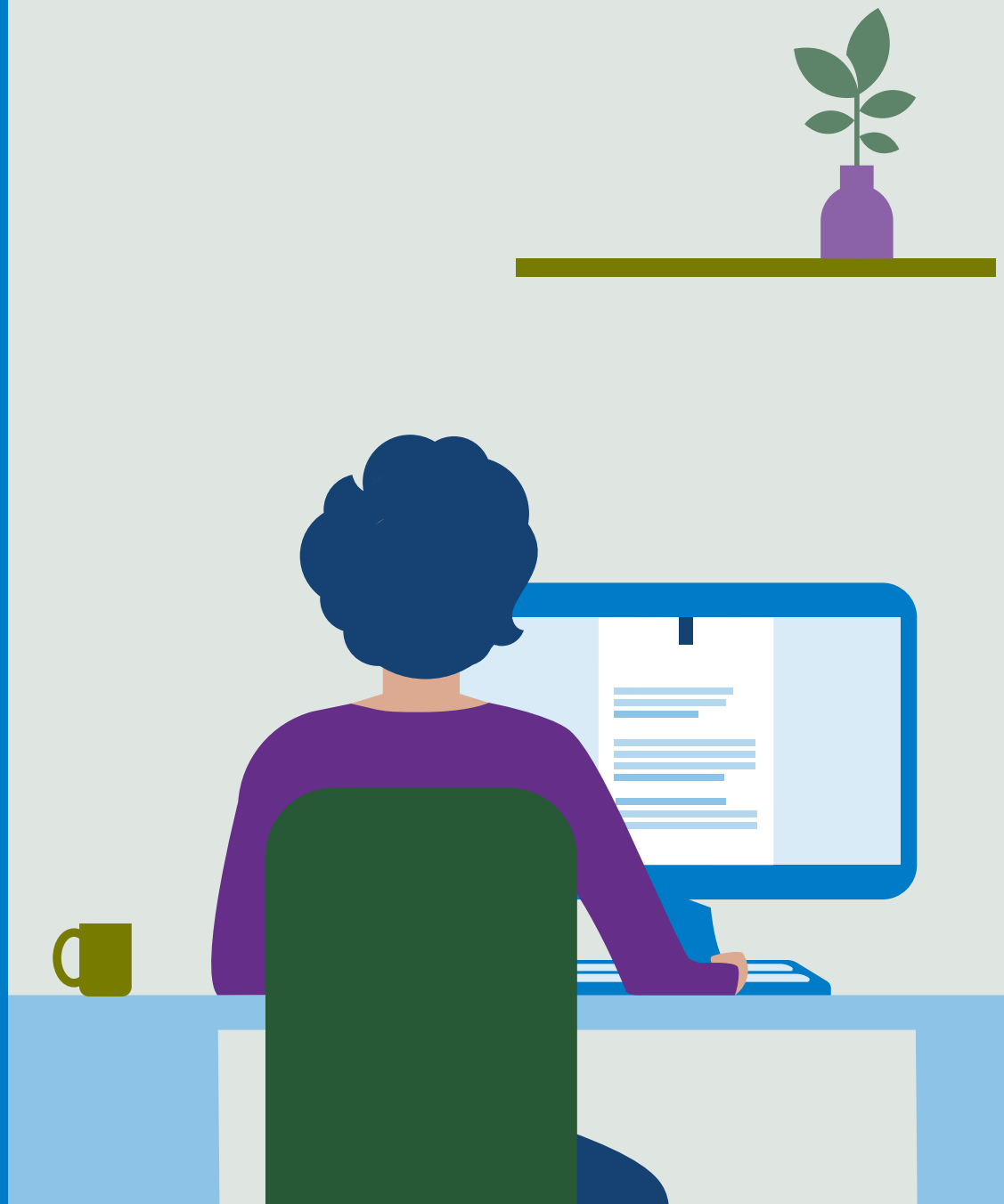
Central Authority for Scientific Procedures on Animals

Experiments involving wild animals in their natural habitat

Guideline issued by the Central Authority for Scientific Procedures on Animals



Inhoud

1 Introduction

This guideline is intended to support the interpretation of the Animal Experiments Act Wet op de dierproeven Wod) in relation to procedures involving wild animals in their natural habitat. The framework set out in the Animal Experiments Act is based on European Directive 2010/63/EU. The guideline is intended for all those directly or indirectly involved in this field of research, including researchers, fieldworkers, establishment licence holders, Animal Welfare Bodies (AWBs), Animal Ethics Committees (DECs), inspectors and trainers of fieldworkers.

This guideline provides a further elaboration of the framework established by the Central Authority for Scientific Procedures on Animals (CCD) for licence-required animal procedures involving wild animals in their natural habitat. These frameworks are supplementary to those described in the guideline "*What constitutes an animal procedure under the experiments on animals act?*", which primarily focuses on the application of the Animal Experiments Act to research involving animals (including wild animals) in laboratory settings. Both guidelines have been drafted to be readable as standalone documents. As a result, a certain degree of overlap is unavoidable.

Chapter 2 of this guideline discusses the legal framework that determines when research involving wild animals in their natural habitat qualifies as a licence-required animal procedure. This chapter describes the scope of the Animal Experiments Act[1]. The legal framework has also been translated into a decision tree, included in Appendix 1.

Chapter 3 elaborates on several general provisions of the Animal Experiments Act that are relevant to fieldwork. Chapter 4 is devoted to wild animals fitted with externally attached transmitters. To support work involving transmitters, a checklist has been included in Appendix 2.

Chapter 5 addresses several aspects that are particularly relevant to the registration of animal procedures. As nearly all research involving wild animals in their natural habitat also falls within the scope of the Environment and Planning Act (Omgevingswet), Chapter 6 briefly discusses the relationship between the Animal Experiments Act and this legislation.

An important part of this guideline consists of the example tables included in Appendix 3. These tables contain a range of example scenarios indicating whether a situation constitutes a licence-required animal procedure and the considerations underlying that assessment.

***Disclaimer**: This document may contain translations of Dutch legal texts. These are unofficial and for informational purposes only. In case of discrepancies, the original Dutch legislation prevails.*

[1] The scope of this guideline does not include experiments involving feral domesticated (stray) animals living in the wild.

2 Legal framework

The Animal Experiments Act Wet op de Dierproeven asks three questions to determine whether a given activity constitutes an animal procedure:

1. **Does the procedure involve a laboratory animal as described in the Act?** The Act applies to certain animal species and developmental stages.
2. **Is the experiment carried out for one of the objectives specified in the Act?** This relates to both excluded and included objectives.
3. **Does the expected level of discomfort exceed the threshold of severity?** Does the anticipated pain, suffering, distress or lasting harm equal or exceed that caused by the introduction of a needle in accordance with good veterinary practice?

These three framework-defining questions are discussed below, with reference to the Experiments on Animals Act. In addition, several subsections further address the question of when research involving wild animals in their natural habitat qualifies as a licence-required animal procedure.

2.1 Does the procedure involve a laboratory animal?

To determine whether a procedure performed on an animal constitutes an animal procedure, it makes sense to first consider the animal in question. Only if the animal qualifies as a laboratory animal within the meaning of the Act can it then be assessed whether the activity to be carried out on that animal falls within the other criteria of an animal procedure (i.e. objective and discomfort). The animals/species groups to which the Animal Experiments Act applies are described in Section 1b, paragraphs 5 and 6.

Section 1b paragraphs 5 and 6

5. This Act applies to:
a. live non-human vertebrate animals, including:
   - independently feeding larval forms; and
   - foetal forms of mammals from the last third of their normal development;
b. live cephalopods and other invertebrate species designated by Order in Council for which it may reasonably be assumed that they can experience discomfort as a result of an animal procedure.
6. By way of derogation from paragraph 5, this Act applies to animals used in animal procedures that are at an earlier stage of development than those referred to in paragraph 5, where those animals are intended to be allowed to live beyond that developmental stage and, as a result of the animal procedure carried out, are likely, after reaching that developmental stage, to experience pain, suffering, distress or lasting harm.

For fieldwork, several relevant aspects require further clarification when determining whether an animal qualifies as an experimental animal. Sections 2.1.1 (Developmental stages), 2.1.2 (By-catch) and 2.1.3 (Animals not specifically bred for use in animal procedures) discuss these aspects in further detail.

2.1.1 Developmental stages

With the exception of one group of invertebrates (cephalopods), the Animal Experiments Act focuses on vertebrates. Section 1b(5)(a) states that the use of immature developmental stages may also constitute a licence-required animal procedure. The thresholds applied differ between animal groups.

For reptiles, amphibians and fish, this threshold applies from the stage at which animals feed independently. In research involving these animal groups, this means that the distinction between whether or not an animal qualifies as an experimental animal, and therefore whether or not a licence-required animal procedure may apply, depends on whether independently feeding larval forms are involved (animal procedure) or larval forms that still rely on their yolk sac (no animal procedure).

For mammals, this threshold applies from developmental stages in the final third of gestation. For birds, animals are only regarded as experimental animals within the meaning of the Act after hatching, unless procedures have been carried out on the embryos at an earlier stage that result in above-threshold discomfort after hatching.

2.1.2 By-catch

Animals that are unavoidably involved in a licence-required animal procedure as by-catch, but which are not considered target animals in the legal sense, are not regarded as experimental animals. This also applies where such animals experience above-threshold discomfort or even die as a result of the procedures carried out in the context of the animal procedure.

As part of their assessment of the 3Rs (Replacement, Reduction and Refinement), the DEC and the AWB should take into account the effects on animals other than the target animals. This includes, for example, the selection of capture methods that minimise by-catch as much as possible (see also Section 2.2.6 Population studies involving wild fish for human consumption). Numbers of by-catch animals do not need to be included in the project application or in the registration of animal procedures.

