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Animal Welfare-oriented Guidelines for the Year-round Grazing of Cattle and Horses on Nature Conservation Areas

2nd revised Edition

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Animal Welfare-oriented Guidelines for the Year-round Grazing of Cattle and Horses on Nature Conservation Areas

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Supplementary information is available on the website *www.naturschutzflaechen.de/tierwohl*, including an animal welfare checklist for year-round grazing (NABU) and selected examples of long-standing year-round grazing projects.

Foreword

Over the past two decades, year-round grazing has proven to be a highly effective method for managing and preserving nature conservation areas. Numerous scientific studies have demonstrated its positive effects on biodiversity. However, its implementation presents challenges for those who must balance the requirements of nature conservation, species protection, and animal welfare. Although a high degree of naturalness is sought in grazing projects, the animals involved remain under human care; organisations and individuals are therefore responsible for ensuring their welfare at all times. The German Animal Welfare Act [Tierschutzgesetz] accordingly requires livestock keepers, including landowners, to comply with minimum standards regarding the feeding, care, and housing of their animals.

To improve the quality of year-round grazing practices for nature conservation purposes, while at the same time facilitating coordination between nature conservation and animal welfare stakeholders, a working group of experienced graziers and animal welfare experts was established in 2021. The initiative originated from the "National Natural Heritage Network" ["Netzwerk Nationales Naturerbe"]. The term "National Natural Heritage" refers to approximately 164,000 hectares of nature conservation areas that have been dedicated to conservation by the Federal Government of Germany since 2005. Grazing is practised on many of these sites. The landowners have had, and continue to have, a shared interest in establishing a consistent set of high animal welfare standards for year-round grazing. It was therefore appropriate to develop transferable standards not only for National Natural Heritage sites but for all grazed nature conservation areas.

Within the framework of a project under the "Federal Programme for Biological Diversity" [Bundesprogramm Biologische Vielfalt], the following requirements and recommendations for year-round grazing of cattle and horses on nature conservation areas were compiled as guidelines for animal keepers and lessors. They are based on an approach developed in Schleswig-Holstein (the "Husum Paper" ["Husumer Papier"]) and were prepared under the leadership of Gerd Kämmer (Bunde Wischen eG). Although the guidelines adopted in January 2023 have a clear focus on year-round grazing, they also apply in principle to seasonal grazing. Any relevant deviations are indicated in the text.

A distinctive feature of this document is that it was developed jointly by graziers, nature conservation stakeholders, the German Veterinary Association for Animal Welfare [Tierärztliche Vereinigung für Tierschutz e. V. (TVT)], and the German Animal Welfare Federation [Deutscher Tierschutzbund e. V.]. This shared perspective is important because, despite a nationally uniform legal framework, there are often differing interpretations in practice across individual districts — for example with regard to housing and supplementary feeding. The guidelines are intended to contribute to the development of a common understanding at the local level. However, they do not replace the continued need for coordination with the competent approval authorities.

These guidelines are designed to be integrated into the grazing management practices of as many nature conservation site managers as possible and can serve as a binding standard for inclusion in lease agreements for nature conservation areas. The guidelines should be reviewed regularly and, where necessary, updated. A dedicated website has been established to provide further background information, including additional literature, a tool for preparing emergency plans, and examples of long-standing year-round grazing projects: *www.naturschutzflaechen.de/tierwohl*.

The following organisations participated in the development of the guidelines:

- Arbeitsgemeinschaft Biologischer Umweltschutz im Kreis Soest e. V.
- Bundesanstalt für Immobilienaufgaben – Sparte Bundesforst
- Bunde Wischen eG
- DBU Naturerbe GmbH
- Deutscher Tierschutzbund e. V.
- Deutscher Verband für Landschaftspflege
- Förderverein Feldberg-Uckermärkische Seenlandschaft e. V.
- Heinz Sielmann Stiftung
- Landschaftserhaltungsverband Ortenaukreis e. V.
- NABU (Naturschutzbund Deutschland) e. V.
- Naturstiftung David
- Primigenius Köthener Naturschutz und Landschaftspflege gGmbH
- Stiftung Naturschutz Pfrunger-Burgweiler Ried
- Stiftung Naturschutzfonds Brandenburg
- Stiftung Naturschutz Schleswig-Holstein
- Stiftung Naturschutz Thüringen
- Taurus Naturentwicklung e. V.
- Tierärztliche Vereinigung für Tierschutz e. V.

These guidelines are maintained by the German Veterinary Association for Animal Welfare [Tierärztliche Vereinigung für Tierschutz e. V. (TVT)] as a standard document.

1 Basic Principles

1.1 Animal Welfare Act

§ 2 of the German Animal Welfare Act [Tierschutzgesetz, TierSchG] stipulates that:
Any person who keeps, cares for, or is responsible for an animal:

- must provide the animal with appropriate feeding, care, and housing in accordance with its species and needs,
- must not restrict the animal's ability to engage in species-appropriate movement in a way that causes pain or avoidable suffering or harm,
- must possess the knowledge and skills necessary to ensure appropriate feeding, care, and behaviourally appropriate housing of the animal.

