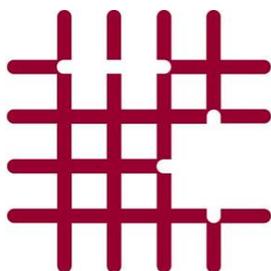


Condensed **A**dvisory
Report
on ten means used to
capture and kill
Birds

Effects on animal welfare and other ethical aspects



RAAD VOOR DIERENAANGELEGENHEDEN

Cover letter

The Hague, March 2016

Your Excellency,

It is my pleasure to present to you the "Condensed Advisory Report on ten means used to capture and kill birds" which the Council on Animal Affairs (RDA) has drawn up at your request.

On 3 February 2015 you submitted a request to the Council for an advisory report on designating ten means, arrangements or methods that can be used to capture or kill birds.

The killing of animals is not a moral, neutral act and requires justification. The Council is of the opinion that any decision concerning interventions to reduce the bird population should be based on a comprehensive assessment, which takes animal welfare and other ethical aspects into account in addition to economic, safety, health and other considerations. The Council has developed an assessment framework for this purpose which should offer guidance in this area; see our advisory reports on "Duty of Care, Naturally" (2012) and "One Health" (2015), for example.

In view of the request for opinion and the available time, this condensed advisory report is limited to the effects on animal welfare and other ethical aspects of the proposed means only. This is partly due to the procedural steps that must be followed to bring the new Nature Conservation Act (*Wet natuurbescherming*) into effect on 1 January 2017. The question submitted to the Council is based on the premise that in certain cases it is necessary and justified to kill birds. Our advisory report therefore does not examine the desirability of and possible alternatives for capturing and killing birds.

During the preparation of this advisory report we contacted the Association of Provincial Authorities (IPO) to clarify the background to the methods stated and consulted two external experts. We also took the relevant recommendations from the Wildlife Compensation Fund (*Faunafonds*) into account. This condensed advisory report is based on the knowledge currently available.

We carried out an analysis of each means in which the facts and circumstances determine whether use is acceptable. The Council calls on policymakers and administrators to ensure and perform a transparent assessment and to enforce the proper implementation of it.

In this advisory report we have added a concise description of the methods you refer to and a conclusion relating to animal welfare and other ethical considerations.

The Council will of course be available to explain the report in more detail. The Council will also be pleased to extend this advisory report with an analysis of further means and to issue an opinion on the use of an assessment framework by the provincial authorities.

The Council hopes that this advisory report will make a useful contribution to the entry into force of the Nature Conservation Act. We wish you and the provincial authorities every success with this process.

Yours sincerely,

Marc Schakenraad
First Secretary

Contents

- Cover letter 2**
- Contents 4**
- 1. Introduction 6**
 - 1.1. Request for an advisory report 6
 - 1.2. Background 6
 - 1.3. Scope and definitions..... 8
- 2. Means used to capture and kill birds 11**
 - 2.1. Introduction to means used to capture and kill birds.....11
 - 2.2. Means.....12
 - 2.2.1. *Live decoys*12
 - 2.2.2. *Decoy birds taken from the wild*.....13
 - 2.2.3. *Decoy bird sounds*.....14
 - 2.2.4. *Artificial light and night vision devices*.....15
 - 2.2.5. *Gun silencers*.....16
 - 2.3. Capturing birds17
 - 2.3.1. *Bal-Chatri trap*.....17
 - 2.4. Killing birds18
 - 2.4.1. *Striking, stabbing and cutting weapons*.....19
 - 2.4.2. *Gassing*.....20
 - 2.4.3. *Electrical stunning*.....23
 - 2.4.4. *Cervical dislocation*.....24
- 3. Conclusions and recommendations 26**
 - 3.1. Conclusions26
 - 3.2. Recommendations27
- References 29**
- Credits 32**

Procedure

This condensed advisory report from the Council on Animal Affairs (RDA) was prepared by a forum of Council members comprising Dr H. Hopster, Dr F.L.B. Meijboom, J. Kaandorp and G. Dijkhuis (chair). The forum held two meetings to prepare the report and received assistance in conducting its activities from the secretary M.H.W. Schakenraad and the deputy secretary R.L. van Oudheusden on the RDA team. The Council sought external expertise from Dr M.A. Gerritzen (researcher, Wageningen UR Livestock Research) and F. van Bommel (Ecologist, Van Bommel Faunawerk). Recommendations from the Wildlife Compensation Fund (*Faunafonds*) have also been included.

This condensed advisory report is based on current knowledge and was prepared as a contribution to the administrative decision-making process for the Nature Conservation Act (*Wet natuurbescherming*). It is shorter than the Council's usual advisory reports in view of the procedural steps that must be followed to bring the new Act into effect on 1 January 2017.

Guide for readers

This condensed advisory report begins with an introduction covering the request for an advisory report, the background, the scope and the definitions applied to the terms used. Chapter two discusses the ten means, arrangements or methods used to capture and kill birds in relation to animal welfare and the ethical aspects. Chapter three contains conclusions and ends with recommendations.

1. Introduction

1.1. Request for an advisory report

On 3 February 2015 the Minister for Agriculture submitted a request to the Council on Animal Affairs (RDA) for an advisory report concerning the designation of means, arrangements and methods that can be used to capture or kill birds.

In the letter containing the request for an advisory report, the question is explained as follows: The Association of Provincial Authorities (IPO) submitted a proposal in a letter to the Minister for Agriculture on 19 January 2016 (Appendix 1) concerning the designation of means, arrangements and methods. The Minister for Agriculture considers it important to understand what effects the possible use of a number of these means, arrangements and methods can have on animal welfare and whether there are any ethical aspects to their use. The advisory report can be helpful during the process of granting exemptions in determining the need to capture or kill birds, considering matters such as public health, traffic safety and the protection of property on the one hand, and the interests of minimising or preventing the negative effects on bird welfare and the killing of birds as far as possible on the other.

The request for an advisory report relates only to the following ten means, arrangements or methods used to capture or kill birds:

- live decoys;
- other decoy birds taken from the wild;
- bal-chatri traps;
- striking, stabbing and cutting weapons;
- gases, authorised under Council Regulation (EC) No. 1099/2009 on the protection of animals at the time of killing;
- electrical stunning;
- the use of artificial light or night vision devices, fitted to a rifle or otherwise;
- gun silencers;
- decoy whistles and other devices which can produce decoy sounds;
- cervical dislocation.

1.2. Background

The question

The Minister for Agriculture's request for an advisory report states that the new Nature Conservation Act will enter into force on 1 January 2017. The question on which advice has been requested states the following:

"Pursuant to the European Birds Directive, the new Act sets out a number of provisions, including the prohibition of capturing and killing birds (Section 3.1(1)). The Provincial Executive and the Provincial Council may grant dispensation or exemption respectively from the prohibition subject to certain conditions (Section 3.3). Both bodies are required to set out in the dispensations and exemptions which means, arrangements or methods are authorised for capturing or killing birds (Section 3.3(5)). They may only authorise methods that prevent or, where this is not possible, minimise any adverse effects on bird welfare, to avoid killing birds as far as possible (Section 3.25(3) of the Act).

Such means, arrangements and methods must be designated beforehand in order in council in implementation of the Birds Directive, as explained by the Administrative Jurisdiction Division of the Council of State in its decision of 4 January 2012 (case no. 201103334/1/H3). If a means, arrangement or method has not been designated, the Provincial Executive and the Provincial Council may not authorise its use in the dispensation or exemption.

These means, arrangements and methods will be designated in the Nature Conservation Decree (*Besluit natuurbescherming*). A draft version of this decree was submitted to various organisations for consultation purposes. The consultation period concludes at the end of February 2016".

In view of the provinces' central role, currently under the Flora and Fauna Act (*Flora- en faunawet*) and in the near future under the Nature Conservation Act, in implementing population management, the Minister for Agriculture has requested each province to submit a substantiated proposal "for the designation of means, arrangements and methods, based on the current practice of granting exemptions pursuant to Section 68 of the Flora and Fauna Act, also having regard to the animal welfare requirements imposed by the new Act".

A document from the Association of Provincial Authorities (IPO) containing a long list of means and methods for catching and/or killing birds is appended to the Minister for Agriculture's request for an advisory report. This document is referred to as the "IPO List" or "according to the IPO" in this condensed advisory report.

The Minister for Agriculture's request for an advisory report has always been used as the starting point.

Guidelines on Geese Culling

The methods of culling geese, including cervical dislocation, electrocution, stabbing in the neck and gassing with CO₂, were assessed in the Guidelines on Geese Culling (RDA, 2012). We have used the insights derived from these guidelines to assess the currently proposed means, arrangements and methods for the purpose of this condensed advisory report (see also the explanation in box 1).