2.1.3 Animals not specifically bred for use in animal procedures

The Animal Experiments Act imposes restrictions on the use of certain categories of experimental animals. These include animals from non-approved sources, wild animals in their natural habitat and endangered species. The relevant sections of the Act are discussed below. First, the Animal Experiments Act sets requirements regarding the origin of experimental animals.

Section 11

1. Animals from species designated in the Directive may only be used in procedures where those animals have been bred for use in animal procedures.
2. Notwithstanding (1), a project licence may be granted for a project that includes procedures involving animals not bred for use in such procedures, if there is scientific justification that the purpose of the animal procedure cannot be achieved by the use of an animal which has been bred for use in procedures.

The situation described in Section 11(1) never applies to research involving wild animals in their natural habitat. In such cases, Section 11(2) always applies. This means that the project application must scientifically demonstrate that the objective of the animal procedure cannot be achieved using animals bred for use in animal procedures.

In addition, Section 10g of the Animal Experiments Act specifies where animal procedures may be carried out.

Section 10g

1. Animal procedures shall be carried out in the establishment of a user.
2. Notwithstanding (1), a project licence may be granted for a project that includes animal procedures outside the establishment of a user if it is demonstrated, on the basis of scientific justification, that the purpose of the animal procedure cannot be achieved if the procedure is performed in a user's establishment.

Research involving wild animals in their natural habitat is (almost by definition) not carried out within the "*establishment of a user*" (that is, within the animal facilities of an establishment licence holder). This means that a project application must provide a scientific justification demonstrating that the objective of the animal procedure cannot be achieved without a natural environment.

Regarding endangered species, Sections 10^{e}(4) and 1c are relevant.

Section 10^{e}

4. Animals, other than non-human primates, belonging to species designated by or pursuant to a general administrative order as endangered shall not be used in procedures, unless there is scientific justification to the effect that the objective of the animal procedure cannot be achieved by the use of species other than those which the order designates as endangered species and the procedure has one of the objectives referred to in Section 1c(b), first indent, (c) or (e).

Section 1c

b. translational or applied research with any of the following aims:
   - the avoidance, prevention, diagnosis or treatment of disease, ill-health or other abnormality or their effects in human beings, animals or plants,

c. c.for any of the aims in point (b) in the development, manufacture or testing of the quality, effectiveness and safety of drugs, foodstuffs and feed-stuffs and other substances or products;

e. research aimed at preservation of the species.

As a general rule, endangered species may not be used in animal procedures. An exception is only possible where it has been scientifically demonstrated that the objective of the animal procedure cannot be achieved without using that species, and where the animal procedure serves a permitted objective as referred to in Section 1c of the Act. Research aimed at species conservation may constitute such an exception.

Within the Animal Experiments Act, an endangered animal is defined as an animal belonging to a species listed in Annex A of EU Regulation 338/97 and not covered by Section7(1) of that Regulation[2].

The EU list (Annex A) contains species with the highest level of protection and is updated periodically (approximately every two to three years). The list was primarily established for the purpose of regulating trade in endangered species.

In this context, it is recommended that animals designated as endangered or protected under other legislation, such as the EU Birds Directive and the EU Habitats Directive, are also taken into consideration.

Further information on the restrictions applicable to the use of endangered animals in animal procedures is provided in Section 2.2.4.

2.2 Is the experiment carried out for one of the objectives specified in the Act?

The sum of all procedures performed on a laboratory animal can only constitute an animal procedure if the objective for which the procedures are performed is one of the objectives described in Section 1c of the Act.

The Animal Experiments Act contains several sections that define this scope of application (permitted or prohibited) and specify the objectives to which the Act does or does not apply. In addition to the content of these sections, the hierarchy in which they must be applied is also important. This hierarchy is determined by the order in which the sections are presented in the Animal Experiments Act and also forms the basis of the decision tree included in Appendix 1.

[2] Section 7 (1) of EU Regulation 338/97 contains the list of species bred in captivity.

2.2.1 Scope

Section 1b

1. This Act applies to animals that:
a. are used for scientific or educational objectives; or
b. are used or intended to be used in animal procedures, or are specially bred in order for their organs or tissues to be used for scientific objectives.

"*Scientific objectives*" in Section 1a is interpreted to mean that the Animal Experiments Act applies to all situations involving "*structured and systematic data collection carried out in a scientific manner*". The broad scope of this interpretation is also illustrated by the objectives described in Section 1c.

2.2.2 Objectives to which the Act applies

Section 1c describes the objectives for which animal procedures may be carried out. For fieldwork, the objectives "*fundamental research*", "*protection of the environment in the interest of the health or welfare of humans or animals*" and "*species conservation research*" are the most relevant.

Section 1c

Notwithstanding Section 2(2–3), animal procedures may be carried out for the following objectives only:

a. fundamental research;
b. translational or applied research with any of the following aims:
   - the avoidance, prevention, diagnosis or treatment of disease, ill-health or other abnormality or their effects in human beings, animals or plants, –the assessment, detection, regulation or modification of physiological conditions in human beings, animals or plants, or
   - the welfare of animals and the improvement of the production conditions for animals reared for agricultural purposes;
c. for any of the aims in point (b), during the development, manufacturing or testing of the quality, effectiveness and safety of drugs, foodstuffs and feed-stuffs and other substances or products;
d. protection of the natural environment in the interest of the health or welfare of humans or animals;
e. research aimed at preservation of the species;
f. higher education, or training for the acquisition, maintenance or improvement of professional skills;
g. forensic research.

Section 2 (2)
With regard to the performance of animal procedures as referred to in Section 1c(b–f), the establishment licence shall apply only insofar as the procedures, whether directly or indirectly, are intended to serve the interests of human or animal health or nutrition.

2.2.3 Objectives to which the Act does not apply

Certain activities (objectives) are explicitly excluded from the scope of the Act. These are described in Section 1b(7).

Section 1b (7)
This Act shall not apply to:
a. non-experimental agricultural practices;
b. non-experimental clinical veterinary practices;
c. veterinary clinical trials required for the marketing authorisation of a veterinary medicinal product;
d. practices undertaken for the purposes of routine animal husbandry;
e. practices whose primary purpose is to identify an animal;
f. practices not likely to cause a level of pain, suffering, distress or lasting harm equivalent to, or higher than, that caused by the introduction of a needle in accordance with good veterinary practice.

According to this section, the Act does not apply to practices whose primary objective is the identification of an animal. In field research, the *marking/identification* of animals is one of the main and perhaps most commonly used research strategies. For a correct interpretation of this section, it is important to understand what the legislator intended by the terms "*practices*", "*primary objective*" and "*identification*". These concepts are explained in more detail below.

Is the identification (marking) of animals the primary objective or a means to an end?
The Animal Experiments Act does not apply to procedures whose primary objective is the identification of an animal. This is laid down in Section 1b(7)(e). As the marking of animals is common in field research, it is important to understand precisely what is meant in the Act by the terms "*practices*", "*primary objective*" and "*identification*".

Practices (Procedures)
"*Practices*" refers simply to all procedures carried out on an animal, such as ringing, tagging or attaching transmitters.

Primary objective of the procedure
To determine whether the Animal Experiments Act applies, the objective of the procedure must be considered:
- If the objective of the procedure falls within one of the official research objectives described in Section 1c of the Animal Experiments Act (such as fundamental research, species conservation research or environmental protection), identification is not considered the primary objective but merely a means to an end → the procedure falls within the scope of the Act and constitutes a licence-required animal procedure.
- Only where the sole objective of the procedure is to identify the animal is identification regarded as the primary objective → the procedure falls outside the scope of the Animal Experiments Act.

Where identification is the primary objective, the activity is not regarded as an animal procedure, even where anaesthesia is used or the procedure results in above-threshold discomfort.

Example
The application of an ear tag to a free-ranging Highland cow falls outside the scope of the Animal Experiments Act (as it forms part of "*regular husbandry practices*"). The application of an ear tag to a wild boar or deer living in the wild would, however, be regarded as an animal procedure.

2.2.4 Restrictions on objectives when using endangered species

Section 10e(4)
Animals, other than non-human primates, belonging to species designated by or pursuant to a general administrative order as endangered shall not be used in procedures, unless there is scientific justification to the effect that the purpose of the procedure cannot be achieved by the use of species other than those which the order designates as endangered species and the procedure has one of the purposes referred to in Section 1c(b), first indent, (c) or (e).

For the use of endangered species, an additional restriction applies with regard to the objectives specified in Section 1c. In addition to the scientific justification required for all wild-caught animals, experiments involving endangered species may only be carried out for a limited number of the objectives referred to in Section 1c, namely *Section 1c, subsection b, first indent, subsection c, or subsection e*.

Section 1c
b. translational or applied research with any of the following aims:
- the avoidance, prevention, diagnosis or treatment of disease, ill-health or other abnormality or their effects in human beings, animals or plants

c. for any of the aims in point (b) during the development, manufacturing or testing of the quality, effectiveness and safety of drugs, foodstuffs and feed-stuffs and other substances or products.
e. research aimed at preservation of the species.

Case study: The management of nature areas
A substantial proportion of research involving wild animals in their natural habitat is conducted in response to questions that fall within the high-level objective of "*the management of nature areas*".

This objective is not explicitly included in Section 1c (inclusive objectives) or Section 1b(7) (exclusive objectives). This coul have two consequences:
1. The Animal Experiments Act does not apply; or
2. The animal procedure in question is prohibited.

Which of these two situations ultimately applies is determined by the interpretation of the sections relating to the scope of application concerning "*objectives*". These are shown in steps 2, 3, 4 and 6 of the decision tree included in Appendix 1.

