That is why there are such strict guidelines for the killing of animals: to minimise suffering. And yet, even if the death is quick and painless, the killing remains 'problematic'. (In a 2018 survey commissioned by the RDA,[1] only 20 percent of respondents agreed, and half disagreed, with the statement: 'Humans have a right to kill animals of any species, provided that death is quick and painless for the animal concerned'.)

That is precisely the essence of the message that killing can be welfare neutral but is not without problems. Incidentally, this message is incorrect. Killing is absolutely accompanied by a loss of welfare, or wellbeing. After all, the welfare of the one who is killed is lost. They were well – more or less – and after the killing, that wellbeing is gone. I therefore interpret that as follows:

> *Killing is not necessarily accompanied by suffering, but it is not without problems.*

Either way, the problem that we have with killing does not lie in the suffering that is caused to the one who is dying.

## The bereaved

There are other people who suffer when someone is killed: those they leave behind. It may well be that this is the problem we have with killing. The problem is not so much the person who is killed, but the people around them. It is exactly for this reason that the RDA previously recommended

that geese be killed in pairs, rather than individually.[2] Then there would be no one left behind to suffer. (Geese form close attachments to their partners.) However, I do not think this is the answer to the question of why we have a problem with killing. This answer actually suggests that we do not have any problem with the killing of a large group of people that have formed an isolated, close-knit society. Or a fictional family that only have each other and no one else and will leave no one to mourn them if they cease to exist. And yet we do have a problem with the killing of such a family. In short, the suffering of others, the bereaved people left behind, cannot explain our problem with killing.

In some ways, that is a shame. If the bereaved were our problem, we would not have to be too concerned about the killing of production animals, such as chickens, pigs and cows. In the first place, as far as we know, they do not have such close relationships with each other. The suffering they experience when one of them is killed is therefore not very great. And secondly, if that were the problem, it could be solved by killing all of the animals at the same time. No one would be left behind to suffer. In a number of sectors, that is already common practice. All fattening pigs in a shed are the same age and are slaughtered at the same time. The same applies to chickens. However, simultaneous slaughtering of an entire cohort does not solve the problem that we have with killing – because the problem does not lie in the suffering of those who are left behind.

Incidentally, as I write this, I have been having a strange kind of experience: I have been writing in quite a rational, business-like manner about a subject that is rather emotional and intense. Killing is not simply an activity that can be rationally analysed. The subject really gets to you – at least, it gets to me.

## Fear of death

A third option is that we do not so much have a problem with the killing itself, but with the period immediately beforehand. The moment when you look death in the eyes and feel afraid. If this were our problem, then this would again be good news for the killing of animals: as a general rule, animals are not particularly scared before death, simply because they have no idea of what is happening to them. A pig in the slaughterhouse might notice that something out of the ordinary is going on. It will probably feel anxious, maybe even afraid. But that animal has no idea that it only has a short time left to live. Unfortunately for the animal industry, the solution does not lie in the fear of death either. If someone cuts a head off, although it is sudden, painless and totally unexpected, we perceive that as problematic, even though there is no fear of death in such a situation.

## Placing ourselves above animals

Answer number four: the problem lies in the fact that, by killing animals, we are placing ourselves above them. We do indeed do that. But we also do that if we do not kill them. We place ourselves above the horse that we house in a horse retirement home so that it can enjoy its old age, simply by putting that horse in a stall and determining when and what it eats. This is not something we find problematic. On the contrary, most people consider giving a home to elderly horses to be a good deed. We are constantly placing ourselves above animals – whether or not that is justified is a whole different discussion – but either way, the fact that we place ourselves above animals is not in itself a problem. Ergo, it is indeed true that we place ourselves above animals by killing them, but that still does not explain why we find killing problematic.

## The right to live

Here is another possible answer: we have a problem with the killing of animals because everything that is alive has a right to continue living. It may be true that living animals have the right to stay alive, but that can never be the explanation for our problem with killing. Such a right is a

consequence of that problem. Children have a right to education, and if they do not receive education, then that is a problem – but not because of that right. If children do not go to school, that is problematic because they will not learn anything, they cannot prepare for the future, and so on. And because of those problems, they have a right to education. Not the other way round. A right to stay alive cannot explain why we have a problem with killing.