Box 1 - Guidelines on Geese Culling

The Council on Animal Affairs published the "Guidelines on Geese Culling" in 2012. With the aid of an assessment framework developed by the RDA for five practical situations, the guidelines provided an assessment of "practicable and socially acceptable" methods of culling wild (migratory and non-migratory) geese. The methods were aimed at preventing the birds from unnecessary suffering, weighed against alternative methods of killing.

The animal welfare criteria which were considered in assessing the culling methods are as follows:

- acute death or acute loss of consciousness until death;
- not necessary to carry out in advance (round up, capture, etc.);

- no risk of non-fatal injury;
- not disturbing for other animals.

The RDA also examined the practicability of the method and whether special equipment or qualifications are required; whether it is safe for people and the environment, and is selective in terms of the animals to be killed; whether it is suitable for large numbers of animals and whether the animals were still suitable for consumption.

1.3. *Scope and definitions*

Ethical scope

The Council does not express an opinion on the problems found and their causes prior to a decision to kill birds (such as nuisance or damage caused by birds), nor about potential solutions/alternative methods other than killing animals. In this advisory report, the Council has adhered to the brief to assess the animal welfare and other aspects of ten methods for luring, capturing and killing birds.

The question submitted to the RDA is based on the premise that in certain cases it is necessary and justified to kill birds. Two ethical steps have already been assumed in this process.

Firstly, the killing of animals is not a moral, neutral act and requires justification. There are diverging opinions on the acceptability of killing animals. Hence, people who find the killing of birds unnecessary or even unacceptable cannot be expected to accept a certain method of killing.

This advisory report therefore does not address the question of whether birds may or must be killed, even though this is where the ethical discussion unfolds. The advisory report focuses on the fact that if birds are killed, what effects the ten means, arrangements and methods (subject to certain circumstances) stated in the request for an advisory report have on animal welfare, and whether any ethical aspects are associated with their use.

Secondly, this condensed advisory report assumes that a decision will be made to proceed to capture and/or kill birds. This decision will be taken by the provincial authorities. The Council wishes to highlight the need for a transparent and consistent decision-making process and assumes that an effective technical, policy-based, political and legal assessment will be made before taking a decision to capture and/or kill birds. An assessment performed prior to killing animals should take all the relevant values and interests into account, including animal welfare. The Council has developed an assessment framework for this purpose (see for example the 2016 "One Health" and 2012 "Duty of Care, Naturally" advisory reports¹). The Minister for Agriculture can offer the provinces guidance in the form of an assessment framework to ensure that decisions are taken in a consistent manner in the Netherlands.

The central question in this condensed advisory report will arise the moment a substantiated decision is taken in a transparent manner to capture and/or kill animals:

¹ Both advisory reports are available on www.rda.nl.

the question relating to the effects of capturing and/or killing on bird welfare and other possible ethical aspects. Not every means or method is equally suitable for every bird species. The welfare of some bird species will suffer more than others. Once the decision to capture or kill birds has been taken, animal welfare must be included in the assessment of the means, arrangements or methods. Those means, arrangements or methods that give rise to problems for and impair bird welfare must be countered by compelling interests, substantiated by the fact that less stressful means, arrangements or methods are unavailable or inapplicable. The Council's guiding principle is that welfare problems and the impairment of welfare should be avoided as far as possible.

Although there are statutory provisions relating to the use of certain methods of killing, they do not constitute a specific legal framework for the question on which advice has been requested. The ten means and methods have not been assessed from a legal perspective.

Scope of means and methods

The question submitted to the Council focuses on ten means, arrangements or methods on which an opinion has been requested. We have not been asked to assess other or alternative methods of capturing and killing birds, such as those included in the list compiled by the Association of Provincial Authorities (IPO). To ensure a transparent and consistent decision-making process, the effects on animal welfare of all the means, arrangements and methods that can be used to capture and kill birds should be assessed as well as the ethical aspects associated with their use. The Council would advise the Minister of Agriculture to perform such a subsequent assessment.

The ten methods have not been comparatively assessed. The Council has not stated which is the preferred method. This partly depends on the actual circumstances, such as the bird species, the numbers involved and the situation. Moreover, it is not possible to compare decoy or luring devices, capturing devices and methods of killing on a one-to-one basis, because the first two cannot be disassociated from the ultimate method of killing. "When taking decisions on which method of killing is the most acceptable in terms of animal welfare, not only should the particular method of killing be examined but also the entire process" (citation from: Van der Weide & Rijks 2013). Alternative methods of capturing and killing should always be considered first, also from an animal welfare perspective.

Scope of birds

The question submitted to the Council relates to birds rather than to other species or species groups. Capturing and killing can have an impact on the welfare of all animal species and ethical aspects are associated with the use of means, arrangements and methods. The Council would advise the Minister for Agriculture to provide insight into these aspects for other animal species as well.

Capturing and/or killing birds can affect their welfare in different ways. For this reason, it is important to examine which means, arrangements or methods are suitable for the bird species and the situation during every assessment. For animal welfare reasons, some means and methods may be used only subject to certain conditions. In that light, it is important to consider the following aspects:

- **differences between species.** Some methods which can easily (practically) be applied to small species cannot be applied effectively to larger animals and vice versa. The physiology of the animals or birds may differ; water birds and birds that fly at higher altitudes can have different ways of dealing with pressure and breathing, for example. The parent-offspring relationship differs for instance between precocial and altricial birds. There may also be differences in behaviour, adaptability and other aspects;
- **differences between individuals.** Not all individuals of a species are the same; significant weight differences can occur in a group of geese, for example²;
- **difference between an individual and a group.** A different approach is required for capturing and/or killing an individual bird than for groups of birds.

Besides differences among species, individuals and groups, circumstances can differ according to the **local situation**. Factors, such as time, place, period, territory, environment, acuity, other aims and interests (e.g. experience of those involved, sensitivity of the situation in the environment, the need for transport) can impact animal welfare when birds are captured and/or killed.

Animal welfare

In its 2012 advisory report entitled "Duty of Care, Naturally", the Council applies the following definition to animal welfare:

"An animal is in a positive state of welfare if it has the freedom to react adequately to hunger, thirst and inappropriate feed; thermal and physical discomfort; injury and disease; and anxiety and chronic stress. In addition, it must have the freedom to display normal species-specific behaviour, which enables the animal to successfully adapt to the prevailing environmental challenges, so that the animal reaches a state that it experiences as positive."

² Matthews, G.V.T. & C.R.G. Campbell (1969) *Weights and measurements of Greylag Geese in Scotland. Wildfowl* 20:86-93; Snow, D.W. & C.M. Perrins (1998) *The Birds of the Western Palearctic. Concise Edition. Oxford University Press, Oxford, UK.*

2. Means used to capture and kill birds

2.1. Introduction to means used to capture and kill birds

Ten means, arrangements and methods were proposed to the Council, which can be categorised according to their function:

- **means:** means refers to devices which are used to help catch and/or kill birds, or otherwise: live decoys; birds taken from the wild; decoy whistles and other devices which can produce decoy sounds; gun silencers and the use of artificial light and night vision devices, fitted to a rifle or otherwise;
- **catching birds:** means, arrangements or methods used to catch birds: a bal-chatri trap;
- **killing birds:** means, arrangements or methods used to kill birds: striking, stabbing and cutting weapons; gasses and cervical dislocation. Electrical stunning is not a method of killing, but is discussed below in combination with electrocution.

The effects of each means, arrangement and method on animal welfare and the ethical aspects of their potential use are described below. This includes a description of the means, arrangement or method; the avian welfare aspects; the conditions or requirements for use and for the users; specific focus areas (e.g. practicability, considerations, experiences with production animals versus experiences in the field).

In terms of the animal welfare aspects, we have examined whether the means and methods impair welfare (e.g. distress, anxiety, stress, suffering and other welfare problems). In the Guidelines on Geese Culling, the following aspects of the killing methods were considered:

- acute death or acute loss of consciousness until death;
- not necessary to carry out in advance (round up, capture, etc.);
- no risk of non-fatal injury;
- not disturbing for other animals.

The selectivity of the means and methods can enhance the welfare of (other) animals. If a means or a method can be applied easily and safely, this will preclude the risk of error and can consequently also enhance animal welfare.

When birds are captured and/or killed, the animal's integrity will always be at issue. The various means and methods have an impact on the well-being and integrity of the animal and its ability to function independently. The animal's integrity can also be impaired in cases where lifelong couples (mute swans and barnacle geese, for instance) are broken up and where the parent-offspring relationship is severed (mutual dependence). Integrity can also be impaired collectively: when killing large numbers of birds, the integrity of the group or species may be compromised.