The interpretation of Section 1b(1) essentially depends on whether the research involves "*structured and systematic data collection carried out in accordance with scientific principles*".
Where this is the case, and research relating to the management of nature areas falls within the objective of "*protection of the environment in the interest of the health or welfare of humans or animals*" and/or the objective of "*species conservation research*", the research falls within the scope of the Animal Experiments Act and there is a legal basis for carrying out this type of experiment.

In all other cases, such research falls neither under the exclusive objectives nor under the inclusive objectives and would therefore be prohibited.

2.2.5 Collection of organs, tissues or bodily fluids
In the Netherlands, the killing of animals for the purpose of using their organs, tissues or bodily fluids in the context of one or more of the objectives described in Section 1c is regarded as a licence-required animal procedure[3].

The use of organs, tissues or bodily fluids from animals that have been killed for another reason (for example for pest control, consumption or commercial fishing) does not require a project licence. This changes where the researcher influences the method of capture in the context of the experiment, for example by determining the location or timing of capture. In such cases, the activity constitutes an animal procedure.

[3] In the Netherlands, unlike in other EU Member States, killing an animal without prior procedures in order to use their organs, tissues or bodily fluids is considered an animal procedure (Section 1(1a)) and therefore requires a licence. The associated level of discomfort may be no greater than mild. The Act requires that the competence and expertise of the persons performing the killing are ensured.

In experiments involving wild animals in their natural habitat, activities may sometimes consist solely of capture, where killing is part of the capture method. Examples include the capture of mice, moles and muskrats using snap traps, or fish caught in trawl nets. As this may affect the level of discomfort experienced by the animals, and because killing methods must comply with the permitted methods listed in Annex IV of Directive 2010/63/EU, a distinction must be made in the project application and the registration of animal procedures between:

- animals that die during capture
- animals that are captured alive and subsequently killed

In population studies with fish, some animals may still be alive after being caught, depending on the capture conditions. Where organs such as otoliths need to be collected, these animals are killed immediately after identification. For practical reasons, project licences and the registration of animal procedures make no distinction between animals that die during capture and those that are killed immediately afterward.

2.2.6 Population studies involving wild fish for human consumption

A large proportion of population studies involving wild fish consists of measuring and weighing animals (resulting in no above-threshold discomfort and therefore not constituting a licence-required animal procedure) and/or collecting otoliths, stomach contents, organs, tissues, etc. As explained in Section 2.2.5, where such activities are carried out for an objective referred to in Section 1c, they constitute a licence-required animal procedure. Because monitoring wild fish populations is often conducted in relation to their importance for food supply and is frequently carried out within a European context, it has been suggested that such population studies fall under the objective of "*non-experimental agricultural practices*", which Section 1b(7)(a) explicitly excludes from the scope of the Animal Experiments Act.

The collection of otoliths or other organs from fish for human consumption caught by a commercial fisher does not constitute a licence-required animal procedure. Nor does the collection of otoliths or other organs from by-catch fish that died during capture. However, where by-catch fish from a commercial fisher that would otherwise have been released alive are killed in order to collect otoliths or other organs, this does constitute a licence-required animal procedure. Likewise, killing and transporting wild fish to the laboratory for later collection of organs and/or identification purposes requires a project licence.

2.3 Is the expected level of discomfort above the threshold?

Where the level of discomfort experienced by an experimental animal as a result of a procedure carried out in the context of one of the seven objectives referred to in Section 1c(a)–(g) is equal to or greater than that caused by the introduction of a needle, the activity constitutes an animal procedure. Section 1(1)(a) of the Animal Experiments Act states the following in this regard:

> **Section 1**
> For the purposes of the provisions of or pursuant to this Act, the following terms are defined as follows:
> a. *animal procedure*: any use, invasive or non-invasive, of an animal for experimental or other purposes, with known or unknown outcome, or for educational purposes, which may cause the animal a level of pain, suffering, distress or lasting harm equivalent to, or higher than, that caused by the introduction of a needle in accordance with good veterinary practice.

The Animal Experiments Act defines the discomfort threshold as "*the introduction of a needle*". In applying this reference framework, the mildest situation is assumed: penetration of the dermis. In practice, this means that invasive procedures will almost always exceed the discomfort threshold and therefore constitute an animal procedure. An important aspect of the reference framework of "*the introduction of a needle*" is that it concerns short-term discomfort. In the case of multiple procedures involving less discomfort than "*the introduction of a needle*", the longer period of restraint may nevertheless result in above-threshold discomfort. Section 2.3.2 (Cumulative effects) discusses this in further detail.

Welfare impairments resulting from non-invasive procedures (for example the attachment of an external transmitter) may also result in above-threshold discomfort. Likewise, situations in which no direct procedures are performed on the animal (for example the manipulation of abiotic (environmental) factors) may also result in above-threshold discomfort and therefore constitute an animal procedure.

2.3.1 Restraint of animals

In many cases, restraint results in discomfort for the animal involved. The discomfort threshold for an animal procedure is based on short-term restraint necessary for the introduction of a needle by a competent veterinarian. This means that, in situations where no subsequent procedures are carried out that would in themselves result in above-threshold discomfort, but where the animal must be restrained for a significantly longer period than required for "*the introduction of a needle*", consideration should be given to whether this prolonged restraint may itself cause above-threshold discomfort.

Example
The attachment of a leg ring to a bird results in less discomfort than penetration of the dermis, and wearing a leg ring does not result in subsequent above-threshold discomfort. These considerations formed the basis for the conclusion that bird ringing does not constitute an animal procedure within the meaning of Section 1(1)(a). This assessment is based on the assumption that the restraint (and its duration) required for attaching a ring does not in itself result in above-threshold discomfort, which could, for example, occur where ring attachment is combined with extensive biometric measurements.

2.3.2 Cumulative effects

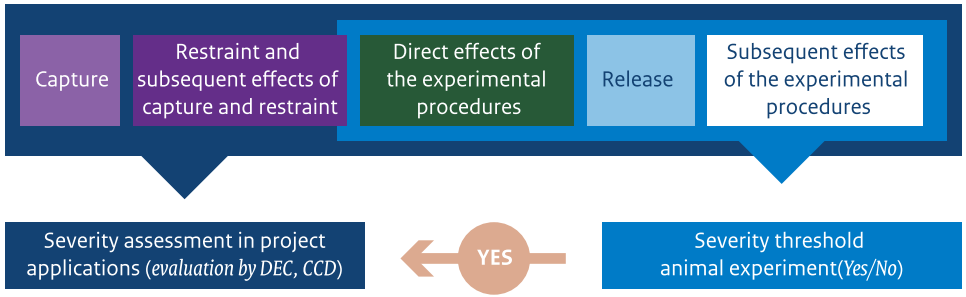
Cumulative effects must be explicitly taken into account when assessing discomfort. Where an animal is repeatedly exposed to procedures involving below-threshold discomfort, this may ultimately result in a situation involving above-threshold welfare impairment and therefore a licence requirement.

2.3.3 Classification of severity in the licensing process

A distinction must be made between the level of discomfort used to determine whether an animal procedure requires a licence (see also the guideline "*What constitutes an animal procedure under the experiments on animals act?*") and the level of discomfort described in a project application.

Once it has been determined that a licence-required animal procedure is involved, all factors contributing to the discomfort experienced by an animal in the context of the procedure must be included in the project application. This therefore also includes discomfort resulting from capture, restraint, etc. Capture procedures must be evaluated by the AWB in the context of the 3Rs, and welfare impairment resulting from capture/restraint forms part of the ethical evaluation carried out by the DEC and the CCD (see also Section 3.1 Capture methods). This approach is illustrated schematically in the figure below.

Figure 1. Schematic overview of the assessment of whether procedures involving wild animals constitute an animal procedure



2.3.4 Integrity

Recognition of the intrinsic value of an animal means that an animal, as a sentient being, is assigned an inherent value and that the interests of the animal are not automatically subordinate to those of humans. The Animal Experiments Act, the Animals Act and the Environment (Wet Dieren (website in Dutch)) and Planning Act (Omgevingswet (website in Dutch)) are all based on recognition of the intrinsic value of animals and nature.

Section 1a
In the exercise of authority issued by or pursuant to this Act, a recognition of the intrinsic value of the animal serves as a general guiding principle.

Section 1a of the Animal Experiments Act states that everyone involved in animal procedures (for example researchers, technical support staff, inspectors, licence holders, or members of a DEC or the CCD) must take the intrinsic value of the animal as a guiding principle in their actions.

This means that infringements on the integrity and welfare of animals must be prevented to the greatest extent possible. The concept of integrity refers to the wholeness and intactness of an organism and is linked to its ability to function independently and in a species-specific manner. Impairment of integrity is not always accompanied by impairment of welfare or health.

Every animal procedure involves a certain degree of instrumental use of the animal. Respect for integrity means that the animal should, to the greatest extent possible, be given the opportunity to function and flourish normally, in accordance with its individual and species-specific needs. Where this is not possible due to interventions involving the animal or its environment, integrity is considered to be impaired.

This must also be taken into account in procedures involving the handling of wild animals in their natural habitat. Recognition of the intrinsic value of the animal means that impairment of welfare, health or integrity is acceptable only when the objectives pursued justify it.

Various forms of impairment of integrity can be distinguished. Several examples are provided below.

Examples of impairment of integrity

- An animal's integrity can be physically violated by changing its body or bodily functions, for instance by pulling out feathers outside of the normal moulting season, clipping fins or applying markers.
- The integrity of the animal can also be violated in behavioural terms, by restricting the animal in its natural behaviour:
  - when its accommodation does not suit its behavioural and physiological needs,
  - when external transmitters/loggers are applied which interfere with the animal's normal behaviour,
  - when prominent colour markers result in animals of the same species no longer recognising the animal or its behaviour as being of their species, in translocation experiments for which animals are relocated to places they would never normally inhabit, and to which they may not be adapted.
- Integrity may be violated if the animal can no longer fulfil its 'reason for being': For a fox, this means, for example, that it can no longer hunt birds, and for a bird, that it can no longer protect its young against a fox or find another suitable nesting site.
- Instrumental use of an animal, for instance by implanting transmitters or killing it for its organs, is also considered to violate the animal's integrity.