### Diminishing the value of life

If someone throws away a present, you will think that present must not have any value. And if someone is careless with life – for example, by killing – it might suggest that life is not particularly valuable. We have no certainty about the value of life; we just assume that life is valuable. And if that value is repeatedly diminished, it challenges our perceptions. I was not alive in the Middle Ages, but based on the stories I have heard and the pictures I have seen, people found killing much easier in those times than they do today. I can well imagine that people ascribed a different value to life back then. Killing is problematic because it puts the value of life into perspective. I do not think this is the problem with killing, but I do think it is a problem. (As for what this means for the killing of animals, we are about to find out.)

### It puts an end to potential

The final answer I want to examine is this: killing definitively closes off an avenue of possibility. Most actions have definitive consequences. If you slice bread, the loaf is definitively no longer whole. But killing has 'extremely definitive consequences': killing deprives someone of the ability to live. Moreover, it is not simply potential that ends, it is valuable potential (see the previous item in the list). I believe this is the answer. Not simply because it is hard to argue with, though that is part of the reason. So I now have two answers to the question of why killing is problematic: it puts the value of life into perspective and it puts a definitive end to potential – potential that is valuable.

I would like to illustrate these two answers through an imaginary scene on a sofa. You are sitting next to someone on the sofa – your friend, partner, child or neighbour – and watching a live TV broadcast. Halfway through the broadcast, you take the remote control, and with an ostentatious click, you stop the programme. "So that's that." Your companion looks at you in astonishment and tries to change your mind, but you do not give in: "We're not going to finish watching this programme."
That was not very nice, for two reasons – the same reasons as before: (i) By turning off the TV, you are suggesting that the programme was not that great. And (ii) you put a definitive end to the programme – it was a live broadcast. This is exactly what happens when an animal (or human) is killed: the value of their life is diminished, and the potential – the valuable potential – of their life is definitively ended.

I have confidence that this answer comes close to a reasonable answer to the question of what is so problematic about killing, and for the sake of convenience, I will accept this answer. Does this answer then have consequences for the legitimacy of the killing of animals? I think so; indeed, I can see two.

### Animals that are causing a nuisance

First, the answer I have found has consequences for the killing of animals that are causing a nuisance (see Chapter 2 of this advisory report). The examples given were urban pigeons and brown rats. If suffering is the key criterion in seeking legitimacy for the killing of troublesome animals, the animals will lose the argument pretty quickly. The reasoning is more or less as follows, taking moles as an example. Moles were not mentioned in Chapter 2, but they do cause nuisance

with their unsightly molehills in our beautiful gardens. As you read, feel free to substitute any other animal that causes nuisance; the structure of the reasoning is the same:

"The presence of a mole causes suffering, particularly on the part of people with a well-kept lawn. Killing a mole can also cause suffering. Not necessarily to the mole, because a well-placed mole trap will kill a mole with a single snap. But there is a risk that the trap will 'misfire', and the mole will lose a paw, or even worse, take several days to die. But this risk can be overlooked. Moreover, moles have less intellectual capacity than we do and presumably cannot suffer as much. When we make a decision in terms of expected suffering, killing a nuisance mole is legitimate."

But bearing in mind the answer we found earlier, it is no longer sensible to make a decision in terms of suffering. After all, the problem with killing is not that it causes suffering but that it puts the value of life into perspective and puts a definitive end to potential. Suddenly, it becomes less clear whether we should kill a mole. Is it not a little excessive to try to cancel out something as weighty and serious as the value of life to avoid bumps on the lawn or nuisance? In concrete terms, the answer we have found so far suggests that we must incorporate reservations into the recommended assessment framework referred to in Chapter 2 of this advisory report. When it comes to the killing of animals that are causing a nuisance, we might want to tread carefully.

## Production animals

Consequence number two. This concerns a consequence for production animals: animals that we keep for the purpose of killing them, such as pigs and chickens. The interesting thing here is the question of what potential is being ended when the animals are killed. This situation does not involve a choice between killing an animal and letting it live, since the animal only exists to be killed. If a production animal could not be killed, it would not be alive in the first place.