1.2 Animal Welfare

According to the concept of the "Five Freedoms," developed by the UK Farm Animal Welfare Council (FAWC) in 1979 and still internationally recognised as a guiding framework for human responsibility towards animals, the following principles apply:

- Freedom from hunger and thirst
- Freedom from discomfort
- Freedom from pain, injury, and disease
- Freedom from fear and distress
- Freedom to express normal behaviour.

2 General Requirements

Keeping animals involves ongoing, long-term obligations and requires adequate, reliable financial and human resources. Time-limited project funding and/or predominantly volunteer-led management are generally insufficient to meet these obligations.

2.1 Competence of Livestock Keepers

- Livestock keepers must be conscientious and possess the required competences and specialist knowledge relevant to the animal species and breeds they keep. They must ensure that sufficient personnel with the required knowledge and skills are available to care for the animals. This also includes those responsible for the day-to-day care of the animals on site. In the event of a change in responsibilities, continuity in animal management must be ensured.
- In the context of land leasing arrangements, tenants or livestock keepers must provide evidence of their competence and relevant expertise. In accordance with Section 2 of the German Animal Welfare Act [Tierschutzgesetz], the veterinary authorities are generally responsible for assessing the officially relevant aspects of this competence. Livestock keepers must demonstrate that they have the necessary competence for the species they intend to keep. This includes the ability to house, manage, and care for the animals in compliance with the requirements of Section 2 of the Animal Welfare Act [Tierschutzgesetz].
- Where the landowner has relevant professional expertise, an additional professional assessment meeting with the tenant or livestock keeper is recommended to evaluate their suitability. From a quality management perspective, this serves to identify potential weaknesses at an early stage and to address them in advance, thereby ensuring animal welfare and public acceptance of the grazing project.
- Vocational training related to the animal species kept (e.g. in agriculture, veterinary medicine, or animal care) generally provides the required competence. However, on large or complex grazing sites, or when keeping species and breeds with specific husbandry and management requirements (such as European bison or Przewalski's horses), the requirements for caretakers may go beyond standard agricultural training. In such cases—building on existing competence—participation in specialised training courses, expert workshops, and/or professional support (e.g. from zoos or wildlife parks) is recommended, particularly during the initial years of grazing.
- Extensive practical experience in animal husbandry may also constitute the required competence, provided that this experience relates specifically to the animal species and breeds to be kept on the particular grazing area in question.
- Another way to acquire the required competence is through participation in relevant training courses and seminars, for example for suckler cow and/or horse keepers.

2.2 Official Coordination and Key Participation Processes

- The responsible **veterinary authority** is to be involved from the outset in the planning of larger grazing projects and should be consulted at the earliest possible stage.
- Where grazing areas are protected under nature conservation law, the competent **nature conservation authority** must be involved in defining the grazing objectives. This is also necessary because landscape elements that are eligible for subsidies under both nature conservation and agricultural law are almost always affected.
  The inclusion of existing structural elements in grazing landscapes (e.g. groups of trees within fields, hedges, ponds, wetlands, forests) is generally desirable from a nature conservation perspective. Grazing within these landscape elements requires a nature conservation exemption permit.
- When incorporating forest areas—which is highly desirable not only for animal welfare reasons (e.g. weather protection and comfort behaviour) but also from a nature conservation perspective—the responsible **forestry authority** must also be involved.
- In larger year-round grazing projects, hunting-related matters should also be coordinated with the responsible **regulatory authority**. Contact with neighbouring landowners and hunting leaseholders is also recommended, as the presence of grazing animals on the land year-round restricts hunting activities. Driven hunts—if they are possible at all, given the potentially significant disturbance they can cause on grazing areas—must be carefully planned and detailed arrangements must be made.

Salers cattle grazing in the floodplain forest of the "Wilde Weiden Taubergießen" project (Photo: Thomas Kaiser).

2.3 Veterinary Care of the Livestock

- Before establishing a grazing project, a veterinarian must be appointed for the care of the animals, and this must be formalised in a veterinary care contract. Suitable model contracts are, for example, provided by the German Federal Veterinary Chamber (Bundestierärztekammer e. V., 2022).
- A veterinary assessment of the livestock should be carried out once or twice a year. For cattle, one of these assessments can take place during the annual sampling required under animal disease control regulations.
- As part of their responsibility, livestock keepers must consult a veterinarian in the event of abnormalities. A competent person qualified in remote immobilisation of grazing animals should also be available at short notice. However, this does not necessarily have to be a veterinarian.