3 Additional legal provisions

In addition to the legal framework that determines whether a licence-required animal procedure is involved, the Act contains several other relevant provisions relating to research involving wild animals in their natural habitat.

3.1 Capture methods

Section 10f

3. The capture of animals in the wild shall be carried out only by competent persons using methods which do not cause the animals avoidable pain, suffering, distress or lasting harm.

Once it has been established that a licence-required animal procedure is involved, the choice of a particular capture method must be justified in the project application. This means that it must be explained why the selected method is considered the most appropriate and refined method available. The consequences of capture for the level of discomfort experienced by the animals must also be described clearly and transparently.

The choice of a particular capture method for a given species must be substantiated on the basis of scientific literature, the applicant's own experience, or the experience of others with the species concerned. The following aspects play a role in this assessment:
1.Which additional legislation and frameworks are relevant to the choice of capture method?
2.What are the capture conditions?
3.Are there any unintended (indirect) environmental effects?

These aspects form part of the assessment carried out by the AWB, the DEC and the CCD.
The capture method and its effects on the animals are also taken into account in the welfare evaluations performed by the AWB.

Sections 3.1.1, 3.1.2 and 3.1.3 discuss these three aspects in further detail.

3.1.1 Additional regulations and frameworks for capture methods

In the Netherlands, many field studies make use of standardised capture methods that have been developed to minimise the impact on animal welfare while enabling responsible data collection.

No specific requirements for capture protocols have been established under the Animal Experiments Act. In a number of cases, however, capture methods are prescribed under other legislation or by the commissioning organisation:

- Research involving species covered by the Fisheries Act (website in Dutch) is restricted to capture methods permitted under that legislation.
- For research involving animals in their natural habitat, an environmental permit for a flora and fauna activity is required in most cases under the Environment and Planning Act[4]. The Environment Desk (Omgevingsloket) (website in Dutch) provides information on these permits.
- The Dutch Association of Ecological Consultancy Organisations (Netwerk Groene Bureaus) (website in Dutch) issues authorisations under the Nature Conservation Act and the Environment and Planning Act. Recipients are required to comply with species-specific protocols (including capture methods) developed in consultation with experts and incorporated into the relevant exemptions or permits. Research organisations that are not affiliated operate under their own permits and the associated conditions.
- The 'Vogeltrekstation' of the NIOO-KNAW issues individual licences to bird ringers under a framework permit in the context of the Environment and Planning Act and is responsible for training and certification. Prescribed capture methods and their careful application form an important part of these licences and training programmes.
- Commissioning organisations increasingly impose requirements regarding the quality of the research conducted, for example through accreditation schemes or by requiring the use of generally accepted capture protocols.

The project application includes a question concerning potentially conflicting legislation. The applicant must assess and indicate whether such conflicts exist. Where this is the case, consideration must be given to the possible consequences for animal welfare. Such conflicts may also affect the feasibility of the experiment.

The CCD has a supporting office that can advise researchers, AWBs and DECs on these matters.

[4] The Nature Conservation Act ceased to apply on 1 January 2024 and has been incorporated into the Environment and Planning Act. Permits and exemptions previously granted under the Nature Conservation Act remain valid until their stated expiry date.

3.1.2 Capture conditions

Section 10f

3. The capture of an animal in the wild shall be carried out by a competent person using methods that do not cause animals avoidable pain, suffering, distress or lasting harm.

When assessing whether "*avoidable pain, distress or harm*" occurs during or after capture, the following aspects must be taken into account in the project application:

1. Traps and other capture devices must be placed in such a way that additional discomfort (for example disturbance caused by humans or other animals, such as predators) is minimised as far as possible. Depending on the inspection frequency, shelter, bedding, food and water must be provided.
2. Consideration must also be given to the period of capture (for example the breeding season), the risk of disturbance, and the frequency with which traps are set and inspected. When setting and checking traps, the time of day at which the likelihood of capturing the target animal is greatest and the risk of by-catch is lowest plays an important role.

Several examples of additional measures to prevent unnecessary discomfort are listed below:

- The use of camera traps to increase the likelihood of successful capture of the target animal and reduce the risk of by-catch
- Equipping traps with a trap alarm or notification system
- Checking traps as early as possible in the morning for nocturnal animals
- Checking traps during the night and early morning for crepuscular animals
- Starvation must be prevented in all cases (for example in shrews and moles)
- Predation on captured animals must be prevented.

3.2 Unintended environmental impacts

Section 10a2

1. The Central Authority for Scientific Procedures on Animals shall grant a project licence for a project only if:

c. the project has been designed in such a way that the animal procedures can be carried out in the most humane and environmentally responsible manner possible.

The Animal Experiments Act primarily focuses on the protection of the individual animal. However, Section 10a2(1)(c) also addresses potential environmental effects. Within the Dutch licensing process, these environmental effects are interpreted broadly and are taken into account in the assessment of project applications.

Project applications must describe the consequences for animals indirectly affected by the research, for the species concerned, and for the natural habitat, as well as the measures taken to minimise these environmental effects.

Examples include:
- effects on the local population or species (particularly in the case of endangered species);
- effects on vulnerable habitats;
- effects on juveniles or eggs;
- introduction of pathogens or parasites.

In many cases, these aspects are also (partly) regulated under other legislation, such as the Environment and Planning Act.

3.3 Sick/injured animals

Section 10f

4. Animals that are found to be injured or in poor health during or after capture shall be examined by a veterinarian or another suitably qualified person. Measures shall be taken with regard to these animals in order to minimise their suffering as far as possible.
5. By way of derogation from subsection 4, the measures referred to in subsection 4 may be omitted where this is scientifically justified.

Section 10f(4) provides that where an injured or sick wild animal is captured, the animal must be examined by a veterinarian (or another suitably qualified person) and that measures must be taken to minimise the animal's suffering as far as possible.

At the same time, "*sick and weakened individuals form an intrinsic part of a natural population*". Veterinary intervention may therefore influence the outcomes of the research. Section 10f(5) provides the possibility, based on scientific arguments, to refrain from such veterinary intervention. These scientific arguments must be included in the project licence and form part of the assessment carried out by the DEC and the CCD.

The decision to refrain from intervention by a veterinarian or another suitably qualified person does not apply to injuries resulting from the capture, handling or restraint procedures themselves.

3.4 Sedation and anaesthesia during capture and subsequent procedures

Section 13

2. When anaesthesia is used, consideration shall be given to whether:
a. the administration of anaesthesia is more traumatic for the animal than the animal procedure itself; and
b. the administration of anaesthesia is incompatible with the objective of the animal procedure.

Section 13(2) applies both to the decision to use anaesthesia during capture and to any subsequent procedures.

When sedating captured wild animals, safety considerations often play a role, both for the animal and for the researchers. As a result, anaesthesia may be applied after capture in order to handle a wild animal safely, whereas sedation would not be necessary for the same procedures in a tame animal.

Because in most cases the anaesthesia does not reach a surgical plane, such sedation should not result in more than mild discomfort. Nevertheless, the use of sedation or anaesthesia after capture (including where this is administered without injection, for example by means of an inhalation anaesthetic) results in above-threshold discomfort in all cases. In such situations, a licence-required animal procedure is involved.

3.5 Release following the experiment

The release of wild animals following the completion of experimental procedures and/or their use in experiments also falls within the scope of the Animal Experiments Act. Sections 13d and 13e describe the relevant framework.

Section 13d

Animals that have been used, or were intended to be used, in an animal procedure may be released for adoption or returned to their habitat or to a husbandry system appropriate for the species, provided that:
a. the state of health of the animal permits this;
b. there is no danger to public health, animal health or the environment; and
c. appropriate measures have been taken to safeguard the welfare of the animal.

Section 13e provides that, where necessary, wild animals that have been housed within an establishment for a period of time must undergo a reintegration programme before being released back into their habitat. This programme should be aimed at providing the animal with a realistic opportunity to resume a normal natural life, for example through reintegration into the wild population.

Section 13e
Where a breeder, supplier or user releases for adoption animals that have been used, or were intended to be used, in an animal procedure, an adoption procedure shall be applied that provides for the socialisation of the animals to be released for adoption. In the case of wild animals, and where necessary, these animals shall undergo a reintegration programme before being returned to their habitat.

The project application must justify whether or not a reintegration programme will be applied. Where such a programme is chosen, it must also explain why it is considered justified to release the animal again following completion of the programme. These considerations are taken into account in the assessment carried out by the AWB, the DEC and the CCD.

3.6 End of the experiment

The end of an animal procedure is described in Section 13a.

Section 13a
1. An animal procedure is considered completed when no further observations are required for that procedure...

A distinction must be made between the release of wild animals into their habitat after completion of an animal procedure and release as part of an animal procedure. In animals from which only feathers, hair, blood and/or tissue samples are collected after capture for DNA analysis, and where no subsequent discomfort is expected, the formal end of the animal procedure coincides with the moment of release. Where animals are captured, fitted with a transmitter and subsequently released, the release forms part of the animal procedure. In such cases, data collection only begins after release.

Where the animal is not recaptured, or recapture proves impossible, there are in principle three moments that may be regarded as the end of the animal procedure:
1. the moment of the final (unsuccessful) attempt to recapture the animal;
2. the end of the duration of the project licence;
3. the (expected or confirmed) natural death of the animal, either during or after the duration of the project licence.