The intrinsic value of an animal is a moral principle, including in policy and legislation. Intrinsic value is not a separate assessment criterion and serves primarily to make the legislature and the policymaker aware of the fact that the animal's interests must be taken into account during each assessment³. All forms of animal use must pass a

³ Animals Act (*Wet Dieren*)

threshold of benefit and necessity, in which the animal's interests as such are taken into consideration.

2.2. Means

2.2.1. Live decoys

Live decoys are used to attract wild geese of the same species flying overhead. They are often used in combination with capturing devices such as clap nets and can be used in combination with a rifle. Live decoys are used to lure wild geese to a closer distance so that they are within reach of the clap nets, or are easier to shoot (within range of the place of capture/within in shooting distance, to prevent unnecessary injuries). Live decoys are also used in combination with decoy whistles. This section only discusses the use of a live decoy (luring). The next steps of catching and/or killing birds for population management and research purposes have not been included in the effects on animal welfare.

We have looked at the welfare of both live decoys and the geese being lured in the use of live decoys. Live decoys are tame birds that have been bred in captivity. They are not geese taken from the wild. Tame, trained decoys are fastened to a peg in the ground with a rope attached to a type of harness around their body so that they cannot move any further than a few metres. The fastened decoys, male (ganders), are provided with food and water. The other decoys are located inside the hide some distance away. These decoys are female geese with offspring, which are constantly in contact with the fastened decoys. As soon as wild geese fly overhead, the fastened decoys start calling and their calls are in turn answered by the geese in the hide. When the goose catchers reckon the wild geese are about to descend on the group, they throw tame decoy geese into the air that land near the fastened decoys, calling loudly. This can spur the wild geese to also descend on this group. The tame decoys are lured to their transport cages with food and returned to the hide. Traditionally, bean geese and white-fronted geese are mostly used for this purpose.

Animal welfare

If live decoys are well looked after, their welfare will be comparable to that of kept animals. Live decoys should be bred in captivity. It is expressly prohibited to clip their wings, blind them or mutilate them in other ways.⁴

The welfare of lured wild geese when being lured is comparable to the natural situation. As a luring method, live decoys do not impair the welfare of the geese to be lured. However, additional steps, such as catching and killing them, do impair their welfare.

Ethical aspects of using live decoys

A live decoy is an animal which is instrumental in luring wild geese of the same species. This extends beyond welfare aspects. Even if their welfare is safeguarded, use of this method conflicts with recognition of the animals' intrinsic value. Various moral views in society about respect for intrinsic value and care for individuals can result in moral

⁴ Lamé, blind or decoy birds mutilated in other ways are prohibited. Wing clipping is a physical procedure involving the removal of the shaft of the primary flight feathers. This has been prohibited since 2005 for birds kept indoors. With effect from 2018 a general prohibition will follow (included in the Veterinarian's Decree (*Besluit Diergeeneeskundigen*), which forms part of the new Animals Act. Pinioning has a temporary effect, which involves cutting off a bird's flight feathers. After moulting, the feathers begin to regrow.

indignation. Further ethical aspects relate to the steps after using decoys (catching and/or killing, research purposes, etc.). One advantage of using live decoys is that larger numbers of birds can be shot⁵.

Based on this analysis, the Council concludes that using live decoys as a lure in itself does not cause unacceptable welfare problems. However, additional steps, such as catching and killing birds, can impair their welfare.

2.2.2. Decoy birds taken from the wild

Besides captive-bred decoys, other birds, either dead or alive, are also used to lure wild birds of the same species to cage traps or within shooting distance (prevention of unnecessary injury). Imitation birds are also used, such as an imitation eagle owl to attract corvidae (the crow family), and imitation geese to attract wild geese (no specific attention is paid to this method in assessing animal welfare). Here again, only the use of the decoy bird itself is discussed (luring) in relation to the welfare of the decoy bird and the birds to be lured. The next steps of catching and/or killing birds, or otherwise, have not been included in this condensed advisory report under the effects on animal welfare.

The designation⁶ of other decoys, if the birds used are alive, only concerns captive-bred magpies, crows or jackdaws which are used as a means of luring birds to cage traps and box traps. If there are insufficient captive-bred specimens in stock, the wish has been expressed to use species taken from the wild. The IPO's proposal also relates to starling and duck specimens. Live decoy ducks (wild ducks) and wood pigeons⁷ are authorised and are still used in some parts of the Netherlands. An exemption was granted for starlings in connection with a damage control pilot project involving catching starlings live and relocating them.

Animal welfare

If decoy magpies, crows and jackdaws (plus starlings and ducks) receive sufficient care, animal welfare will be comparable to that of kept animals. These birds should be bred in

⁵ In 1987, the former Ministry of Agriculture, Nature and Food Quality imposed restrictions on the use of live decoys in hunting. Their use was later banned completely, due to the large numbers of migratory geese, mainly white-fronted and bean geese, which could be shot as a result. Live decoys that were used to catch wild geese alive in clap-nets (a traditional Dutch method called "*ganzenflappen*") for scientific research purposes formed an exception. The effectiveness (large numbers) may now give reason to re-authorise this method.

⁶ Under the Flora and Fauna Act, it is prohibited to keep wild birds in captivity, as set out in Section 9(5) of the Animals (Management and Damage Control) Decree (*Besluit Beheer en Schadebestrijding Dieren*)

Live decoys may only be used if: a. they are captive-bred magpies, black crows or jackdaws, which are used as a means of catching magpies, black crows or jackdaws with cage traps, or with box traps, the design of which precludes physical contact between the decoy and the bird to be captured. This similarly applies under the new Nature Conservation Act. Nature Conservation Decree (*Besluit Natuurbescherming*), Section 3.9(5). The designation of decoy birds, referred to in paragraph two, in the preamble and in subparagraph b, applies when live birds are used only if: a. they are magpies, black crows or jackdaws which are used to catch magpies, black crows or jackdaws with cage or box traps;

b. captive-bred birds are used.

⁷ Flora and Fauna Act, Section 50(1.e.) decoy ducks or decoy pigeons, provided they are not blind or mutilated; Animals (Management and Damage Control) Decree, Section 9(5) a. they are captive-bred magpies, black crows or jackdaws which are used as a means of catching magpies, black crows or jackdaws with cage traps, or box traps, the design of which precludes physical contact between the decoy bird and the bird to be captured, and b. the decoy birds are provided with sufficient food and water.

In principle, other decoy birds are unauthorised, except where a special exemption has been granted.

captivity. It is expressly prohibited to clip their wings or blind them or to mutilate them in other ways.

If birds are taken from the wild, they will be deprived of their freedom. Kept as a captive decoy, they will no longer be able to display natural behaviour. This can cause chronic stress, anxiety and distress. However, they will be assured of safety (no predators), food security and veterinary care, which, from the bird's perspective, are advantages. Where adult birds are concerned, they will never be able to adapt to life in captivity. This will impair their welfare (unacceptable).

If youngsters are taken from their nest in the imprinting phase and are reared by hand, they will be able to adapt better than adult animals to life as a kept animal, close to human beings. The removal of youngsters from their nest can impair the welfare of parents and their offspring. No general statements can be made on the welfare of young birds in such situations, as this largely depends on the species, husbandry conditions, etc. The Council is not unanimous about the acceptability of this aspect, the predisposition of a minority is that it is unacceptable to separate parents and their offspring.

The use of birds taken from the wild impairs welfare. If it is essential to attract birds, a population of captive-bred animals must be available. A captive-bred population is preferable to specimens taken from the wild.

As a luring method in itself, the use of decoy magpies, crows and jackdaws (as well as starlings and ducks) does not impair the welfare of the birds to be lured. However, additional steps, such as catching and killing birds, can impair their welfare.

Ethical aspects of using decoy birds taken from the wild

The decoy magpies, crows and jackdaws (as well as starlings and ducks) are instrumental in attracting birds of their own kind. Even if their welfare is safeguarded, use of this method conflicts with recognition of the animals' intrinsic value. Various moral views in society about respect for intrinsic value and care for individuals can result in moral indignation. Specimens taken from the wild are deprived of their freedom.

Further ethical aspects relate to the steps after using decoy birds (catching and/or killing, research purposes, etc.). The ethical aspects of using dead birds must be considered prior to obtaining and killing these birds.