2.4 Access to the Animals

- Access to the animals must be ensured at all times.
- In areas with an increased risk of weather-related extreme situations (e.g. high water levels, flooding, fire), appropriate emergency plans for rescue measures must be in place. These emergency plans should be coordinated with the responsible veterinary authorities and should be regularly reviewed and adapted to current conditions. They should be communicated to the emergency control centres of the police and fire services.
- Emergency plans should include contact persons (e.g. in the form of a telephone chain), the measures to be taken, and—depending on the escalation level—additional alerting points.
- Sick or injured animals and carcasses must be recoverable from all areas without delay and be treated or disposed of accordingly. The installation of appropriate infrastructure, such as securely fenced handling facilities, is recommended.

Leaving carcasses in the landscape would generally make a significant contribution to promoting local biodiversity and near-natural nutrient cycles. In addition to providing valuable food resources for scavengers such as white-tailed eagles, red kites, corvids, small mammals and necrophagous insects, carcasses create temporary microhabitats that can benefit a wide range of fungi, microorganisms and even plants.
From a holistic conservation perspective, leaving livestock carcasses in extensive grazing landscapes would therefore be desirable, provided that infectious animal diseases can be reliably excluded as the cause of death.
However, in accordance with the relevant Regulation (EC) No. 1069/2009 and the German Animal By-Products Disposal Act (TierNebG), carcasses of animals such as cattle, water buffalo and horses are currently subject to a general obligation for proper disposal. This means that such carcasses must not remain on site but must be collected without delay and disposed of safely in the designated animal by-products processing facility.

2.5 Daily Monitoring of the Livestock

- Livestock keepers must generally monitor the health status of the animals on a daily basis in order to prevent suffering, pain, and harm. A visual inspection includes assessing the overall condition of the herd. Individual animal examination is required if the general inspection indicates this is necessary. During calving or foaling periods, or in other critical phases (e.g. extreme weather, flooding, wildfires, drought), multiple checks per day may be necessary. Decisions on the appropriate level of monitoring require competent persons with extensive experience and form part of the duty of care of all livestock keepers.
- Livestock keepers are to document the number of animals and the composition of the herds so that this information is available when needed. Documentation of the checks carried out is also recommended.
- The availability of a responsible person capable of taking action is to be ensured at all times. In organising operations, holidays, illness, and possible short-term staff absences must be taken into account. One-person operations without competent substitutes are therefore excluded.
- It is recommended that signs displaying contact details and an emergency number for the livestock keepers be clearly posted on grazing areas. The contact details should also be registered with the responsible emergency control centres of the police or fire services, as well as with the relevant authorities and municipalities.
- On very extensive and difficult-to-oversee areas, fitting transmitters to lead animals within a herd or subherd can be useful. This allows herds to be located more easily and monitoring to be carried out more efficiently. However, where animals are widely dispersed over large areas—as is often the case with cattle—the usefulness of this technology is more limited.

2.6 Identifying and Avoiding Hazards

Before starting any grazing project, a hazard assessment should be carried out. Depending on the area and the grazing animals used, different aspects must be considered. These include, among others, hazards associated with water bodies and wetlands; cliff edges and embankments; flooding/high water; poisonous plants and wolves, as well as human-animal interactions and dogs. In addition, contaminated sites and former (covered) waste disposal areas can pose a risk due to the pollutants potentially present. Ammunition-contaminated areas represent a special case. Selected hazards are outlined in more detail below.

2.6.1 Hazards Associated with Water Bodies

Water bodies can represent a potential hazard for grazing animals, particularly where banks are steep or marshy. As the inclusion of natural or artificial water bodies in grazing systems is generally desirable from a nature conservation perspective, they require special attention with regard to animal safety (e.g. ensuring suitable exit points for grazing animals).

Water bodies need to be designed and managed in a way that prevents hazards to livestock (Photo: Matthias Scharf).

- When establishing grazing landscapes, biotope-shaping measures are often implemented that create new water bodies or optimise existing ones. Care must be taken to ensure that no new hazards for grazing animals arise during water intake. This can be avoided, for example, by creating gentle slope angles when widening ditches or by designing shallow water margins.
- In winter, frozen water bodies and boggy areas present particular hazards. If animals have learned that frozen areas can be accessed, risks arise when thawing begins, as animals may break through the ice. During such periods, monitoring in vulnerable areas should be intensified or these areas should be temporarily fenced off.
- Drainage ditches (including fenced ones) pose a particular risk for small calves and should be monitored more closely during critical periods.

2.6.2 Hazards Posed by Poisonous Plants

In the context of grazing, poisonous plants can be divided into two categories: those that grow on the grazing areas and those that are introduced from outside.