In the case of experiments that extend throughout the remaining lifetime of the animal and continue beyond the duration of the project licence, the animals must formally be transferred to a new project licence once the original licence has expired.

There are currently situations in which birds have been carrying transmitters for more than five years[5] and are still transmitting positional data. Where no new animals are fitted with transmitters, the animal procedure is formally concluded at the end of the duration of the project licence. At that stage, it is expected that no above-threshold discomfort is involved any longer and therefore no justification exists for submitting a new project application.

3.7 Animal Welfare Body

Every establishment is required to establish an Animal Welfare Body. This is set out in Section 14a.

Section 14a
1. Breeders, suppliers and users shall establish an Animal Welfare Body.
2. By way of derogation from subsection 1, categories of breeders, suppliers and users may be designated by or pursuant to a general administrative order that are not required to establish an Animal Welfare Body. Where no Animal Welfare Body is established, they shall ensure that the tasks of the Animal Welfare Body are carried out in the manner specified in that general administrative order.

Establishments that only carry out animal procedures resulting in no more than mild discomfort and consisting exclusively of routine, simple procedures are exempt from the obligation to establish an Animal Welfare Body. This is described in the Animal Procedures Decree (website in Dutch), Section 7(c).

[5] A project licence for animal procedures is granted for a maximum duration of five years.

Animal Procedures Decree – Section 7
By way of derogation from Section 14a(1) of the Act, the following categories of breeders, suppliers and users are not required to establish an Animal Welfare Body:
c. users who:
- do not carry out animal procedures involving dogs, cats, horses, non-human primates, endangered species as referred to in Section 10e(4) of the Act, or stray animals; and
- carry out only animal procedures that cause no more than mild discomfort and consist exclusively of routine, simple procedures.

This exemption does not apply to establishments conducting animal procedures involving endangered species (as referred to in Section 10e(4)) or stray animals. This means that establishments where research involving endangered animals in their natural habitat takes place, regardless of scale, must have an Animal Welfare Body, either independently or in collaboration with other establishments.

3.8 Fieldworkers' skills and competences

It is the responsibility of the establishment licence holder to ensure that persons carrying out experiments involving the capture of wild animals in their natural habitat under a project licence possess the required competences for these activities.

Section 10f
3. The capture of the animal in the wild shall be carried out by a competent person using methods that do not cause the animals any avoidable pain, suffering, distress or lasting harm.

Section 13f
3. The breeder, supplier and user shall have one or more persons on site who:
a. are responsible for overseeing the welfare and care of the animals in the establishment;
b. ensure that personnel dealing with the animals have access to species-specific information concerning the species housed in the establishment;
c. ensure that personnel are adequately educated, competent, continuously trained and supervised until they have demonstrated the required competence.

The person referred to in Section 13f(3) is responsible, on behalf of the establishment licence holder, for ensuring that personnel are competent, adequately educated and skilled, continuously trained and supervised until they have demonstrated the required level of competence. These competences must be transparent to the AWB and the Netherlands Food and Consumer Product Safety Authority (NVWA).

3.8.1 Training requirements

The Act distinguishes several functions within laboratory animal research:
- Persons who possess the expertise and competence required to care for and kill experimental animals (animal caretakers) (Section 13f(2a));
- Persons who possess the expertise and competence required to perform animal procedures (biotechnicians) (Section 13f(2b));
- Persons responsible for designing projects and animal procedures, who must meet requirements relating to expertise and competence (researchers) (Section 9 of the Animal Experiments Act and the Experiments on Animals Decree 2014);
- Persons responsible for overseeing the welfare and care of animals (proefdierdeskundige) (Section 13f(3a)).

The assessment of the competences of all persons involved in carrying out animal procedures forms an intrinsic part of the evaluation process. This assessment takes place at a general level in the project licence application and more specifically (person-related) in the working protocol of an experiment. The project application must indicate that the applicant has an infrastructure in place in which the required competences are safeguarded.

The current training pathways for the various functions within laboratory animal research generally do not adequately match the knowledge and skills required for work involving experiments with wild animals in their natural habitat.

For field researchers (Section 9), an additional fieldwork-oriented course may be followed (WIAS Courses), offered by Wageningen University.

In addition, the following is included in the Experiments on Animals Regulation 2014:

Experiments on Animals Regulation – Section 6(2)
Upon request, the Minister may grant an exemption from the requirement referred to in paragraph 1 if it is demonstrated by other means that the person who cares for experimental animals, performs biotechnical procedures or kills experimental animals possesses a comparable level of expertise and competence. The exemption may be limited to specific procedures involving experimental animals.

This Section provides the possibility for '*technical support staff fieldworkers*' (i.e. non-academic personnel) to obtain a (limited) Section 13f(1)/(2) authorisation through exemptions. Such an exemption may be requested from the NVWA (Application for exemption from training requirements under the Animal Experiments Act (website in Dutch)). This form also specifies the applicable requirements. The same form is used for exemptions/equivalence decisions relating to Section 9 personnel.

For clarification: exemptions previously granted under Section 16 relating to training requirements (formerly Section 12) remain valid under the current Animal Experiments Act. Transitional provisions for this are included in the Experiments on Animals Regulation (Section 11(2)).

Experiments on Animals Regulation – Section 11(2)
An exemption granted under Section 16 of the Act prior to the entry into force of the Act amending the Animal Experiments Act in connection with the implementation of Directive 2010/63/EU shall be deemed equivalent to an exemption granted pursuant to Section 6(2), insofar as that exemption relates to the training requirements for persons who care for experimental animals, perform biotechnical procedures or kill experimental animals.

3.8.2 Inspection and monitoring of experiments

A veterinarian or another suitably qualified expert must assess the health status of the animals. These persons must demonstrably possess the required competences and, where necessary, have completed appropriate training. These competences must be transparent to the AWB and the NVWA.

Persons assessing the health status of captured wild animals must possess at least the following competences:

- the ability to assess the normal behaviour, appearance and responses of the species concerned;
- knowledge of the characteristics of common diseases and injuries in the species concerned;
- knowledge of the 'normal' occurrence of diseases within the relevant population;
- knowledge of clinical signs and behavioural indicators of discomfort and disease, recognising that these may not always be clearly visible in wild animals;
- the ability to handle and observe the species concerned responsibly and appropriately;
- understanding of the possibilities and limitations where animals must be temporarily housed and treated;
- access to a relevant network of experts who can be consulted in emergency situations;
- the technical skills and resources required to take measures to limit the animal's suffering, including the ability to kill the animal rapidly and as humanely as possible.

4 Applying and using external transmitters

Where the attachment and/or carrying of transmitters or other equipment by an animal result in above-threshold discomfort and/or impairment of the animal's integrity, this constitutes a licence-required animal procedure.

Example
Carrying a transmitter may result in reduced life expectancy, an increased risk of predation, direct harm caused by the harness (for example due to excessively tight attachment or irritation of the underlying skin or feathers), a reduced contribution to reproduction and effects on metabolism, as well as aero- and hydrodynamic effects.

Experience gained in recent years has shown that the effects of carrying a transmitter are highly species-, context- and sex-specific. Experience with the same transmitter in comparable species has proven to only be of limited predictive value for the level of discomfort associated with a specific species/transmitter combination. In addition, there are indications that even within a single species, individuals may differ in their response to externally attached transmitters.

Appendix 2 contains a checklist concerning the use of transmitters in animals. The use of transmitters must comply with generally accepted standards[6] (including standards relating to dimensions and weight, use in healthy adult animals, and the prevention of interference with reproduction).

Where no experience exists with a specific attachment method or transmitter in a particular species, it is recommended, where practically feasible, first to conduct a controlled pilot study, for example using captive animals or animals in the field. Important prerequisites for a field pilot include adequate possibilities for observation, appropriate opportunities for recapture, and the use of transmitters that detach automatically from the animal remotely or after a short period.

There are transmitter, harness and animal species combinations for which sufficient experience has now been gained to conclude that the risk of above-threshold discomfort associated with attachment and carrying is negligibly small. In such cases, no licence-required animal procedure is involved. Examples of such situations are provided on the next page.

[6] For fish, amphibians and reptiles, no generally accepted guidelines have yet been established. It is likely that the same standards do not apply to all species and life stages. Based on a literature review involving the implantation of acoustic transmitters of various sizes in Atlantic salmon, the current guideline for Salmonidae is that the tag should not exceed 16% of the body length and 8% of the body weight.

Examples of the attachment and carrying of a transmitter that **do not** result in above-threshold discomfort:

Birds
- Geolocators and other equipment weighing less than 1% of the animal's body weight, attached to a leg ring or collar.
- Temporary attachment of transmitters or loggers (maximum 5 days), for example a radio transmitter attached to a tail feather or glued to feathers (whether or not trimmed), with a weight of no more than 3% of the animal's body weight.

Bats
- Measurements involving tagged animals that can be completed within a few days (for example, determining the roosting site of a species). The transmitters (maximum 5% of body weight) are attached using an adhesive that ensures detachment within a maximum of 5 days. The antenna is designed in such a way that it does not interfere with the animal's normal behaviour.

Mammals
- Collar-mounted transmitters used in large mammals (such as deer and wolves) weighing less than 3% of the animal's body weight.

Experience from previous research has shown that certain situations may result in above-threshold discomfort and therefore constitute a licence-required animal procedure. Examples of such situations are provided below.

Examples of the attachment and carrying of a transmitter that **do** result in above-threshold discomfort:
- Where anaesthesia or sedation is required after capture in order to attach the transmitter (including where such sedation is already applied as part of the capture procedure) (see also Section 3.4);
- Implantation of the transmitter (for example subcutaneous or intraperitoneal implantation);
- Where the applicable standards relating to maximum weight, size, attachment and/or attachment site are not followed for scientific reasons;
- Where there is a realistic risk of subsequent above-threshold discomfort (see also the examples in Appendix 3).