Based on this analysis, the Council concludes that using decoy birds (magpies, crows, jackdaws, starlings and ducks) as a lure in itself does not cause unacceptable welfare problems if the decoys have been bred in captivity. However, the next steps, such as catching and killing birds, can impair bird welfare. The use of adult decoy birds taken from the wild causes unacceptable welfare problems. No general statements can be made on the welfare of young birds taken from the wild as this largely depends on the species, husbandry conditions, etc. The Council is not unanimous about the acceptability of this aspect; the predisposition of a minority is that it is unacceptable to separate parents and their offspring. Respect for the intrinsic value of the animal and the dependence of young animals (parent-offspring relationship and care for individuals) also play a role here.

2.2.3. Decoy bird sounds

Like decoy birds, making decoy sounds using acoustic or mechanical luring devices (such as decoy whistles), can also be used as a method to get ducks and geese within shooting distance (prevention of unnecessary injury)⁸. Both mechanical and electronic luring devices are available for a wide range of bird species. Examples include the black crow, magpie, greylag goose, white-fronted goose, Canadian goose, wild duck, wigeon and Egyptian goose. Luring devices do not work equally well for all bird species. Only the use of decoy sounds/decoy whistles and other devices which can produce decoy sounds (luring) is discussed in relation to the welfare of the birds to be lured. The next steps of catching and/or killing birds, or otherwise, have not been included under the effects on animal welfare.

Based on this analysis, the Council concludes that the use of decoy whistles and other devices used to produce decoy sounds as a luring device in itself does not cause welfare problems. However, additional steps, such as catching and killing birds, can impair their welfare.

2.2.4. Artificial light and night vision devices

According to the IPO, artificial light, fitted to a rifle or otherwise, may be necessary for certain damage control methods. According to the IPO, the use of artificial light aims to increase effectiveness during twilight and dark night hours in specific cases where the number of birds must be reduced in a short period of time. These birds are mainly nocturnal foraging birds (such as wigeons and other ducks, plus geese at full moon and when the sky is clear). Devices, such as a residual light amplifier and night vision binoculars, could be used for this purpose. The purpose of these means/methods is to allow a rifle to also be used at night⁹.

In the past, the Wildlife Compensation Fund (*Faunafonds*) frequently issued advice on the effectiveness of these devices for population management and damage control purposes, particularly for mammals (mostly foxes and wild boars).

The use of a laser has been designated as a deterrent by the IPO and it has therefore been excluded. Lasers can have harmful effects. It is not clear whether birds' eyes are resistant to high-energy light. It could have harmful effects. Whether this is the case for laser pointers is also not known.

Little is known about whether different colours of light are less disturbing for birds. Blue light is known to have a calming effect on poultry. Infrared light may be visible to certain birds; at present, there are no indications suggesting that it has a disturbing effect.

Animal welfare

The use of artificial light in dark night hours can disturb birds and the environment (other animals). Disturbance caused by light can occur because it triggers animals' curiosity, frightens them or disorients them¹⁰. Where birds are concerned, the use of artificial light

⁸ Luring devices are used as a means of population management aimed at reducing the size of the population. In damage control, luring devices help to disperse birds when individual birds are killed ("bird dispersal aided by culling"). Culling works as a deterrent for other birds.

⁹ Without these devices, vision would be poor. This would make the range shorter, adversely affect precision and make it difficult to recognise species.

¹⁰ Terms such as the "attraction" and "repulsion" effects are also used in this context. The effects of permanent lighting on mammals, such as bats and Mustelidae, are known, but amphibians and insects can also be

can drive away sleeping or foraging birds. It can cause disorientation and fear/anxiety and can provoke large groups of birds into flying up into the air. This can impair their welfare. Other prevalent species and interests should also be taken into consideration. It is unclear whether the use of artificial light is so effective that birds which are difficult to tell apart can be distinguished from each other (such as various geese species).

The use of a night vision device in itself does not impact animal welfare. However, the methods with which night vision binoculars are combined to kill birds do impact animal welfare.

Ethical aspects of using artificial light and night vision devices

The use of artificial light interferes with the natural rhythm, darkness and sleep of animals and the environment. Conversely, sleeping birds are easier to approach (less disturbance for the animals) than birds active during daylight.

Based on this analysis, the Council concludes that the use of a night vision device (infrared light) as a means does not cause welfare problems. The use of artificial light has a disturbing effect (in a non-selective manner) and should be avoided.

2.2.5. Gun silencers

According to the IPO, gun silencers can be used, subject to strict conditions at all times and only for a limited target group, to prevent unnecessary disturbing effects on species that are to be shot, other species and the environment. The use of gun silencers is intended for specific cases where the number of birds must be reduced in a short period of time (and is only permitted if consent has also been granted on the basis of the Weapons and Ammunition Act (*Wet wapens en munitie*)). Silencers can also be used for night-time operations near urban areas or in areas that are sensitive to disturbance from a nature conservation perspective.

Recommendations from the Wildlife Compensation Fund concerning the use of silencers are intended for mammals, including for killing red deer in the Oostvaardersplassen nature reserve, to prevent disturbance to waterfowl and other birds.

The Guidelines on Geese Culling state that the use of a silencer, possibly in conjunction with subsonic ammunition, can significantly reduce the disturbing effect of a bullet gun shot (depending on the calibre). This means that more geese can be killed and the "dispersive"/disturbing effect on the environment will be reduced. The "dispersive" effect of culling will similarly be reduced.

Animal welfare

Silencers reduce disturbance to birds that are to be shot, other animals and the environment. However, there is still a residual sound. It is not clear whether the animals to be killed are less aware of what is happening and are calmer. Birds do not only react to the sound of a gunshot; they also react to the reaction of birds of the same species. Without a silencer, after a single shot birds will become agitated/frightened and will fly

disturbed by artificial light. Disorientation can disrupt sleep/darkness and consequently energy balance and biorhythm. Depending on the exposure (duration, intensity) this can cause exhaustion and a swifter death. Light sources can divert birds and cause them to fly off course.

away. With a silencer, the same reaction will perhaps occur after a few gunshots. The use of a silencer will not make much of a difference in terms of the degree of agitation/anxiety in the animals to be killed.

Ethical aspects of using silencers

The use of silencers can ensure effectiveness, though shooting larger numbers of birds depends on the reactions of birds of the same species. The use of a silencer facilitates less disturbing interventions in areas which are sensitive to disturbance.

Based on this analysis, the Council concludes that the use of silencers as a means/device does not cause welfare problems.

2.3. Capturing birds

2.3.1. Bal-chatri traps

A bal-chatri trap is a cage containing a live or imitation bait to lure birds of prey. Nylon nooses are attached to the cage to snare the legs/claws of birds of prey so that they can be caught alive and released elsewhere. The transportation of the bird in another cage, to another location or other next steps are not included in the effects on animal welfare in this section.

Bal-chatri traps are used at airports (as an alternative to culling) or for scientific research purposes, such as fitting birds with rings or transmitters. According to IPO information, specific knowledge of bal-chatri traps is required and professionals are therefore only authorised to use them on the basis of an exemption. There are anecdotes about repeatedly catching the same individual after it has been caught in a cage and relocated (the type of cage is unclear). Consequently, there is reason to doubt the effectiveness of this method. However, this does suggest that animals can cope with being caught and relocated without suffering injury or dying as a result (though this is no guarantee). It is unclear whether and for how long entrapment affects the natural predatory behaviour of the bird (association of "punishment" of being stuck with hunting behaviour/bait).

Animal welfare

The legs of birds of prey captured in a bal-chatri trap become entangled in the nylon nooses. The animal then attempts to free itself from its position, which causes considerable stress, anxiety and distress, and as a result impairs the captured bird's welfare.

The bird relies heavily on the person that controls the trap and can free it. It is not clear how difficult it is to disentangle a bird from a bal-chatri trap. The bird is handled in this process and follow-up actions take place. After that, the animal will be transferred to another cage and transported to a different location. The trap is not designed specifically for birds of prey and it is unclear how selective the bal-chatri trap is and whether other birds can also become entangled in it. Presumably, only birds of prey will want to strike and catch the bait. The risk of injury will diminish when intervening quickly after the bird has been caught. It is unclear whether birds can sustain permanent injury the longer

they are trapped inside the bal-chatri trap. In the interests of animal welfare, it is vital that cage traps of this type are monitored closely.

If a live bait is offered, its welfare will be considerably impaired, both due to the stress from being caged and the life-threatening proximity of the predator.

Ethical aspects of using bal-chatri traps

Capturing birds adversely affects animal welfare and implies the impairment of integrity, which must be countered by compelling interests. Capturing and relocating birds can be used as an alternative to killing them. Besides moral issues relating to the animal, the fact that people may take offence to this procedure should also be considered: it is an unpleasant sight to see a bird of prey trapped inside a bal-chatri trap. Additional ethical aspects are associated with the steps to be taken after capture (transport/etc.).