- Poisonous plant species that regularly occur on extensively used grazing areas include, for example, ragwort, horsetails, water hemlock, autumn crocus, ivy, and yew. For established herds with experienced adult animals that are familiar with the area, these plants generally do not pose a problem. Calves and foals learn from experienced animals which plants to avoid. When establishing new grazing areas, animals with prior experience on extensive grazing sites should therefore be used. Where necessary, external expertise should be consulted to assess the risk. As long as sufficient suitable forage plants are available, poisonous plants generally do not pose a risk.
- This also applies to ragwort, which receives particular attention. Extensive findings from Schleswig-Holstein have been compiled in a brochure entitled "Meiden – Dulden – Bekämpfen" [Avoid – Tolerate – Control] (LLUR & STIFTUNG NATURSCHUTZ SCHLESWIG-HOLSTEIN 2017).
- Unfortunately, hedge cuttings or garden waste containing poisonous plants are repeatedly disposed of on grazing areas. This creates (potentially fatal) risks to the health of grazing animals, as they do not recognise the poisonous plants. Similar risks arise from well-intentioned supplementary feeding with bread, vegetables, or fruit. Appropriate signage and information are recommended to prevent possible poisoning.

2.6.3 Munition-Contaminated Areas

When establishing grazing on areas contaminated with munitions or suspected of containing munitions, the relevant authorities must be involved, and site-specific hazard prevention regulations must be taken into account. A distinction must be made between areas where access is strictly prohibited due to confirmed contamination and those that, despite confirmed contamination or as suspected ordnance sites, may be entered by specific groups of people based on a professional risk assessment and in compliance with special rules of conduct. However, access restrictions may also affect management and intervention options. For example, the treatment of an animal in a medical emergency may not be possible on a munition-contaminated site due to access restrictions.

It is recommended that the following points be considered:

- close coordination with the relevant authorities to define exemption rules and develop individual operating plans
- selection of suitable grazing animal species and breeds
- munition-free areas for handling and treatment
- munition-free areas for fence and fence maintenance
- conditioning of the animals (i.e. luring them into the handling area)
- a munition-free path system within the grazing area (to ensure visual monitoring of the animals)
- access to "less contaminated areas" only by trained personnel and on the basis of a risk assessment
- development of specific emergency plans, including provision of the necessary emergency equipment
- recommendation for large areas: equip lead animals with transmitters and monitor them using GIS; hardy horse breeds are particularly suitable, as they remain in close herd structures and therefore only one GPS collar per herd is required.

Heck cattle in the Oranienbaumer Heide. This former military training area contaminated with munitions was in use until 1992 (Photo: Theresa Petzold).

A survey conducted among all Federal Forest operations, covering a total affected area of 150,000 hectares of munition-contaminated land-where red deer, wild boar and fallow deer often occur at above-average densities—found that not a single case of injury or death of these wildlife species caused by unexploded ordnance had been reported over a period of several years (GOEBEL 2022, written communication).
It can therefore be assumed that the risk of injury to grazing livestock from unexploded ordnance on munition-contaminated sites is also very low.

2.7 Suitable Grazing Animals

The breeds used for grazing must be selected according to the size and characteristics of the grazing area and the requirements of nature conservation. The needs of the animals must be taken into account. It is therefore recommended that one should familiarise oneself thoroughly with the planned husbandry system and the characteristics of the selected breed before making a choice.

- For **year-round grazing**, only hardy, undemanding, and easy-calving breeds are suitable, whose nutritional requirements, behaviour, and preferred habitats are adapted to the respective site. Particularly suitable cattle breeds include, for example, Galloway, Highland, Heck and Taurus cattle, as well as all pony breeds of the Nordic type (e.g. Koniks, Exmoors, and Dartmoors). It should be noted that easy-care horse breeds may quickly become overweight on nutrient-rich sites and develop serious health problems. In principle, crossbreeds may also be used.
  Water buffalo, for example, are well suited to wet areas and for maintaining open water bodies (KTBL e. V. 2010). Lines originating from the Romanian Carpathians have proven to be particularly suitable. In most regions, they can be kept outdoors year-round.
  Under suitable conditions, non-domesticated species such as European bison and Przewalski's horses can also be used.
  A comprehensive overview of species and breeds and their suitability for conservation grazing is provided in the practical guide to year-round grazing "Wilde Weiden" [Wild Pastures] (BUNZEL-DRÜKE et al. 2008).
- In **seasonal grazing systems**, a wide range of breeds can be used. However, the use of extensive breeds is also recommended here, as they are significantly less selective in their choice of forage plants and therefore contribute more to achieving biodiversity goals.

In general:

- Mixed grazing with different animal species, such as cattle and horses, can increase the positive effects on biodiversity due to different grazing behaviour, among other factors. However, mixed herds present particular challenges, as the animals are more difficult to control due to species-specific behavioural differences, require different handling and restraint facilities, and are subject to different legal requirements (e.g. for animal identification and veterinary examinations) (PAULER & SCHNEIDER 2020).
- Many traditional and endangered livestock breeds are well suited to near-natural grazing. Due to their origin, many of these breeds are characterised by efficient feed utilisation even on nutrient-poor soils and a high degree of weather resistance. Synergies between conservation breeding and nature conservation can also enhance the multifunctional value of extensive grazing systems.