Efforts should be made to use transmitters that detach and fall off automatically after completion of the measurements, or to use situations in which the transmitter can be removed after completion of the experiment (see also Section 3.6).

Experience gained from transmitter studies and their success rates (such as the number of transmitters deployed and the number of transmitters recovered or successfully read out, as well as observations of the animals) form part of the welfare evaluation within the framework of the Code of Practice for Welfare Monitoring by the AWB. This evaluation is intended to reduce discomfort in future experiments and, where possible, to improve the transmitter or the attachment method.

The checklist in Appendix 2 supports researchers conducting studies in which animals carry transmitters or other equipment. It identifies elements that may influence the eventual level of discomfort and therefore the evaluation of a project by the DEC and the CCD, and in particular the evaluation of specific experiments by the AWB.

As transmitters and loggers are increasingly equipped with solar cells, and as long-term monitoring of individual animals is often desirable for research purposes, the need for methods in which transmitters detach and fall off automatically is decreasing. This also affects the determination of the end of the experiment, particularly where this extends beyond the duration of the underlying project licence (see also Section 3.6).

5 Registration of animal procedures

5.1 Classification of severity in the registration of animal procedures

As in the evaluation during the licensing process (see also Section 2.3.3 Classification of severity in the licensing process), the registration of animal procedures is based on all discomfort actually experienced by the animal. This means that discomfort resulting from capture and restraint must also be included.

Difference between estimated, actual and registered discomfort in the killing of animals and the collection of tissue:

As discussed in Section 2.2.5, the killing of animals for the purpose of collecting organs, tissues or bodily fluids is considered a licence-required procedure in the Netherlands. Under the current registration rules, this procedure is always classified as "*mild*" severity.

Unlike other registrations of animal procedures, any potentially higher discomfort resulting from capture and handling is not included in this registration. This creates a discrepancy between, on the one hand, the registration data and, on the other hand, the actual discomfort experienced and the severity assessments included in project applications, working protocols and welfare evaluations. However, these documents must always include the correct severity assessments.

5.2 Animal procedure in the natural habitat or in the laboratory?

In the registration of animal procedures, experiments involving wild animals in their natural habitat and experiments involving wild animals in the laboratory must be reported separately. In some cases, animals are temporarily removed from their natural habitat after capture for further observation, treatment or to perform (short-term) measurements.

The current legislation does not explicitly define when an activity constitutes field research (research in the natural habitat) and when it constitutes research involving wild animals in the laboratory. The explanatory memorandum accompanying an amendment concerning wild animals (Parliamentary Document 34062-3 (website in Dutch)) states that field research is involved "*where animals captured in the wild are used in an animal procedure and are not removed from their natural habitat, or are removed for no longer than 24 hours*".

This means that, in such situations, the legally prescribed housing requirements must be complied with. Where applicable, these requirements must be included in the project application.

However, the criterion "*removed from their natural habitat for no longer than 24 hours*" does not in all cases align logically with practice. In situations where a wild-caught animal (for example after the attachment of a harness) is kept under observation for more than 24 hours in the interest of the animal itself, the housing requirements must indeed be met, but this should not automatically mean that the experiment is regarded as an experiment in the laboratory.

For the registration of an animal procedure as an animal procedure in the natural habitat, the following definition therefore applies:

An animal procedure is considered to take place in the natural habitat where:
- the primary objective of the animal procedure is to collect measurement data after the animal has been returned to its natural habitat; or the animal is returned to its natural habitat within 24 hours after capture and the subsequent procedures.

Table 4 in Appendix 3 provides examples of experiments that, for registration purposes, are classified as "*in the natural habitat*" or "*in the laboratory*".

5.3 Animals from the wild and wild animals bred within an establishment

In the registration of animal procedures, in addition to the distinction between "*animal procedures in the natural habitat*" and "*animal procedures within the establishment*", a distinction is made between "*animals from the wild*" and "*wild animals bred within the establishment*", depending on where the animals were born:
- Offspring born within the establishment from wild-caught parent animals are not considered "*animals from the wild*".
- Offspring born in their natural habitat from wild parent animals kept within the establishment are considered "*animals from their natural habitat (wild fauna)*", even if they are subsequently brought back to the laboratory.

An example of offspring born in their natural habitat is provided on the next page.

Example
Offspring of wild birds kept within the establishment, which are placed as eggs with wild birds in their natural habitat and hatched there, and returned to the laboratory before fledging, are regarded as animals from the wild fauna.

In all cases, housing within the establishment must comply with the housing requirements set out in Annex III of Directive 2010/63/EU.

6 Environment and Planning Act and the Animal Experiments Act

The Animal Experiments Act (Wet op de dierproeven, Wod) primarily focuses on the protection of the individual (experimental) animal. Assessment under the Environment and Planning Act (website in Dutch), by contrast, focuses on risks to biodiversity (see also the Habitats Directive).

Under Directive 2010/63/EU and the Animal Experiments Act, the DECs and the CCD are also required to take "*effects on the environment*" into account in their evaluation. This is translated into questions such as:
- Is a protected species involved?
- What are the risks for the species, the population and the ecosystem?
- What are the consequences of carrying out the animal procedure?

In addition, the objectives "*protection of the environment*" and "*research aimed at preservation of the species*" are included in the Animal Experiments Act. Where relevant, these objectives also form part of the evaluation process.
There is therefore overlap between the assessment under the Environment and Planning Act and the assessment under the Animal Experiments Act in relation to animal procedures involving wild animals in their natural habitat. However, these procedures are conducted independently from one another.
For licence-required animal procedures involving wild animals in their natural habitat, an environmental permit for a flora and fauna activity is required in addition to a licence under the Animal Experiments Act. Information on this can be found via the Environment Desk (website in Dutch) and the Living Environment Information Point (website in Dutch).

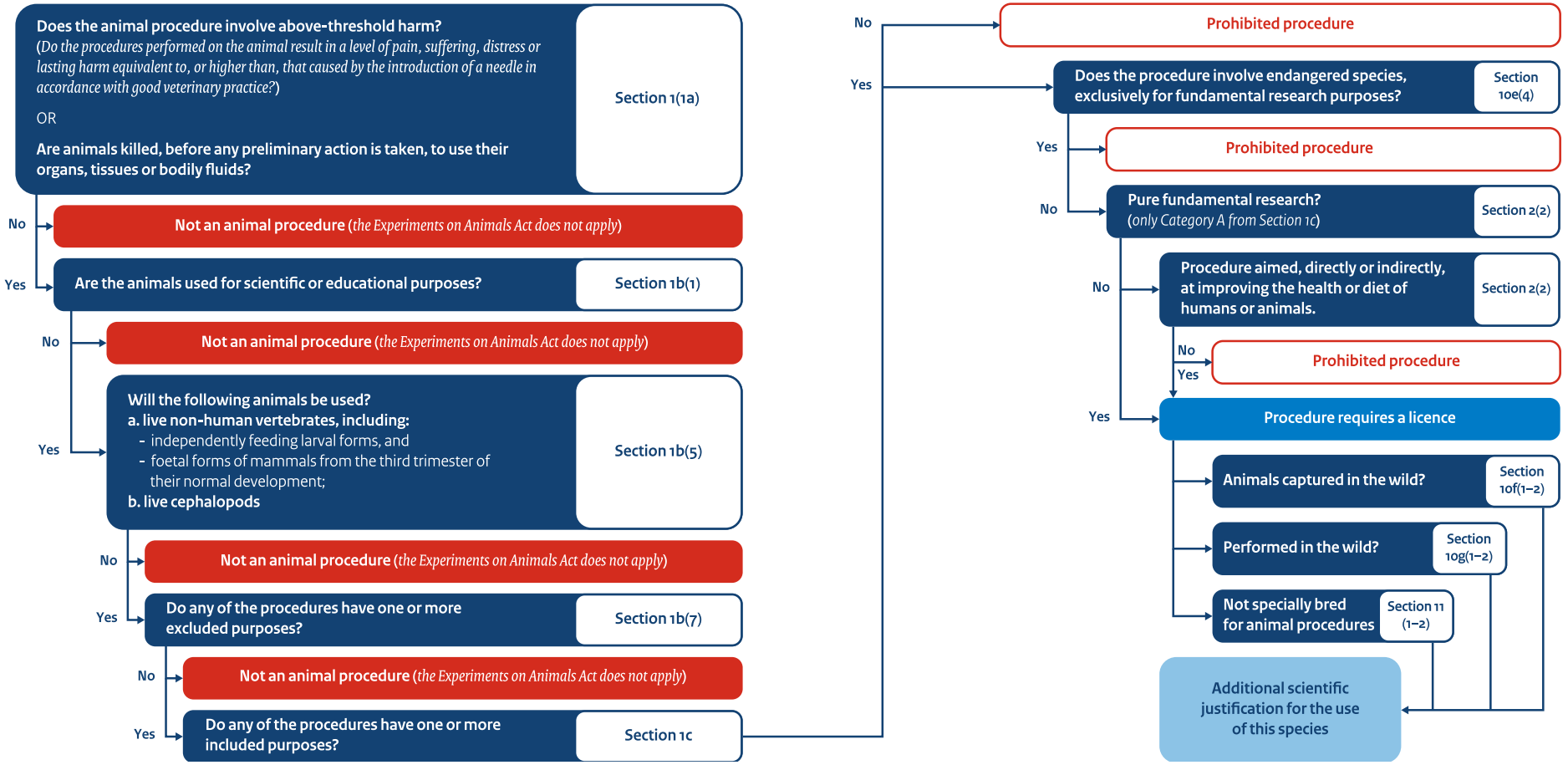
When granting licences, it is assumed that there are no conflicts with other relevant legislation that could impede the implementation or feasibility of the animal procedure. This concerns, in particular, legislation relating to:
- animal health and welfare (for example the Animals Act);
- species conservation (for example the Environment and Planning Act);
- the competence and expertise of personnel carrying out the procedures.