On the basis of this analysis, the Council concludes that using a bal-chatri trap as an alternative to killing animals and for research purposes does not cause unacceptable welfare problems for birds of prey if live bait is not used and if a number of implementation aspects are taken into consideration. Conditions must be specified for the latter aspects, stating how to prevent animals from being trapped for too long and sustaining unnecessary injury. The maximum duration of entrapment must be specified exactly as well as the frequency with which the bal-chatri trap in the field is checked, the technology/ICT and the presence of a visual surveillance system to permanently monitor the situation remotely; these are the conditions for safeguarding welfare and the design requirements of the bal-chatri trap and the environment. In addition, requirements must be drawn up for appropriate transport. The Council recommends monitoring captured birds to assess the long-term effects. If the implementation aspects cannot be ensured, this means that the method is unacceptable from an animal welfare perspective.

2.4. Killing birds

In order to use the means and methods of killing birds set out below, the birds must be captured or otherwise gotten hold of first. These prior actions have not been assessed in terms of the effects on animal welfare¹¹. Capturing birds causes stress, anxiety and distress and adversely affects animal welfare.

2.4.1. Striking, stabbing and cutting weapons

¹¹ The Guidelines on Geese Culling issued earlier state that geese must first be captured in order to kill them (the methods include stabbing in the neck, cervical dislocation, electrocution and gassing with CO₂). The limited available literature indicated that this is relatively easy and causes the least disturbance only in the moulting period, at the end of the nesting season. Additional measures, such as drugged bait or more welfare-impairing methods of capture, will need to be taken at other times. From a welfare perspective, the preference is to capture complete families (parents and their offspring). The best chance for this is during the moulting period, a relatively short period of 3 – 4 weeks. In practice, there are indications that the disturbing and welfare-impairing effects of capturing and rounding up geese differs by species. Greylag geese in particular are said to react in a more agitated fashion than other species. The Guidelines on Geese Culling stated that it would be advisable to conduct further research in this area. The same applied to the disturbing effect capturing geese has on other animals and plants in the wetlands because, according to the Habit and Birds Directives, significant disturbance could pose a serious impediment in permitting moulting geese to be captured.

According to IPO information, these weapons are used to kill animals that have already been taken. Birds, such as pheasants and ducks (geese?), which have been shot or injured can be killed with these weapons in force majeure situations, as can "small specific categories of birds" that have been captured in a cage trap to "prevent crop damage", for instance.

The term "striking, stabbing and cutting weapons" is an extremely broad concept. There are many different types of knives and a lot of weapons can be used as a striking weapon (not only clubs, the butt of a gun, sticks, but in principle rackets and suchlike as well). The Weapons and Ammunition Act makes a distinction between various categories of weapons. It is unclear which weapons the IPO means can be used for this purpose.

The following striking, stabbing and cutting weapons are used for production animals:

- striking weapons: penetrative captive bolt; non penetrative captive bolt (such as the Zephyr) and a percussive blow to the head. Captive bolts are more commonly referred to as slaughtering masks;
- stabbing and cutting weapons: bleeding with no anaesthesia.

The immediate lethal impact of these weapons depends on the type of bird (size and weight), the method and the person using the weapon. Sometimes, an animal is only stunned/anaesthetised and an additional act of killing is required such as slitting the throat and arteries. This largely depends on the combination of animal and device.

Animal welfare

When using stabbing and cutting weapons, the birds do not lose consciousness immediately, and it takes some time for them to die. The difference between loss of consciousness, paralysis (tonic immobility) and death is not always easy to establish.

A blow to the head is only lethal as a product of a certain mass and a certain acceleration ($F=m \times a$). Loss of consciousness occurs immediately, although the animal can recover and regain consciousness. Because the effect of a captive bolt and a blow to the head can be reversible, an additional act of killing is required.

Bleeding without anaesthesia is irreversible and is only authorised for production animals for religious rites subject to certain conditions. Because loss of consciousness does not occur immediately, this method is not acceptable without prior anaesthesia. Stabbing in the neck and decapitation are painful and death is not instantaneous (RDA, 2012). Since death is not instantaneous in decapitation, the procedure can be painful and is not regarded as animal friendly. In the case of geese that are to be slaughtered, this method is only deemed suitable for animals which have already been anaesthetised (EFSA, 2006 according to Van der Weide & Rijks, 2013).

When using these methods without anaesthesia, it can take some time for death to occur (20 seconds). This can be accompanied by considerable pain, which will impair the animal's welfare for a short period of time.

When using striking, stabbing and cutting weapons, birds must be taken first (e.g. by capturing or shooting them) and then handled. The IPO information only states that these weapons are supplementary in force majeure situations. The animals will already be injured, from a shot wound for example, and will already experience pain, anxiety and stress. Handling and securing animals exacerbates the impairment of their welfare.

Given that the use of striking, stabbing and cutting weapons largely depends on the user's skill and the operating characteristics of the weapon to be used, conditions for use must be laid down (weapon types/directions for use according to the type of bird/training/education/monitoring). However, where this method is concerned it is difficult to determine whether these aspects will be carried out properly, which poses a risk in terms of impairing animal welfare. The use of standardised captive bolts depends less on the person performing the procedure.

From an animal welfare perspective, striking, stabbing and cutting weapons are unsuitable as a direct method, only as a stopgap solution to spare animals from further suffering. It should always be examined whether a better means or method can be used. In this context, the use of cage traps is not entirely comparable to a force majeure situation in that the birds in the cages are expected to be killed and other methods are preferred (such as a lethal injection or anaesthesia). From an animal welfare perspective, situations such as clubbing an animal to death are fundamentally wrong. Stabbing in the neck is a method which is difficult to perform and requires training. It is definitely inadvisable for large groups of animals, and may only be used as an emergency measure, not as a standard method. Decapitation is relatively easy to perform, but does not cause immediate loss of consciousness. The larger the bird, the more difficult it is and the longer it takes for loss of consciousness to occur. For this reason, decapitation is only acceptable for smaller birds and should not be used for geese or swans.

Ethical aspects of using striking, stabbing and cutting weapons

As stated earlier, any form of killing is not a moral, neutral act and requires justification. Another factor that comes into play in the use of striking, stabbing and cutting weapons is that, in many cases, it is an unpleasant sight to see an animal bleeding and suffering convulsions during decapitation. This raises questions not only in terms of respect for the intrinsic value of the animal, but also in terms of whether the method accords with human dignity. The answer should be determined by the need, or lack of alternative methods, for killing the birds. From an ethical viewpoint, it will only be acceptable in a very limited number of cases.

Based on this analysis, the Council concludes that the use of striking, stabbing and cutting weapons from an animal welfare and ethical perspective is unsuitable as a direct method, and should only be used as a stopgap solution for individual birds which are already injured, depending on the bird species. It should always be examined whether a better means or method can be used instead.

2.4.2. Gassing

According to IPO information, this method is used to kill large numbers of captured birds such as geese. Geese are herded into a capturing device, such as a pen, during the moulting period. In specially prepared containers or vehicles, the animals are exposed to gas (CO₂) that flows in from a mobile, airtight lockable unit (a trailer or container). Under Council Regulation (EC) No 1099/2009, the following gases are authorised for production animals:

- High concentrations of CO₂ (<40% – legal limit) for poultry, except for geese and ducks¹². In the Netherlands, this is also an authorised method of killing wild geese. More than 60% CO₂ is usually used for high concentrations. CO₂ induces loss of consciousness due to hypercapnia or, combined with a lack of oxygen, hypoxia. After this, death has yet to occur. The effect depends on the concentration. With low concentrations, it takes longer for the animals to die; with high concentrations, death is quicker. The means or method is reversible if the exposure time is short;
- CO₂ – in two phases for poultry. This is used in slaughterhouse circumstances. In phase 1, exposure to <40% during consciousness leads to unconsciousness (immediately or gradually in several phases). After the birds lose consciousness, they are subsequently exposed to a higher concentration;
- CO₂ with inert gasses (N₂, Ar) for poultry. This is reversible if the exposure time is short;
- Inert gasses (N₂, Ar). This is reversible if the exposure time is < three minutes.

The different gasses work in different ways. High concentrations of N₂ and argon cause the animals to inhale insufficient oxygen, which leads to severe anoxia, inducing loss of consciousness and death. CO₂ ensures a high CO₂ load in the bloodstream, which causes a shortage of oxygen or a rapid drop in blood pH and brain fluid. The lower pH value leads to loss of consciousness and ultimately death.