If we suddenly decided *en masse* that it was no longer acceptable to kill animals, there would soon be a lot fewer cows, chickens and pigs on the planet. We would not keep millions of pigs if we could not kill them. Accordingly, the potential we are talking about here is not staying alive versus being killed, but living for a short time versus not living at all. Which world is better: a world in which millions of pigs, cows and chickens live for a short while? Or a world in which none of these animals live at all? I do not know, but I suspect that, if we could ask the animals, they would pick option one. (In fact, they would probably prefer the option where millions of them live long, happy lives, but that option does not exist.)

In short, killing is a problem because it definitively 'snuffs out' potential. But in the case of production animals, not killing also snuffs out potential; specifically, the potential to exist in the first place. In the chapter about killing for human use, this advisory report places the emphasis on the final minutes of these animals – the minutes when they are slaughtered. It does not ask whether the killing of production animals is legitimate. That might seem strange, and I can imagine that some readers might think the RDA lacks the courage to tackle such a thorny issue. However, on reflection, it probably seems sensible. Ultimately, it is best to accept the fact that production animals are killed – which was the conclusion I came to. Once you do that, it is sensible to place the emphasis on killing as quickly and painlessly as possible.

## Conclusion

What did I do in this reflection? I tried to find an answer to the question of why we find killing problematic in general. I found a rudimentary answer, and I looked at the consequences of that answer for the killing of animals. It does not seem to me that this should be the end of the matter.

How we treat animals, and in particular how we kill them, is a topical issue that will demand our attention for some time to come. But one way or another, I think it is important to remain objective and rational when discussing this subject that affects us so deeply.

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# Annex 2: Assessment framework for the killing of animals that are causing a nuisance