Water buffalo are particularly well suited to wet habitats and to maintaining open water bodies (Photo: Katharina Kuhlmey).

3 Structure of Livestock Management

3.1 Nutrition

3.1.1 Water Supply

- Livestock must have access to sufficient quantities of water of adequate quality at all times. Water may be supplied from natural water bodies and/or artificial sources.
- Standing or flowing water bodies can generally be suitable as drinking sources if they meet the quality parameters for drinking water (BUNDESMINISTERIUM FÜR ERNÄHRUNG UND LANDWIRTSCHAFT 2019). Safe access of the animals to the water bodies must be ensured.
  From a legal perspective, drinking water is classified as feed. Therefore, Regulation (EC) No. 178/2002 (General Food Law Regulation) and Regulation (EC) No. 183/2005 (Feed Hygiene Regulation) apply. Annex III of the Feed Hygiene Regulation specifies that drinking water must be "suitable" for the respective animal species and refers to the parameters palatability, tolerability, and usability.

Frost-resistant drinking systems and mineral lick buckets in handling facilities increase their attractiveness for livestock (Photo: Gerd Kämmer).

- Water supply must also be ensured during frost and snow conditions. Snow is not an adequate substitute for water. In winter, frozen natural water bodies must be made accessible by breaking the ice daily. Heated and unheated frost-resistant drinking systems are recommended and are available in various practical designs.
- Permanently stagnant, marshy water bodies may be problematic from an animal hygiene perspective, as grazing animals can become infected with pathogens and parasites. They are therefore not suitable as the sole source of water and must be supplemented by hygienically safe natural or artificial drinking sources. If there are indications of conditions that may endanger animal health (e.g. cyanobacterial blooms or listeria), such areas must be fenced off.

3.1.2 Feed Supply

- The stocking density of grazing animals must be adapted to the size and productivity of the grazing area to ensure a continuous and sufficient supply of roughage of adequate quality. The supply must always be considered in relation to the intended grazing period. As a general rule, year-round grazing should not exceed 0.5 livestock units (LU) per hectare, although temporary exceedances due to high biomass availability (usually at the beginning of grazing) are possible. For year-round grazing on nutrient-poor and dry sites, a stocking density of approximately 0.2 LU/ha can be assumed as a guideline. Depending on the available forage, these values may be exceeded or undercut.
- In year-round grazing systems, animals generally meet their feeding requirements from natural forage. This results in a significantly lower stocking densities compared to seasonal grazing. After the end of the vegetation period, sufficient forage must be available to ensure adequate feeding of the animals during winter.
- The feed base must be appropriate to the species and the specific needs of the selected breed. Attention must be paid to the energy content of forage plants in order to avoid over- or underfeeding at the site in question. Suitable breeds should be selected according to site conditions. The Body Condition Score (BCS) index provides a clear indication of the nutritional status of the animals: if the available forage is only sufficient for an extensive cattle breed, a high-performance cow will generally not be able to meet its energy requirements under the same conditions. On the other hand, oversupply during the vegetation period can lead to health problems, particularly for horses, especially in single-sex herds and geldings.
- If natural forage is insufficient during dry periods or in winter, supplementary feeding appropriate to the species and their requirements must be provided. For nature conservation reasons (in particular to promote nutrient removal), supplementary feeding should be initiated as late as possible, but always before grazing animals are at risk of animal welfare-relevant weight loss. Adequate quantities of feed (primarily hay) are to be kept available for supplementary feeding. Care should be taken to ensure feed quality. The feed

In year-round grazing systems, livestock generally meet their feed requirements from natural forage. Sufficient biomass must therefore remain at the end of the growing season to ensure adequate feed supply during winter (Photo: Theresa Petzold).

should be stored dry and be free from mould and poisonous plants. Alternatively, stocking density should be reduced or animals should be removed from the area entirely during such periods.

- When establishing year-round pastures in forests, the feed base—i.e., natural forage in forest areas—is too low to meet the feeding requirements of grazing animals during winter. At the same time, a high stocking density is necessary to open up the forest and enable the development of wood pasture structures. Only in such "opened" forests does the feed base increase over time. To ensure that animals are adequately supplied during the first winters, supplementary feeding is essential, while ensuring compliance with nature conservation objectives.

3.1.3 Mineral Supply

- Adequate and species-specific supply of grazing animals with minerals and trace elements is to be ensured. Salt licks alone are generally not sufficient and must be supplemented with feed supplements tailored to individual needs (e.g., mineral lick blocks or lick tubs). In particular, the essential trace element selenium is deficient in many regions, both in soils and consequently in the forage. In such cases, lick tubs with an increased selenium content must be provided. Alternatively, selenium boluses (slow-release tablets) can be administered annually to ensure a long-term and consistent supply to the animals.
- It is advisable, as part of the annual examinations (e.g. BoHV-1 testing in cattle), for the attending veterinarian to carry out spot blood tests for relevant minerals. Soil analyses are suitable for providing preventive indications of potential deficiencies.