The anaesthesia arising from exposure to these gases (CO₂, N₂ and argon) is reversible if the exposure time is too short and sufficient oxygen is again inhaled. The animals should therefore remain in the gas until death occurs. CO₂ pressure induces faster breathing. CO₂ is a gas which is used for narcosis, whereas N₂ and Ar are not.

The way in which birds cope with breathing and gases varies widely. Birds that can fly at high altitudes or species that can remain under water for a longer period of time (such as water birds) deal with factors such as changes in pressure and oxygen deficiency in different ways. Gassing is currently used only for poultry and geese.

Animal welfare

It is painful to inhale high concentrations of CO₂ (>40%) due to the strong acidification of the mucous membranes. For this reason, a two-phase anaesthetisation method is required for poultry, which does not expose the animals to high concentrations of CO₂ when they are conscious.

This effect does not occur when inhaling high concentrations of N₂ and argon (inert gasses). Killing by means of anoxia requires a controlled, extremely low O₂ concentration to prevent the animals from quickly regaining consciousness.

Birds must be captured in order to be gassed, which also adversely affects animal welfare, giving rise to stress and anxiety (used on large numbers of birds, this procedure can also cause disturbance to other animals in the environment). Rounding up moulting geese is a method that can be carried out relatively smoothly, but it does require expertise and conditions must be imposed. The lack of clarity about using gas for birds

¹² This is not authorised based on the view that water birds can do without O₂ for a longer period. Research clearly shows that Pekin ducks and wild geese are as sensitive to CO₂ as other poultry (e.g. chickens and turkeys).

that are not yet able to fly brings unknown risks in terms of welfare impairment (flying up, flying into walls, injuries, stress and anxiety). This method would seem to be unsuitable for this group.

The Guidelines on Geese Culling issued earlier state the following: "When using gassing with CO₂ as a method of killing birds, it is vital to gradually build up the concentration of CO₂¹³ to stun the birds first before death occurs, keeping convulsions to a minimum. It is vital to ensure the gradual build-up of the concentration of CO₂ for all geese in the gas chamber, or to opt for a two-phase method. This must be monitored, verified and enforced. Scientific research shows that the addition of argon to the gas mixture does not have a welfare-enhancing effect. The use of CO is inadvisable for safety reasons." "Welfare impairment is kept to a minimum when the animals are captured during the moulting period at the end of the nesting season. In practice, this is a period of around four weeks". When using gas for large numbers of animals, a lot of teams and mobile equipment will need to be deployed to capture them. According to practical experts, the restrictive factor is not the availability of gassing devices, but rather the availability of competent capture teams. "The impaired welfare of geese that are to be slaughtered relates directly to the skill of the catchers, and it is vitally important they are competent."

Killing with the aid of CO₂ is not suitable for all types of birds. Some species are so sensitive that capturing them in order to gas them induces greater stress than actually killing them. The degree of stress also depends on the waiting time between capturing and killing them and how they are treated in the pen in which they have been captured. Any transport used after the birds have been captured will also impair their welfare. Research among farm animals shows that transport can be a particularly stressful experience for animals, depending on numerous factors, including the travel distance and the animals' age.

If large numbers of geese, caught with nets and traps, are to be killed, gassing is the quickest and probably the least stressful method.

The "capture and kill" method should preferably be performed (subject to certain conditions) on site in mobile gassing equipment, given that transport constitutes a further, avoidable impairment of welfare (RDA, 2012). This aspect was also taken into consideration in the assessment. The bird species, the local situation, the time, the place and the period jointly determine the use of this means or method.

Ethical aspects of using gases

As stated earlier, any form of killing is not a moral, neutral act and requires justification.

The Guidelines on Geese Culling state that, out of all the various methods for killing geese, asphyxiation with a gas mixture triggers the strongest reactions from society: *"Some people draw parallels with the large-scale gassing of people during World War II. Although one may question whether this abhorrent parallel is justified, we do need to acknowledge these sentiments in society. It is striking, for that matter, that this parallel has been voiced to a far lesser extent, if at all, when it comes asphixiating chickens and pigs which are used to produce food."*

¹³ High concentrations of CO₂ are permitted by law for killing in situations other than slaughtering. In the interests of animal welfare, it is vital to build up the concentration.

Capturing and slaughtering large numbers of vulnerable animals and indeed entire families conflicts with recognition of the intrinsic value of animals and the ensuing moral duty to care for individual animals. Against this background, this method can similarly provoke moral indignation. The sight of large numbers of animals being herded into gassing installations can be extremely unpleasant.

Besides the risks for animal welfare, using gas on birds that are still able to fly is an unpleasant sight. This raises questions not only in terms of respect for the intrinsic value of the animal, but also in terms of whether the method accords with human dignity. The answer should be determined by the need, or lack of alternative methods, for killing the birds. From an ethical viewpoint, it will only be acceptable in a very limited number of cases.

Based on this analysis, the Council concludes that the full Guidelines on Geese Culling can be applied to the use of gases as a method or means of killing groups of moulting geese. The guidelines set out the specific preconditions (in context) under which this method is acceptable from an animal welfare perspective. Furthermore, requirements must be imposed on the equipment (including the build-up of gas concentrations, measuring equipment and a viewing window) and use of the equipment (including numbers of animals, duration and expertise).

2.4.3. Electrical stunning

The Council was asked to assess electrical stunning. Electrical stunning is not a method of killing, but is discussed below, for the sake of completeness, in combination with electrocution (killing with an electric current).

Electrical stunning is an interim step between capturing and killing, whereas electrocution can also cause instant death. Two methods of electrical stunning/electrocution can be used for slaughtering production animals:

- The head-only stun: the electric current only passes through the animal's head, so only through its brain.
- The head-to-body-stun: the electric current passes through the animal's brain and the rest of its body, including its heart.

The requirement for stunning for the purpose of slaughter is that the method induces loss of consciousness for a sufficient period of time to guarantee that animals do not regain consciousness during additional acts of killing, such as exsanguination.

According to the IPO, electrical stunning can also be used for captured wild birds. As stated earlier in the Guidelines on Geese Culling, while ample scientific information is available on electrocution as a method of *stunning* poultry, there is a lack of knowledge about the use of electrocution as a method of *killing* geese. At that time, the Council recommended that the Ministry of Economic Affairs should conduct or commission further research into the effectiveness and welfare impairment of this method of killing geese and other water birds.

There may be considerable differences among wild birds. To ensure that death occurs in all animals, the decision can be taken to exsanguinate the animals immediately after administering the electric current by severing both jugular veins and arteries.

Animal welfare

Wild birds show larger differences in size and weight than poultry. This means that in practical situations it will be difficult to establish whether all birds have lost consciousness. It is difficult to establish loss of consciousness anyway.

The head-only stun does not always disrupt the heart rhythm. It is a single stun and the animal usually regains consciousness quickly. Additional acts of killing are therefore required. The effects on animal welfare of additional methods, such as severing jugular veins and arteries are discussed under striking, stabbing and cutting weapons. If the animals are unconscious and remain in a state of unconsciousness during exsanguination until death occurs, there is no additional risk of distress. In the head-to-body-stun at frequencies of <50Hz and with sufficient exposure, this method is irreversible and the animals die instantly. The minimum required voltage for electrocution has not been established. For both the head-only stun and the head-to-body stun, the animal must be secured. This is exceedingly stressful for wild animals.

The "capture, stun and kill" method should preferably be performed on site in a mobile unit, given that transport constitutes a further, avoidable impairment of welfare. However, in practical situations it is difficult to carry out electrical stunning/electrocution with captured wild animals. High-voltage equipment is required and in the field it is difficult to use an aggregate as a solution. A second practical problem is that, due to the individual differences between birds, a different approach for each type of bird is required. Moreover, from an occupational safety point of view, it can be dangerous to work with wet animals, with high risks involved for those performing the procedure.

Ethical aspects of using electrical stunning or electrocution

In addition to the general considerations associated with killing wild animals, the use of an electric current raises questions about the safety of those performing the work, particularly if the birds are wet.

Based on this analysis, the Council concludes that electrical stunning and electrocution are not practicable.

2.4.4. Cervical dislocation

According to the IPO, cervical dislocation can be used to kill just one specimen or small numbers of animals which have been captured, such as corvidae in cage traps, or shot. This method is only suitable in a limited number of situations (small numbers and far away from the urban area). According to the IPO, this must always be set out in the conditions attached to an exemption, in line with the Guidelines on Geese Culling.

Cervical dislocation can be performed manually or mechanically on production animals by stretching and torsion of the neck. There also is a glove with a built-in clamp, which is used in the United Kingdom to break the animal's neck more effectively. Cervical

dislocation is authorised for poultry with a maximum weight of 5kg. However, this procedure may only be carried out manually for birds weighing up to 3kg. A maximum of 70 birds per day may be slaughtered in this manner.