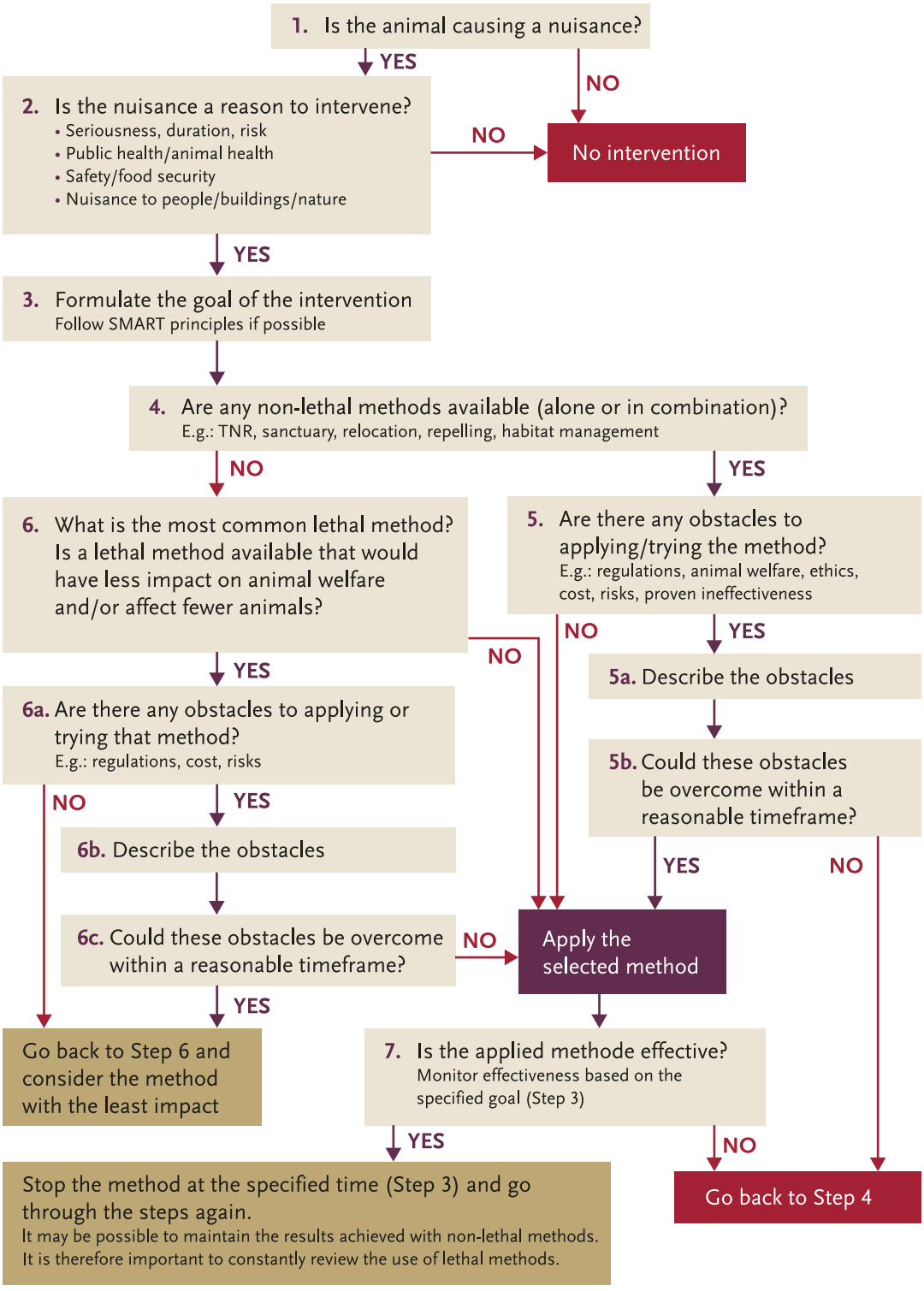


**Figure:** Assessment framework for the killing of animals that are causing a nuisance, based on the work of Yeates,[1] Van Gerwen[2] and the RDA[3] (TNR = Trap-Neuter-Return).

## Explanation of the assessment framework

Once it has been established that there is a nuisance (**Step 1**), the next question in the assessment framework is: 'is the nuisance a reason to intervene?' (**Step 2**). In other words, it is necessary to determine whether the nuisance is *so bad* that intervention is required. By 'intervention', we mean taking actions that will have a direct effect on the animal, such as killing, repelling, catching, neutering or making the living environment less attractive. In this assessment framework, actions that do not have a direct effect on the animals, such as informing people that they cannot feed urban pigeons, are categorised as 'not intervening'. To determine the seriousness of the problem, a risk analysis should be performed. Existing models could be used, such as those created by the NVWA,[4] the National Institute for Public Health and the Environment (RIVM)[5] and Bij12.[6] If no models are available, one must be developed. Using the risk analysis, it can be determined whether there is a reason to intervene. In addition to the physical nuisance, the psychological nuisance should also be considered.

It should also be determined whether enough is known about the problem to tackle it effectively. For example, is there sufficient information on current animal numbers? Is the cause known? If not enough information is known, it may be possible to define a smaller problem, for example by focusing on a smaller group of animals or intervening on a smaller scale. For example, tackling geese in a specific area, such as a nature reserve, instead of throughout the Netherlands. The focus can also be shifted, for example from the number of animals to the number of reports of nuisance.

If consideration of these factors leads to a decision not to intervene, the next step is to consider whether something should be done about the problem in a different way (with an indirect effect on the animals), such as giving information to individuals or groups of people. If consideration of the relevant factors does lead to a decision to intervene, the next step is to formulate the goal of the intervention according to the SMART principles (**Step 3**):

- **Specific:** what exactly is the goal?
- **Measurable:** how will achievement of the goal be measured (for example, a percentage reduction in the number of animals or a reduction in the number of reports per month)?
- **Achievable:** is there support for the intervention? Who has to do what to achieve the goal?
- **Realistic:** is the goal realistic (considering matters of practicality, capacity, know-how, resources and powers)?
- **Time-related:** what are the start and end dates for the intervention?

In practice, it can be difficult to formulate the goal according to the SMART principles, for example if the number of animals involved is not known. If a SMART formulation is not entirely possible, at a minimum, the S and T should be determined.