An adequate and species-specific supply of minerals and trace elements for livestock must be ensured (Photo: Katharina Kuhlmey).

4 Livestock Care and Management

4.1 Herd and Reproduction Management

- The larger the grazing area, the more important the composition of the herd (in terms of age and sex structure). Large, structurally diverse areas with a variety of habitats enable animals to live in a species-appropriate manner. Experienced, high-ranking lead animals and older animals should always be present on a grazing area in order to pass on knowledge of optimal habitat use to younger animals.
- On large grazing areas, the entire herd should never be replaced at once, so that knowledge of the specific characteristics of the area is retained within the herd.
- For some cattle breeds, female young animals should be separated from the herd after five to six months (at the latest after nine months) and kept separately from males until planned first mating. This particularly applies to early-maturing breeds such as Galloways, but also, for example, Pinzgauers and Limousins. Timely castration of male animals may be an option to prevent early mating. It should be noted that male calves can be fertile as early as three months of age. For grazing systems with minimal intervention and management, breeds with early-maturing females are not suitable.
- Calving during winter in grazing systems is generally unproblematic. However, adequate feed supply for cows must be ensured, as supplementary feeding with hay alone is usually not sufficient. In addition, complications may occur under extreme weather conditions; appropriate emergency plans coordinated with the veterinary authorities should therefore be in place. Since prolonged supplementary feeding with high-quality feed is undesirable from a nature conservation perspective (particularly due to the associated nutrient input), calving on grazing areas during the period from early October to the end of February should be avoided as far as possible. For this purpose, bulls must be removed from the herd by the end of the year at the latest and may not return before 1 June.
- In many grazing projects involving Heck or Taurus cattle, breeding bulls and calves remain with the herd year-round, as this results in a more natural herd structure. The main calving period begins in March; occasional calving during the winter months cannot be ruled out but is generally unproblematic. The "Weideleitfaden" (Bunzel-Drüke et al. 2008) provides further details on breed-specific characteristics. Ultimately, however, the success of a grazing project depends less on the breed than on how the animals are managed.
- In horse herds, the removal of stallions to control breeding is generally not necessary, as the longer gestation period (approximately eleven months) usually leads to a natural cycle with births beginning in March.
- If male offspring remain on the grazing area over the long term, the areas must be large enough to allow young stallions to separate and establish their own territories if necessary.

Galloway cow with calf in the extensively grazed landscape of the Ferbitzer Bruch (Photo: Max Jung).

4.2 Health Management

- Livestock keepers are required to continuously monitor the health status of the herd and to take appropriate action in the event of abnormalities (e.g. treatment of affected animals, removal of animals, consultation of a veterinarian, assistance during birth). In addition to physical signs, the behaviour of the herd and of individual animals must also be monitored. Particular attention should be paid to animals that isolate themselves from the herd.
- During calving or foaling periods, monitoring must be intensified; at peak times, at least two checks per day are recommended.
- Particular attention must be paid to hoof condition, especially with regard to natural wear. The hoof characteristics of the selected breeds must be suitable for the substrate of the grazing areas. If natural wear is insufficient, appropriate hoof care must be carried out.
- Persistent coat soiling that impairs the function of the coat should be avoided and addressed if necessary. For example, burrs can lead to massive coat matting in long-haired breeds, reducing thermal insulation in winter.

- Necessary parasite treatments must be carried out. Nature conservation concerns must not be an exclusion criterion for veterinary-required parasite treatment. However, treatments should be carried out in a targeted and evidence-based manner and limited to what is necessary. Prophylactic treatment of entire herds (e.g. deworming without prior confirmation of a parasitic infestation requiring treatment by a veterinarian) should be avoided for nature conservation reasons. From a veterinary perspective, such prophylactic treatment of entire herds is also strongly discouraged, as it promotes resistance and reduces the effectiveness of treatments when they are genuinely required.
- Parasitological findings (e.g. slaughter findings, blood tests, faecal examinations, and assessments of nutritional and general condition) should form the basis for parasite treatment decisions.
- Where possible, necessary parasite treatments should be carried out outside nature conservation areas. Treated animals should not be returned to these areas for several weeks in order to avoid negative effects on dung fauna caused by excreted active substances.
  The reason for this is, among other things, that active ingredients from the avermectin group have strongly negative effects on dung fauna for several weeks after treatment. For the less harmful active ingredients from the moxidectin group (approved for organic farming), this effect persists for approximately 2.5 weeks (JESSEN 2020). Ivermectin (from the avermectin group) is approximately six times more toxic than moxidectin (VERDÚ et al. 2018).
- Routine parasite treatment before spring turnout in seasonal grazing systems is generally not necessary. If considered necessary by a veterinarian, it should be carried out in the barn or on the winter pasture a few weeks before animals are turned out.
- Disease cases must be clearly documented, particularly to ensure continuity in the event of staff changes. Procedures for assessing general animal health should be defined within the operation and documented in writing (an example of operating instructions is available on the website *www.naturschutzflaechen.de/tierwohl*).
- In the case of seriously ill or severely injured animals, the veterinarian called in should decide whether euthanasia on the spot (by injection, gunshot, or captive bolt) is the most responsible course of action. This applies in particular where animals are not fit for transport based on veterinary assessment and have a poor prognosis for recovery.