Cervical dislocation is a difficult method and strongly depends on the skills of the person performing it. It is important to break the top part of the neck to ensure that the brain stem is damaged. If a bird's neck is broken too low, paraplegia will occur without any guarantee of loss of consciousness. The technique is not easy to learn and cannot be performed effectively for large numbers of birds. Used on smaller birds (which are the same weight as ducks or smaller, around 1.5kg), and provided this method is performed in a technically proficient manner, it can lead to a quick death if both the neck is broken and the blood vessels are ruptured. A considerable amount of pressure is required for large birds as well as for large numbers of birds, which makes it difficult to carry out (van der Weide & Rijks 2013). This method is used on poultry and involves holding on to their legs and then stretching their neck, but this is not permitted for geese and swans.

Animal welfare

Cervical dislocation does not induce instant loss of consciousness and numbness and causes distress. Only if it is performed in a technically proficient manner will it lead to a quick death, but it is not instant. It is irreversible. Since death is not instantaneous and this procedure can therefore be painful and cannot be regarded as animal friendly, in the case of geese that are to be slaughtered this method is only deemed suitable for animals which have already been anaesthetised (EFSA, 2006).

Handling the birds during cervical dislocation causes anxiety and stress. From an animal welfare perspective, cervical dislocation is suitable as a direct method only if it is a stopgap solution. It should always be examined whether a better means or method can be used. In an urban environment, prior transport will usually be required for this method of killing, which will additionally impair welfare.

Ethical aspects of using cervical dislocation

In addition to the welfare problems stated, another factor that plays a role in cervical dislocation is that it is an unpleasant sight. This raises questions not only in terms of respect for the intrinsic value of the animal, but also in terms of whether the method accords with human dignity. The answer should be determined by the need, or lack of alternative methods, for killing the birds. From an ethical viewpoint, it will only be acceptable in a very limited number of cases.

Based on this analysis, the Council concludes that the use of cervical dislocation, from an animal welfare and ethical perspective, is unsuitable as a direct method, and should only be used as a stopgap solution for individual birds of the same weight as ducks or smaller (around 1.5kg), which are already injured, provided it is carried out by individuals who have mastered the technique. It should always be examined whether a better means or method can be used.

3. Conclusions and recommendations

3.1. Conclusions

- It is not possible to draw generic conclusions on the use of means, methods or arrangements. Not every means, method or arrangement presented to the Council is equally suitable for every bird and situation, given that the effects on animal welfare may differ. This depends on the characteristics of the species, the individual, the group and location-specific factors.
- The means referred may only be used if a thorough assessment has been made based, for instance, on the assessment framework drawn up by the Council in which animal welfare, the intrinsic value of the animal and other ethical aspects are taken into account.
- Apart from the effects on welfare, employing various means to capture and kill animals conflicts with the recognition of the intrinsic value of the animal. Various moral views in society about respect for intrinsic value and care for individuals can result in moral indignation, as in the case of live decoy geese, decoy birds used in bal-chatri traps, striking, stabbing and cutting weapons, gases and cervical dislocation. This raises questions not only in terms of respect for the intrinsic value of the animal, but also in terms of whether the method accords with human dignity. The answer should be determined by the need, or lack of alternative methods, for killing the birds. From an ethical viewpoint, means and methods will only be acceptable in a very limited number of cases. The use of means, methods and arrangements will always need to be assessed on the basis of a comprehensive assessment.
- The use of live decoy geese, decoy whistles and other devices which can produce decoy sounds, night vision devices and gun silencers as means in themselves do not cause unacceptable welfare problems. However, additional steps, such as catching and killing birds, can impair their welfare. The use of other decoy birds (magpies, crows, jackdaws, starlings and ducks) does not cause unacceptable welfare problems, provided they have been bred in captivity. However, the use of adult decoy birds taken from the wild does cause unacceptable welfare problems. No general statements can be made on the welfare of young birds taken from the wild, as this largely depends on the species, husbandry conditions, etc. The Council is not unanimous about the acceptability of this aspect; the predisposition of a minority is that it is unacceptable to separate parents and their offspring. Respect for the intrinsic value of the animal and the dependence of young animals (parent-offspring relationship and care for individuals) also play a role here.
- The use of a bal-chatri trap as an alternative method for killing animals and for the purpose of research does not cause unacceptable welfare problems for birds of prey if live bait is not used and if a number of implementation aspects are taken into consideration. Conditions must be specified for the latter aspects, stating how to prevent animals from being trapped for too long and sustaining unnecessary injury. The maximum duration of entrapment must be specified exactly as well as the frequency with which the bal-chatri trap in the field is checked, the technology/ICT and the presence of a visual surveillance system to permanently monitor the situation remotely; these are the conditions for safeguarding welfare and the design requirements of the bal-chatri trap and the environment. In addition, requirements must be drawn up for appropriate transport. If the

implementation aspects cannot be ensured, this means that the method is unacceptable from an animal welfare perspective.

- From an animal welfare and ethical perspective, the use of striking, stabbing and cutting weapons and cervical dislocation is not suitable as a direct method, only as a stopgap solution for individual birds (depending on the species and weight of the bird; cervical dislocation may only be used on birds which are the same weight as ducks or smaller) which are already injured. It should always be examined whether a better means or method can be used. Electrical stunning/electrocution is not practicable.
- The full Guidelines on Geese Culling should be followed for the use of gases as a method or means of killing groups of moulting geese. The guidelines set out the specific preconditions (in context) under which this method is acceptable from an animal welfare perspective. Furthermore, requirements must be imposed on the equipment (including the build-up of gas concentrations, measuring equipment and a viewing window) and use of the equipment (including numbers of animals, duration and expertise).
- In designating means, methods or arrangements in the Nature Conservation Decree, conditions must be incorporated for their use to safeguard animal welfare, as described under each means, method or arrangement in this condensed advisory report. Conditions must be drawn up stating for which birds a means, method or installation is authorised or unauthorised and what conditions apply to implementation and those using such means and methods.
- Means, arrangements and methods that give rise to problems for and impair bird welfare must be countered by compelling interests, substantiated by the fact that less stressful means, arrangements or methods are unavailable or inapplicable. The Council's guiding principle is that welfare problems and the impairment of welfare should be avoided as far as possible.

3.2. Recommendations

- To ensure a transparent and consistent decision-making process, the effects on animal welfare of all the means, arrangements and methods that can be used to capture and kill birds should be assessed, as well as the ethical aspects associated with their use. The Council would advise the Minister of Agriculture to perform such a subsequent assessment.
- The decision to proceed to capture and/or kill birds must be taken by the provincial authorities or the central government, given that the results of the assessments can differ by province due to regional diversity. The Council wishes to highlight the importance of a transparent and consistent decision-making process and recommends that all relevant values and interests be taken into account, including animal welfare, in an assessment that must be carried out prior to killing animals. The Council has developed an assessment framework for this purpose (see for example the 2016 "One Health" and 2012 "Duty of Care, Naturally" advisory reports). The Minister for Agriculture can offer the provinces guidance in the form of an assessment framework to ensure that decisions are taken in a consistent manner within the Netherlands. The Council will of course be available to extend this condensed advisory report with an analysis of further means and methods, and to issue an opinion on an assessment framework regarding their use.

- The Council wishes to highlight the importance of effective enforcement, given the numerous preconditions and principles that underlie an analysis and a decision.
- The terms "force majeure" and "stopgap solution" require further definition in this context and may not be used as an excuse to apply less animal-friendly methods. The Council recommends that a definition be documented and made explicit (capturing birds and then killing them is not a force majeure situation).
- The Council also recommends that a list of authorised striking, stabbing and cutting weapons (solely for use in force majeure and emergency situations) be drawn up based on the ethical aspects and enforcement in the field.
- The Council recommends that monitoring of the long-term effects of a bal-chatri trap on captured birds be implemented if this trap is to be used.
- The ten methods of killing which the Council was asked to assess have now been assessed individually in line with the request for an advisory report, without addressing the preceding steps (such as capture and killing), or the next steps (capture and killing after luring birds). "When taking decisions on which method of killing is the most acceptable in terms of animal welfare, not only should the particular method of killing be examined but also the entire process" (citation from: Van der Weide & Rijks 2013).
- The Council has noted that lethal injection has not been included in the list of means, arrangements and methods. For reasons of avian welfare, where possible, the use of narcotics (barbiturates) to anaesthetise or kill birds is the preferred method and should be added to the list of means and methods. In a number of situations, it is conceivable that it should be feasible to administer individual animals an injection, when they are in a cage trap for instance, or to use a stun gun. The prior expectation when using cage traps is that the animals will be captured and killed, and a prior approach can be devised accordingly (this is not a force majeure situation). Currently, use of the means and method lies with the hunters, managers and animal control officers who are granted permits and exemptions for this purpose. The administration of injections is reserved for veterinarians.
- The situations in which it may sometimes be necessary to use means, methods or installations often have underlying causes for which people are individually or jointly responsible. If land bordering airports is made attractive to birds, it is logical that lots of birds will flock to the area. In such cases, it may be more effective to identify and resolve the root cause of the problem rather than treating the symptoms and deciding on actions that will impair animal welfare. Alternative methods of capture and killing should always be considered first, also from an animal welfare perspective.