Once the goal is formulated, you can investigate whether non-lethal methods are available to achieve the goal (**Step 4**). Such methods are preferred under the 'no, unless' principle. It is important to check whether new methods are available, and multiple methods can be combined. Before non-lethal methods are applied, it should be investigated whether there are any obstacles to applying these methods in practice (**Step 5**). Such obstacles could include the effect on animal welfare, the effect on other animals, regulations, cost and evidence that the method works in practice. New methods should preferably be tested for effectiveness before being used and should be substantiated by a trial protocol. If there is not yet any evidence as to the effectiveness of the method, it should be determined whether there are obstacles to applying the method anyway or to testing it out. These could include moral objections. In this situation, an ethical assessment should be performed. With geese, for example, there is a question as to what is more animal-friendly: killing them or taking away their nests. In the 2012 advisory report 'Duty of Care, Naturally',[7]

the RDA described how such an ethical assessment could be carried out. To complete this assessment successfully, it is important to gather as much information as possible. The parties concerned can consult the literature and/or gather information from centres of applied research.

If there are no non-lethal alternatives, the next step is to investigate what lethal methods are available (**Step 6**). Of course, the preference is for a method with the smallest possible impact on animal welfare and/or a method that affects fewer animals. It is also possible to combine different methods. After the intervention (i.e. after the end date set in Step 3), it can be determined whether the goal has been achieved – in other words, whether the nuisance has been effectively controlled (**Step 7**). The assessment framework is a guide and should be developed further for each sector or animal group.

### *Example 1: Rats in a city park*

In a city park with a pond, there are brown rats. Visitors to the park and neighbouring residents complain to the city council that they regularly see rats running around, even in daytime.

1) Yes, a nuisance exists. People are complaining and making reports to the council.
2) Yes, people are complaining that they are afraid to sit in the park or play there with their children. There is a potential risk to public health. There is also the risk that the rats will spread out from the park into the surrounding residential neighbourhoods.
3) Ideally, the goal of the intervention would be to bring the number of rats down to zero. For the council, the goal could be to receive fewer reports, for example, a reduction from ten to three reports per month.
4) Yes, preventative methods exist – see 2.2 in the main text of this advisory report.
5) The effect is not scientifically proven, but practical experience suggests that non-lethal methods do work. The council may choose to try a non-lethal method first and see how it goes, particularly in a location such as the one described. After all, the rats are not in buildings or homes; in a way, they are in their natural habitat.
6) N/A
7) Monitor using bait stations with non-toxic food cubes or cameras. The number of reports can also be monitored. If effective, the prevention can be continued.

### *Example 2: Rats around a residential property*

A couple live in an old, free-standing house on the edge of a floodplain. They previously discovered that there were brown rats in the house. They caught them and set them free near the river. The house has now been fully renovated, with new walls and a new roof. No rats have been seen inside since the renovations. The couple keep rabbits in the large, green garden, and they have a bird feeder for garden birds. One day, in broad daylight, the couple see two rats running around among the rabbits and climbing on the bird feeder. The rats appear unfazed by the presence of humans.

The couple become concerned. Although they are real animal lovers, they would prefer to see the rats gone. They are afraid that more might come, and that the rats might come inside the house again. They realise that their living environment is suitable for rats and accept their presence to a certain degree. However, they find it concerning that the rats are running around unperturbed in broad daylight. In addition, they are expecting their first child soon, and they want the child to be able to play safely both inside and outside.

1) Yes, a nuisance exists, particularly due to concerns for the future: will more rats come, and will they come inside?
2) To prevent more rats from arriving, and to prevent the existing rats from causing a worse nuisance, the need for intervention seems obvious. There is a potential risk to the health of the couple, their baby and their rabbits. There is also a risk that the rats could gnaw and/or soil the couple's possessions and other materials.
3) The goals of the intervention are to prevent the number of rats from increasing and to keep the rats out of the house. Ideally, the rats would also be less visible during the day.
4) Yes, a preventative approach in the form of removing food and nesting sites (woodshed, loose pallets). The first step is to remove the bird feed and tidy up the surrounding area as much as possible to make it unattractive to rats.
5) Its effectiveness has not been scientifically proven, but practical experience suggests that the preventative approach does work. The couple may choose to try this first and see how it goes. However, food is still present in the form of the rabbit feed. Moreover, the rats may also be able to find food in neighbouring homes.
6) If more rats arrive or the rats come inside, the couple could install a falcon nest box in the garden or on the house. They could also consider placing traps alongside or inside the house. Or the couple could hire a professional pest control company.
7) Wait and see how it goes. Are there more rats? Do the rats keep coming?