If natural wear is insufficient, professional hoof care must be carried out (Photo: Gerd Kämmer).

4.3 Compliance with Animal Disease Control Regulations

- All current applicable animal disease control requirements must be complied with. For cattle, this includes the prescribed testing for brucellosis, leukosis, and BoHV-1 at the required intervals. BoHV-1 testing must be carried out annually and may in some cases involve considerable risks to humans and animals, as it involves handling and restraint of the animals.
  In view of this risk to humans and animals, specific exemptions from standard testing procedures may be applied in justified cases, provided that disease control requirements are not compromised. One example is the so-called "farm-gate" approach, under which animals are tested when entering or leaving the holding, rather than through routine testing of the entire herd. This approach is already applied on some holdings in Germany and leads to a significant reduction in workload as well as improved safety. However, it requires close coordination with and approval from the competent authorities.
- Ear tagging must be carried out within the legally prescribed period after birth (e.g. within seven days in Germany; Section 27 of the Livestock Traffic Regulation [Viehverkehrsverordnung]). Every bovine must be tested for bovine viral diarrhoea (BVD) after birth by means of ear tissue sampling. In accordance with EU Regulation 2016/429 (Animal Health Law), sampling must take place by the 20th day of life and must be submitted promptly for testing. The pathogen belongs to the pestiviruses and can cause fatal diarrhoeal disease. Infection is dangerous for calves in utero during the first third of gestation (immunological gap), as it may result in persistently infected animals that continuously shed the virus. Therefore, a single test immediately after birth is sufficient. The disease is one of the most economically significant animal diseases worldwide.
- On large year-round grazing areas as well as forest grazing areas, timely ear tagging presents a considerable challenge. Catching calves without aids is vir-

tually impossible and leads to considerable stress for the calf, the mother cow, the herd, and the person carrying out the procedure. Ear tagging is then often associated with attacks by the mother cow and/or the entire herd on the person carrying out the procedure. Ear tagging without aids should therefore never be carried out by a single person.

- For reasons of occupational safety and compliance with deadlines, various methods have been developed to make ear tagging safer. These include, for example, catching baskets mounted on front loaders that are placed over the calf, as well as side-mounted catching baskets on quads. While these methods reduce risks for the persons carrying out the procedure, they still cause considerable stress in cattle.
- The most animal-friendly and animal welfare-compliant method is ear tagging following immobilisation of the calves to be marked. Blowpipes and dart guns are suitable for this purpose, although the administrative requirements for the use of a gun are significantly higher than for a blowpipe. After immobilisation, the dam usually remains in close proximity but generally does not attack and remains calm, as the calf does not show a fear response. When applied consistently, this method leads to a significant calming of the herds in the long term. Calves are not negatively imprinted on humans during marking, and the herd as a whole is easier to handle, as the presence of humans during the calving period is not associated with a danger to the calves (KÄMMER 2022, personal communication).
- Horses must be fitted with a microchip in the year of birth. This is usually injected by the veterinarian in the neck muscle on the left side. The corresponding equine passport must be applied for from the responsible authority. Identification is then only possible with a special reader from close proximity.
- Livestock keepers must ensure that the required examinations are arranged in a timely manner. They must ensure that the necessary handling facilities are available.
- For keeping European bison, compliance with animal disease control regulations presents particular challenges. Due to their size and aggressiveness in stress situations, European bison can only be handled with considerable effort. Before starting a project, possible special arrangements regarding animal identification and the prescribed examinations should be discussed with the competent veterinary authority.

Ear tagging within the required timeframe represents a significant challenge in year-round grazing systems (Photo: Katharina Kuhlmey).

5 Housing

5.1 Weather Protection

Effective weather protection that is available at all times is required year-round. It must meet the needs of the animals. Both natural and artificial protective structures may be used.