The project proposal application form contains a specific question addressing this issue.
This question assesses whether other legislation and regulations apply and whether these may affect animal welfare and/or the feasibility of the immediate objective.

Appendix 1 Decision tree

All relevant frameworks within the Animal Experiments Act are summarised in the decision tree below. The decision tree provides an answer, or guidance, as to whether the totality of procedures involving wild animals in their natural habitat does or does not constitute a licence-required animal procedure.References to the relevant Sections of the Animal Experiments Act are also provided for each element.

Figure 2. Decision tree for the assessment of whether procedures involving wild animals in their natural habitat constitute an animal procedure



Appendix 2
Checklist for the use of transmitters in animals

This checklist supports researchers conducting studies in which animals carry transmitters or other equipment. As carrying such equipment may result in discomfort and/or impairment of the animal's integrity, the following questions are essential when preparing this type of research.

1 Technical prerequisites

Are the applicable standards regarding weight, size, attachment and attachment site being followed?

- Is the use of transmitters consistent with generally accepted standards (for example regarding transmitter dimensions and weight)?
- Has the choice of transmitter been based on own experience and/or the experience of others with comparable transmitters and species?
- Is the weight of the transmitter in mammals and birds ≤ 5% of the animal's body weight?
- For fish, amphibians and reptiles for which no uniform guidelines exist (for example Salmonidae), are reference values being applied such as[1]:
  - maximum length ≤ 16% of body length;
  - maximum weight ≤ 8% of body weight?

2 Impact on natural behaviour

Is the animal able to express its full repertoire of natural behaviour?

- Has it been assessed whether lightweight but relatively large transmitters (for example external transmitters equipped with solar cells) negatively affect thermoregulation, metabolism, aero- and hydrodynamics, and behaviour?
- Do the harness/collar and/or transmitter affect aero- or hydrodynamics or the animal's ability to adopt a normal resting posture?
- Are negative effects on reproduction, appearance or social position within the group expected due to the weight, shape or colour of the harness/collar and/or transmitter?
- Is there an increased risk of predation or social disturbance within the group?

3 Risk of harm and welfare impairment

Is there a risk that the harness/collar and/or transmitter may cause pain, distress or injury?

- Is there a risk that the harness/collar and/or transmitter could lead to strangulation or that the animal could become entangled?
- Has additional attention been paid to the welfare of vulnerable groups such as:
  - pregnant animals[2]
  - juveniles?
- Has it been assessed whether weight gain (for example due to fat accumulation prior to migration or hibernation) could result in additional discomfort associated with carrying the harness or transmitter?
- Does carrying the harness/collar and/or transmitter increase the risk of wounds or infections that may attract flies (maggots)?
- Does the harness/collar and/or transmitter constitute a significant physical or physiological burden?
- Do the harness/collar and/or transmitter impair the animal's ability to obtain sufficient food (particularly during periods of food scarcity)?
- Is there a risk of damage to feathers, fur or scales that could negatively affect protection against moisture, temperature or infection?

4 Duration and removal of the transmitter

Has the duration of carrying the transmitter been clearly established?

- Does the attachment method include a predefined breaking point or a time-controlled mechanism to ensure that the transmitter eventually detaches without additional risk to the animal?
- What possibilities exist for removing the harness/collar and/or transmitter from the animal after completion of the experiment?
- Where glue is used:
  - does it avoid causing direct irritation?
  - can the glue be removed safely and without causing harm?

[1] Lacroix, G. L., Knox, D., & McCurdy, P. (2004). Effects of Implanted Dummy Acoustic Transmitters on Juvenile Atlantic Salmon. Transactions of the American Fisheries Society, 133(1), 211–220.

[2] Increases in body weight in pregnant animals and animals with increased fat reserves should not be used as justification for equipping these animals with heavier transmitters.

Appendix 3 Tables with examples

Table 1: Subsequent procedures after capture: animal procedure or not

Examples of subsequent procedures	Discomfort caused by the subsequent procedure	Risk of subsequent discomfort after release	Animal procedure?	Considerations
Electric fishing, species identification/biometric examination. After capture in a net (risk of mechanical damage/ mortality), biometric examination is performed (no invasive procedures).	No above-threshold discomfort	No above-threshold discomfort	No	Discomfort resulting from capture is not taken into account when determining whether above-threshold discomfort is involved. After capture, there is no above-threshold discomfort. The choice of a capture method with a higher risk of discomfort (beam trawl) or a capture method with little or no discomfort (dip net) has no bearing on the decision as to whether the discomfort threshold is exceeded.
Mammals, reptiles, amphibians After capture in a live-trap, biometric examination is performed (no invasive procedures).	No above-threshold discomfort	No above-threshold discomfort	No	Discomfort resulting from capture is not taken into account when determining whether above-threshold discomfort is involved. The procedures after capture do not result in above-threshold discomfort.
Removal of invasive alien species/undesired species in the context of site management.	n/a	n/a	No	Capturing and/or killing (control) of animals solely in the context of site management falls outside the scope of the Animal Experiments Act, as no scientific objective is involved.
Research into the effects of removing species (for example invasive alien species) from the natural habitat.	Removed individuals (killing not for the purpose of collecting organs)	n/a	Yes / No	The objective of the research falls within the objectives described in Section 1c(d) and (e) of the Animal Experiments Act. Depending on how the effects on the natural habitat are measured, there are likely to be two groups of animals: 1. the animals that are removed; and 2. the measurements performed on the remaining animals in the natural habitat. The subsequent procedures determine whether this group forms part of the animal procedure. Observation alone is not an animal procedure, whereas taking tissue samples or placing chips is.
Field research into the effectiveness of killing methods in the context of control measures.	Animals are killed in an experimental setting to assess effectiveness.	n/a	Yes	Research into capture and killing methods is the objective of the study. Above-threshold discomfort is involved.

Table 2: Marking, identification and tagging of animals after capture: animal procedure or not

Examples of subsequent procedures	Discomfort caused by the subsequent procedure	Risk of subsequent discomfort after release	Animal procedure?	Considerations
Fish Removing a small piece of the adipose fin from a fish (without anaesthesia). Permanent mark.	Above-threshold discomfort	No above-threshold discomfort	Yes	Due to invasiveness (= more than puncturing the dermis), this involves above-threshold discomfort.
Fish Mark in tail muscle.	Above-threshold discomfort	Above-threshold discomfort	Yes	Due to invasiveness (= more than puncturing the dermis), this involves above-threshold discomfort.
Fish Active removal of scales (temporary mark).	Above-threshold discomfort	Above-threshold discomfort	Yes/No	No generic answer can be given for this example, because whether above-threshold discomfort is involved differs by species (responsibility of the establishment licence holder).
Fish Tattooing a small mark in the fin/skin using a jet injector. The ink is injected into the skin under high pressure. The tattoo needle itself is not introduced.	No above-threshold discomfort	No above-threshold discomfort	No	Introduction of ink causes less discomfort than puncturing the dermis (with a needle). Jet injectors have been specifically developed to cause less discomfort.
Fish Fish are kept for some time (one to several hours) in a tank containing a dye. They take up the dye and can be identified upon recapture.	No above-threshold discomfort	No above-threshold discomfort	No	No above-threshold discomfort, assuming that the dye poses no additional risks to the fish (toxicity, predation, behaviour, reproduction, etc.).
Amphibians/reptiles Gluing a temporary mark to the skin.	No above-threshold discomfort	No above-threshold discomfort	No	No above-threshold discomfort is involved, because the mark does not in any way restrict the animal's normal behaviour or way of life
Reptile Removal of scales (temporary mark).	Above-threshold discomfort	Above-threshold discomfort	Yes	Due to invasiveness (= more than puncturing the dermis), this involves above-threshold discomfort.
Reptile, amphibian Toe clipping.	Above-threshold discomfort	No above-threshold discomfort	Yes	Due to invasiveness (= more than puncturing the dermis), this involves above-threshold discomfort.
Bird Attachment of a leg ring.	No above-threshold discomfort	No above-threshold discomfort	No	Attaching the ring takes approximately the same time as administering an injection and results in less discomfort than puncturing the dermis.
Bird Attachment of a leg ring and performance of biometrics in birds.	No above-threshold discomfort	No above-threshold discomfort	No	Attaching the ring and performing biometrics takes longer than restraint for administering an injection, but causes no, or hardly any, additional discomfort.
Bird Chip or other equipment weighing less than 1% of body weight and attached to a leg ring.	No above-threshold discomfort	No above-threshold discomfort	No	It has been demonstrated that the transmitter does not cause above-threshold discomfort.