References

Bader, S., Borris Meyer-Kühling, Ronald Günther, Angele Breithaupt, Silke Rautenschlein and Achim D. Gruber, 2014. Anatomical and histologic pathology induced by cervical dislocation following blunt head trauma for on-farm euthanasia of poultry. *J. appl. Poult. res.* 23 :546–556.

Baker SE, Sharp TM, Macdonald DW, 2016. Assessing Animal Welfare Impacts in the Management of European Rabbits (*Oryctolagus cuniculus*), European Moles (*Talpa europaea*) and Carrion Crows (*Corvus corone*). *PLoS ONE* 11(1): e0146298. doi:10.1371/journal.pone.0146298

Cors JC, Gruber AD, Günther R, Meyer-Kühling B, Esser KH, Rautenschlein S., 2015. Electroencephalographic evaluation of the effectiveness of blunt trauma to induce loss of consciousness for on-farm killing of chickens and turkeys. *Poult Sci.* 2015 Feb;94(2):147-55. doi: 10.3382/ps/peu038. Epub 2015 Jan 20.

Cramp, S. & K.E.L. Simmons 1977. Handbook of the birds of Europe, the Middle East and North Africa: the birds of the Western Palearctic. Vol. 1. Oxford University Press, Oxford.

Council Regulation (EC) No 1099/2009 2009. Council Regulation No 1099/2009 on the protection of animals at the time of killing. *Official Journal of the European Union* L303, 1–30.

Ebbing, B.S. 2000. Ganzenvangen voor de wetenschap: ringonderzoek aan wilde ganzen. *Alterra report* 155. Alterra, Wageningen.

Erasmus MA1, Lawlis P, Duncan IJ, Widowski TM., 2010. Using time to insensibility and estimated time of death to evaluate a non-penetrating captive bolt, cervical dislocation, and blunt trauma for on-farm killing of turkeys. *Poult Sci.* 2010 Jul;89(7):1345-54. doi: 10.3382/ps.2009-00445.

Wildlife Compensation Fund Annual Report 2010. Wildlife Compensation Fund, Dordrecht.

Wildlife Compensation Fund Annual Report 2011. Wildlife Compensation Fund, Dordrecht.

Wildlife Compensation Fund Annual Report 2012. Wildlife Compensation Fund, Dordrecht.

Wildlife Compensation Fund Annual Report 2013. Wildlife Compensation Fund, Dordrecht.

Wildlife Compensation Fund Annual Report 2014. BIJ12-unit Wildlife Compensation Fund, Utrecht.

Gerritzen, M., Hellebrekers, L.J., Stegeman, J.A., Herten, J. van, 2015. Expert report: Doden van dieren op het primaire bedrijf.

Gerritzen, M.A.; Reimert, H.G.M.; Lourens, A.; Bracke, M.B.M.; Verhoeven, M.T.W., 2013. Killing wild geese with carbon dioxide or a mixture of carbon dioxide and argon. *Animal Welfare* 22 (1). - p. 5 - 12.

Gerritzen, M. 2010. Het doden van wilde ganzen met CO2 en argon. Report 338a. Wageningen UR Livestock Research, Lelystad.

Gerritzen, M.A.; Lambooij, E.; Reimert, H.G.M.; Stegeman, J.A.; Spruijt, B.M., 2006. Susceptibility of Duck and Turkey to severe hypercapnic hypoxia. *Poultry Science* 85 (6). - p. 1055 – 1061.

Gregory, N.G., Wotton, S.B., 1990. Comparison of neck dislocation and percussion of the head on visual evoked responses in the chicken's brain. *Veterinary Record* 126, 570-572.

Inglis, I. R., 1985. "Humane control of rural birds." Humane control of land mammals and birds: proceedings of a symposium held at the University of Surrey England, 17th to 19th September, 1984/(edited for UFAW by David P. Britt). Potters Bar: Universities Federation for Animal Welfare

IPO (Association of Provincial Authorities), 2016. The designation of means for capturing or killing birds in draft and implementing regulations under the Nature Conservation Bill. Submitted on 19 January 2016 to the Minister for Agriculture together with appendices.

Martin, Jessica E., 2015. Humane mechanical killing methods for killing poultry on-farm. PhD Thesis College of Medical, Veterinary and Life Sciences, University of Glasgow.

Matthews, G.V.T. & C.R.G. Campbell 1969. Weights and measurements of Greylag Geese in Scotland. *Wildfowl* 20:86-93.

Melman, T.C.P., H.J. de Lange & A.P.P.M. Clercx 2011. QuickScan effectiviteit van het weren en verjagen van ganzen. Wageningen, Alterra, Alterra report 2251

Oord, J.G. 2009. Handreiking Faunaschade Preventieve maatregelen, soorten faunaschade, wetgeving, beleidsregels en procedures. Wildlife Compensation Fund, Dordrecht.

Polderdijk, K. 2008. Ganzenflappen: Ganzenvangst vroeger en nu. In: Lumeij, J.T. , D.A. Jonkers and J.J.H.G.D. Karelse 2008. *Beter één vogel in de hand...; over vogelvangst, valkerij en eieren zoeken in ambacht, cultuurhistorie, natuurbescherming en wetenschap.* KNNV Uitgeverij, Zeist.

RDA, 2012. Guidelines on Geese Culling

Snow, D.W. & C.M. Perrins 1998. *The Birds of the Western Palearctic. Concise Edition.* Oxford University Press, Oxford, UK.

Weide, M. van der & M. Rijks 2013. "Gereedschapskist". Maatregelen voor het verminderen van schade door ganzen in de zomerperiode. IPO on behalf of the 12 provinces & Ganzen-7 (Netherlands Society for the Protection of Birds (Vogelbescherming Nederland), Dutch Federation of Agriculture and Horticulture (LTO), National Forest Service in the Netherlands (Staatsbosbeheer), Society for the Preservation of Nature in the Netherlands (Vereniging Natuurmonumenten), Federatie Particulier Grondbezit & Natuurlijk Platteland Nederland).

Woolley, S.C. and Gentle, M.J. 1988. Physiological and behavioural responses of the domestic hen to hypoxia. Research in veterinary science Volume 45, Issue 3, November 1988, Pages 377-382.

Credits

The Council on Animal Affairs (*Raad voor Dierenaangelegenheden* – RDA) is an independent council of experts that gives the Minister for Agriculture solicited and unsolicited advice on multidisciplinary issues in the field of animal welfare and health. The Council on Animal Affairs comprises scientific experts and professional practitioners, who serve in a personal capacity, are independent and not bound by any instructions.

The draft condensed advisory report was submitted to the full Council for review. Consequently, this advisory report is a product of the full Council.

The Council on Animal Affairs consists of the following experts:

Prof. J.J.M. van Alphen	J.Th. de Jongh
G.B.C. Backus	J. Kaandorp
Dr H.M.G. Beers-Schreurs	Prof. B. Kemp
W.T.A.A.G.M. van den Bergh	Prof. F. van Knapen
A.G. Dijkhuis	Prof. P.A. Koolmees
Prof. A.A. Freriks	Prof. M.P.G. Koopmans
Prof. S. Haring	Dr F.L.B. Meijboom
Prof. L.A. den Hartog	F.C. v.d. Schans
A.L. ten Have-Mellema	Dr M.C.Th. Scholten
Prof. L.J. Hellebrekers	Prof. M.M. Sloet v.
Dr S.A. Hertzberger	Oldruitenborgh-Oosterbaan
J.E. Hesterman	Prof. J.A. Stegeman
A.J.M. van Hoof	M.H.A. Steverink
Dr H. Hopster	H.W.A. Swinkels
Prof. A. van Huis	Dr J.W.G.M. Swinkels
M. de Jong-Timmerman	Prof. van Trijp
	R.A. Tombrock
	H.M. van Veen
	P.J. Vingerling (until 1 March)

For more information on the Council on Animal Affairs, visit our website: www.RDA.nl, where you can also download all previous advisory reports.