### *Example 3: High-risk dogs*

As we explained in 2.3, a high-risk dog can be defined as a dog that is at high risk of causing a biting incident in everyday situations in which people would not normally expect it to be a problem. Many biting incidents involving high-risk dogs take place each year.

1) Yes, this results in nuisance/harm. People and animals are getting hurt, people are complaining and reports of biting incidents are being made to the police.
2) Yes, because injuries and even deaths are occurring. People are also complaining that they do not feel safe around high-risk dogs.
3) Ideally, the goal would be to ensure that biting incidents no longer occur. However, this is not achievable, because any dog can bite, and multiple factors play a role. Accordingly, the goal is to minimise the number of biting incidents by focusing primarily on high-risk dogs.
4) Non-lethal methods include:
   - retraining or re-educating dogs;
   - banning the breeding of high-risk dogs (long-term effect);
   - selecting owners who are suitable to keep a high-risk dog and training them in how to rear and handle these dogs;
   - order that the dogs be muzzled and/or kept on a leash, and/or ban the dogs from certain areas.
5) Evidence of effectiveness in practice:
   - retraining: not always, because not all dogs stop biting after retraining, and dogs are often retrained only after they have already bitten someone;
   - breeding ban: not always, strong protests;
   - pre-selection of owners; no, is not (yet) being done;
   - muzzle orders, etc.: not always, as they are difficult to monitor. Furthermore, such orders are imposed only if an incident has already happened and are sometimes temporary; after they expire, another incident may occur.

5a) Obstacles to application:
   - retraining: high costs, difficult to monitor, risk that it will not have the desired effect and that the dog will bite again;

- breeding ban: protests from people and agencies that breed or work with these animals. If a ban were imposed, there is a risk that they would be brought in from other countries or that cross-breeds would be bred;
- pre-selection of owners; no legal basis and difficult to monitor;
- muzzle orders, etc.: no obstacles, but the question is how effective such measures are, because they are difficult to monitor.

**5b)** The obstacles cannot be resolved in the short term. However, a long-term plan with multiple steps could be drawn up. For example, authorities could start by ordering that high-risk dogs be muzzled, with the muzzle able to be removed if the dog undergoes retraining. Good monitoring is essential here. Whether retraining is an option depends on the situation (nature and behaviour of the dog and its circumstances). A long-term plan could also be drawn up for future cases, which might include the preselection of owners. However, this would be a long process.

**6)** Euthanasia by a veterinarian. No other official method.

**7)** It is only effective in preventing the dog in question from biting new victims. Often, the dog has already bitten a victim. In addition, such measures relate to a single dog and do not solve the entire problem.

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# Publication details

This advisory report of the Council on Animal Affairs was prepared under the leadership of Franck Meijboom by a core group comprising Bas Kemp, Len Lipman (from 1 September 2020), Lisette de Ruigh (until 1 September 2020), Jan Staman and Ruud Tombrock. The core group was supported by deputy secretaries Tamara Bergstra and Ruud Pothoven and secretary Marc Schakenraad. Linda van den Berg was responsible for the final editing of the advisory report.

The following RDA members, former members, Young RDA members and RDA team members made particular contributions to certain chapters, as indicated:

1) Introduction: Franck Meijboom;
2) Nuisance: Tamara Bergstra, Andreas Dijkhuis (until 1 June 2021), Maite van Gerwen, Len Lipman (chair of the subgroup from 1 September 2020), Lisette de Ruigh (chair until 1 September 2020)
3) Suffering: Nienke Endenburg, Annechien ten Have, Ruud Pothoven, Wim Smit, Ruud Tombrock (chair of the subgroup);
4) Unwanted: Tamara Bergstra, Franck Meijboom (chair of the subgroup), Lisette de Ruigh (until 1 September 2020), Jan van der Valk, Jeanette van de Ven, Dennis Vink;
5) Culling: Leo den Hartog, Ynte Schukken;
6) Killing for human use: Leo den Hartog, Ad Kemps, Ruud Pothoven, Jan Staman, Ruud Tombrock (chair of the subgroup), Bert Urlings;
7) Conclusions and recommendations: Tamara Bergstra, Bas Kemp, Len Lipman, Franck Meijboom, Marc Schakenraad, Jan Staman and Ruud Tombrock;
8) Appended reflection: Bas Haring.