Examples of subsequent procedures	Discomfort caused by the subsequent procedure	Risk of subsequent discomfort after release	Animal procedure?	Considerations
Bird Temporary attachment of transmitters/loggers (maximum 5 days), for example a radio transmitter tied to a tail feather, or a radio transmitter glued to back feathers, whether or not trimmed, where the weight of the transmitter/logger is <=3% of body weight.	No above-threshold discomfort	No above-threshold discomfort	No	No risk of above-threshold discomfort caused by the transponder.
Bat Attachment of an external transponder by gluing it to the skin, where the weight of the transmitter/logger is <=3% of body weight. The transponder falls off again after a maximum of 5 days.	No above-threshold discomfort	No above-threshold discomfort	No	This release of animals falls outside the scope of the Animal Experiments Act.
Bat Attachment of an external transponder using a collar.	Above-threshold discomfort	Risk of above-threshold discomfort	Yes	Because the transponder remains attached for a longer period, there is a risk of above-threshold discomfort.
Bat Attachment of a wing ring.	Above-threshold discomfort	Risk of above-threshold discomfort	Yes	The ring remains attached for a longer period, creating a risk of additional damage to the wing. This results in a risk of above-threshold discomfort.
Mammal (*including seal, harbour porpoise*) Attachment of an ear tag or tag in the fin.	Above-threshold discomfort	No above-threshold discomfort	Yes	Due to invasiveness (= more than puncturing the dermis), this involves above-threshold discomfort.
All animals Injection of RFID chips and other identification devices, such as transponders or PIT tags, without anaesthesia.	Above-threshold discomfort	No above-threshold discomfort	Yes	Due to invasiveness (= more than puncturing the dermis), this involves above-threshold discomfort.
All animals Any form of marking for which the animal must be placed under anaesthesia, apart from capture.	Above-threshold discomfort	Above-threshold discomfort	Yes	Recovery from anaesthesia/sedation constitutes above-threshold discomfort, even where an antagonist is used.
All animals Gluing a small sticker to the skin.	No above-threshold discomfort	No above-threshold discomfort	No	No above-threshold discomfort is involved.
All animals Attachment of external transmitters.	Above-threshold discomfort	Above-threshold discomfort	Yes	Unless, on the basis of demonstrable experience, it is expected that a specific type of transmitter/device, in combination with a specific attachment method in a particular species, will not result in above-threshold discomfort during the period in which the transmitter remains on the animal.
Gluing a transmitter to seals.	Above-threshold discomfort	Above-threshold discomfort	Yes	After capture, the animals must be restrained for some time (longer than the introduction of a needle) for handling/holding and to allow the glue to dry. Subsequent discomfort may also occur as a result of the presence of the transmitter.

Table 3: Is the discomfort equal to or greater than the introduction of a needle?

Examples of subsequent procedures	Discomfort caused by the subsequent procedure	Risk of subsequent discomfort after release	Animal procedure?	Considerations
Water authorities test the fish-friendliness of pumps by assessing fish that have passed through a pump 'in the field' (in their own living environment) for injuries. For this purpose, fish are captured and collected in a keep net at the entrance to the pump, after which they are guided through the pump.	Above-threshold discomfort	Above-threshold discomfort	Yes	For some of the fish, above-threshold discomfort is involved. They may be harmed by the pump. In addition, the animals are actively manipulated for the purposes of the research, because the researcher determines that the fish must pass through the pump.
Rijkswaterstaat monitors fish populations in the major rivers by conducting a long tow with a beam trawl at set times.	No above-threshold discomfort	No above-threshold discomfort	No	After capture, no above-threshold discomfort is involved. In this case, the choice of more or less '*fish-friendly*' capture methods falls outside the scope of the Animal Experiments Act and is governed by other legislation.
Fish inventory using electric fishing. During the inventory, fish are identified, measured and weighed.	No above-threshold discomfort	No above-threshold discomfort	No	After capture, no above-threshold discomfort is involved. In this case, the choice of more or less '*fish-friendly*' capture methods falls outside the scope of the Animal Experiments Act.
To perform the correct measurements (for example blood sampling), the fish is placed under anaesthesia after capture.	Above-threshold discomfort	No above-threshold discomfort	Yes	Due to the invasiveness (puncturing the dermis) and the use of anaesthesia, above-threshold discomfort is involved.
Removing a fish from the water after capture (thereby bringing it into a state of hypoxia) for procedures that do not in themselves result in above-threshold discomfort (such as measuring and weighing).	No above-threshold discomfort	No above-threshold discomfort	No	The discomfort frame of reference also assumes a fish that is removed from the water. The state of hypoxia is therefore part of the discomfort threshold.
Placing wild animals in metabolic chambers/cages during their active period or with clear impairment of welfare during the acclimatisation period.	Above-threshold discomfort	Above-threshold discomfort	Yes	Above-threshold discomfort.
Placing wild animals in a metabolic chamber/cage to measure basal metabolism during their resting period (at night for a diurnally active animal; during high tide for a tidal bird). During the acclimatisation period, no above-threshold discomfort occurs.	No above-threshold discomfort	No above-threshold discomfort	No	No above-threshold discomfort.
Capturing and identifying invasive alien species (no invasive procedures). The animals are killed or taken away because they may not be released again.	n/a	n/a	No	Removal of invasive alien species (capturing, killing, taking away) falls outside the scope of the Animal Experiments Act, as it is carried out in the context of nature management.
Research into the distribution of escaped/released invasive alien species. Capturing and killing, collecting tissues/blood (DNA analysis).	n/a	n/a	Yes	Collection of organs and tissue falls within the scope of the Animal Experiments Act. Bodily fluids are collected for research purposes.

Examples of subsequent procedures	Discomfort caused by the subsequent procedure	Risk of subsequent discomfort after release	Animal procedure?	Considerations
Prolonged restraint of a wild animal (longer than needed for the introduction of a needle), while the procedures themselves cause only below-threshold discomfort.	Above-threshold discomfort	Above-threshold discomfort	Yes	Prolonged restraint of a wild animal may result in above-threshold discomfort.
Implantation (subcutaneous, intraperitoneal) of a transmitter under anaesthesia.	Above-threshold discomfort	Above-threshold discomfort	Yes	The invasiveness of the procedure and recovery from anaesthesia result in above-threshold discomfort.
Attachment of a GPS logger with a harness to a bird/mammal.	Depending on the circumstances	Above-threshold discomfort	Yes	Depending on factors including duration and species, attaching the transmitter may result in above-threshold discomfort, with a possible risk of prolonged subsequent discomfort.
Release of animals at another location where no above-threshold experimental procedures are involved (blood sampling, transmitter implantation, etc.).	n/a	n/a	n/a	This release of animals falls outside the scope of the Animal Experiments Act.
Release of animals at another location where, in the context of this release, above-threshold experimental procedures are also involved (blood sampling, transmitter implantation, etc.).	Above-threshold discomfort	Above-threshold discomfort	Yes	One or more procedures result in above-threshold discomfort or involve the use of anaesthesia.
All animals Removal of ticks from live-captured animals without anaesthesia. No procedures resulting in above-threshold discomfort are performed on the animal in the context of the experiment.	No above-threshold discomfort	No above-threshold discomfort	No	This is a veterinary procedure; removal of ticks is not the objective of the experiment. Removing ticks may involve more discomfort than puncturing the dermis. NB: It is questionable whether such veterinary intervention is desirable, as such situations are part of a natural population.
All animals Collection of ticks from live-captured animals without anaesthesia, where the collection of ectoparasites is the objective of the study (for example research into the presence of ectoparasites in an area).	Above-threshold discomfort	Above-threshold discomfort	Yes	The experiment falls within the scope of the Animal Experiments Act. Removing ticks involves more discomfort than puncturing the dermis.
Manipulation of abiotic factors in the natural habitat outside the natural range (for example changes to clutch, nest-box temperature, feeding, light or sound in birds).	n/a	Above-threshold discomfort	Yes	Risk of above-threshold discomfort. Interventions in which the animal is exposed to conditions outside natural variation.

Examples of subsequent procedures	Discomfort caused by the subsequent procedure	Risk of subsequent discomfort after release	Animal procedure?	Considerations
Manipulation of abiotic factors in the natural habitat within the physiological range (for example changes to clutch, nest-box temperature, feeding, light or soun Manipulation of abiotic factors in the natural habitat within the physiological range (for example changes to clutch, nest-box temperature, feeding, light or sound in birds), where the animal is exposed to conditions that also fall within natural variation. d in birds), where the animal is exposed to conditions that also fall within natural variation.	n/a	No above-threshold discomfort	No	No above-threshold discomfort. The procedures add nothing to the discomfort that the animal would also experience under normal conditions.

Table 4: Experiment in the natural habitat or in the laboratory

Procedure	Experiment in the natural habitat or in the laboratory	Consideration
After capture, experimental subsequent procedures (ringing, biometrics, attachment of a transmitter) are carried out in a field shed for a short period (<24 hours).	Natural habitat	The animal is removed from its natural habitat for less than 24 hours. The primary objective of the procedures is to collect measurements in the natural habitat.
After capture, experimental subsequent procedures are carried out (ringing, biometrics, attachment of a transmitter). The animal is then observed for another one or several days for its response to the harness.	Natural habitat	The primary objective of the procedures is to collect measurements in the natural habitat.
After introduction of a PIT tag, the animals are kept under observation for some time (>24 hours) before being released again.	Natural habitat	The primary objective of the procedures is to collect measurements in the natural habitat.
Survival studies: how many animals survive in aquaria on board a research vessel after capture.	Laboratory	The primary objective of the procedures is to collect measurements (survival in aquaria on board) in the laboratory. These are animal procedures involving wild animals in the laboratory and must be treated as such.
Taking wild fish to an institute, housing them there and using them for behavioural research (where above-threshold discomfort is involved in this situation).	Laboratory	The primary objective of the procedures is to collect measurements in the laboratory.
Capturing wild sticklebacks, which are then housed in large tanks on the premises of a wastewater treatment plant. Waste/discharge water flows through these tanks. To determine at which points during the treatment process hormones are still present in the water, the animals are captured and observed at intervals and killed at the end for analysis.	Laboratory	The primary objective of the procedures is to collect measurements in the laboratory (the wastewater treatment plant). The objective is to collect organs, tissues or bodily fluids.
Capturing birds and housing them for 12 hours in a metabolic chamber.	Laboratory	By housing the animals for 12 hours in a metabolic chamber/cage, the measurement parameters are collected in the laboratory.
Temporary housing of a wild-caught animal for the purpose of collecting faeces.	Laboratory	Through temporary housing, the measurement parameters are collected in the laboratory. This is an animal procedure if above-threshold discomfort would be involved, for example as a result of the housing.

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