In preparing this advisory report, the core group and a number of subgroups met virtually or in person with each other several times. In addition, individual meetings were held with a number of experts:

1) Introduction: -;
2) Nuisance: William van Dijk (BIJ12), Laurens Hoedemaker (Royal Dutch Hunters' Association);
3) Suffering: Joost van Herten (KNMvD);
4) Unwanted: Harry Arts (Kleindier Liefhebbers Nederland);
5) Culling: -;
6) Killing for human use: Johan Bongers (Netherlands Food and Consumer Product Safety Authority (NVWA)-Office for Risk Assessment & Research (BuRo)), Roger Claessens (Marel), Marien Gerritzen (WUR), Jos Koedijk (Remkes), Bert Lambooij (formerly of WUR), Madelaine Looije (Eyes on Animals), Dorothy Mckeegan (University of Glasgow, UK), Lesley Moffat (Eyes on Animals), Peter Poortinga (Plukon), Bas Rodenburg (Utrecht University and RDA member), Tim van Schaijk (Marel), Frederieke Schouten (Caring Vets), Sara Shields (Humane Society International, USA), Henny Swinkels (Van Drie Groep), Nanda Ursinus (NVWA-BuRo), Merel Verhoeven (Ministry of Agriculture, Nature and Food Quality), Kitty de Vries (Caring Vets), René Welpelo (Plukon), Ruud Zanders (Kipster);
7) Conclusions and recommendations: -.

# Composition of the Council on Animal Affairs

The Council on Animal Affairs (RDA) is an independent council of experts that gives the Minister of Agriculture, Nature and Food Quality solicited and unsolicited advice on multidisciplinary issues in the field of animal welfare and health. The Council consists of scientific experts and professional practitioners, who serve on the Council in a personal capacity, independently and without any outside influence.

The draft advisory report was submitted to the entire Council and to the Young RDA network for assessment. Accordingly, this advisory report is a product of the Council as a whole.

## As at 1 October 2021, the Council had the following members:

Prof. J.J.M. van Alphen
Dr G.B.C. Backus
J.P. van den Berg
W.T.A.A.G.M. van den Bergh
Prof. I.J.M. de Boer*
Dr J.J.L. Candel MA
H.R. Chalmers Hoynck van Papendrecht DVM
Prof. G.M. van Dijk
Dr N. Endenburg
Prof. J.W. Erisman*
Prof. R. Gehring
D. van Gennep MSc
Prof. M.A.M. Groenen
Prof. S. Haring
Prof. L.A. den Hartog
A.L. ten Have-Mellema
Prof. J.A.P. Heesterbeek
G. Hofstra MSc
J.A.M. Huijbers
Prof. A. van Huis
Prof. B. Kemp
A. Kemps
Dr L.J.A. Lipman
Dr F.L.B. Meijboom
F.E. Rietkerk DVM
C.W. Ripmeester LLM
Prof. T.B. Rodenburg
Dr M.C.Th. Scholten
Prof. Y.H. Schukken
G.C. Six MSc
M. Slob MA
Prof. G.R. de Snoo
J. Staman LLM DVM, chair
Dr J.W.G.M. Swinkels
R.A. Tombrock MSc
Prof. J.C.M. van Trijp
Dr H.A.P. Urlings
Dr J.B.F. van der Valk
J. van de Ven
F.A.L.M. Verstappen DVM

The Secretary of the RDA is M.H.W. Schakenraad MSc.
* No longer a member of the RDA as of 1 December 2021.

For more information about the Council on Animal Affairs, visit our website: *https://english.rda.nl/*, where you can also download all previous advisory reports.