- Rain and snow are generally unproblematic for grazing animals. Animals only seek shelter when strong winds occur in addition. In such situations, there is a risk of chilling, requiring animals to expend excessive energy on thermoregulation. For this reason, animals naturally seek shelter in the lee of hedges, hedge rows, embankments, natural depressions, field groves, and forests. Lateral wind protection is more important to the animals than a "roof over their head." Regardless of whether woody plants are in leaf, reducing wind speed is the key factor. Therefore, natural weather protection is sufficient in most cases. Only where such structures are not sufficiently available should, for example, straw bales or straw bale walls be used to create vertical artificial weather protection.
- Three-sided shelters are not necessary in winter if sufficient natural weather protection is available. However, where adequate natural protection is lacking, it is advisable to provide not just one but potentially several shelters to ensure access for lower-ranking animals, as higher-ranking animals may displace them when individual distance is not maintained, which can result in animal welfare-relevant exclusion from shelter.
- In areas with wolf presence, grazing animals often avoid visual barriers. Structures such as huts or walls are generally poorly accepted.
- In structurally diverse grazing landscapes, weather protection is generally available year-round. This also applies to periods of intense solar radiation and heat in summer.
- Suitable lying areas for resting and rumination must be available in sufficient extent. After precipitation, the ground is inevitably superficially wet but is still used by animals as a lying area. Heat dissipation must not be excessive, and the animals' coats must not become permanently soiled or matted due to the substrate. These requirements are met by a permeable substrate that allows precipitation to drain quickly and dries rapidly at the surface. Lying areas—including those for water buffalo—must not be muddy or waterlogged. Horses have higher requirements for lying areas than cattle, as they also need a good overview of their surroundings. While adult horses spend around 80% of resting phases standing, foals and young horses mainly rest lying down on a dry deformable substrate. If such a substrate is not available, straw mats may provide a solution.
- If suitable lying areas are not regularly available on pastures during the winter months, these areas are not suitable for year-round grazing.
- If suitable lying areas are not available after prolonged periods of rain, straw mats applied in good time can serve as a temporary solution.

In structurally diverse grazed landscapes, protection from the weather is available throughout the year (Photo: Stiftung Naturschutz Schleswig-Holstein).

5.2 Fencing

- Fences must always be animal welfare-compliant and escape-proof.
- Experience shows that cattle and horses are very familiar with the boundaries of their territory. In flight situations on large-scale pastures, animals generally remain within their known range.
- Barbed wire must not be used as an electric fence (according to standard DIN EN 60355-2-76, Annex 1).
- For horses, barbed wire fencing alone is not permitted. Barbed wire fencing for horses is only allowed if it is secured from the inside by a clearly visible and non-injury-prone barrier (BVerwG [Federal Administrative Court], Decision of 02.04.2014, 3 B 62.13). This can be an electric fence placed on the inside, which reduces the risk of injury while increasing the safety of the fence.
- Barbed wire should also be avoided as the sole fencing for cattle, as it poses a general injury risk.
- Comprehensive and additional information on fencing can be found in the brochure "Sichere Weidezäune" [Safe Pasture Fences] (BUNDESINFORMATIONSZENTRUM LANDWIRTSCHAFT 2024). The following point may deviate from the recommendations of this brochure: In the context of year-round grazing with horses, when using taut and electrified smooth wires on fixed fence posts, making the fencing visible is recommended, especially when acclimatising new animals. This can be through the use of broadband tapes, flags, barrier tape, or pieces of jute sacks on the wires. Where fences run long distances across open areas without structures behind them, the permanent installation of a conductive and plastic-coated steel wire of the Equi-/Horsewire type as the top current-carrying conductor is recommended. These are predominantly white and are easily recognised by grazing animals. Moreover, they are also easily visible to wild animals, for whom fences across open areas can become dangerous obstacles.
- Not relevant to animal welfare but important for traffic safety purposes is the marking of electric fences with clearly visible and legible warning signs. These must be installed along public roads and paths at intervals of 50 to 100 metres. Further guidance is provided in the above-mentioned brochure.
- Hiking trails on and along grazing areas can have a positive effect on public acceptance and the visitor experience of conservation grazing. However, clearly defined rules — such as a general feeding ban, maintaining safe distances from grazing animals, and access restrictions or leash requirements for dogs — must be complied with. For unfenced paths crossing grazing areas, traffic safety considerations must also be taken into account. It is recommended that the risk of accidents involving grazing animals be clarified with the insurer and, if necessary, covered by additional insurance.

The topic of **"large predators and livestock protection"** is also relevant to animal welfare but will not be discussed in detail here.
Reference is made to further literature on this topic available on the websites of the German Association for Landscape Conservation (DVL), NABU, and the Federal Centre for Grazing Animals and Wolves (BZWW).
A list of additional web resources can be found here: *https://www.naturschutzflaechen.de/tierwohl/tierwohl-infos*

5.3 Catching and Restraint Facilities

- To comply with animal welfare requirements and for herd management purposes, fixed or mobile handling facilities are required on grazing areas. In addition, corrals or designated gathering areas with appropriate fencing are useful. These areas should be permanently accessible and designed to attract animals (e.g. by providing minerals, feed as an attractant, and/or frost-proof drinking troughs). Ideally, they should have at least two entrances and exits and be arranged in such a way that animals regularly pass through them when moving between different parts of the grazing area (forced passage). In these areas, animals can be taken out, separated, and kept under close observation, for example after treatment. The gathering areas or corrals also serve to acclimatise new animals to the grazing area.
- In the winter months, it is generally possible to lure grazing animals into the corral using feed and subsequently drive them into the handling facility, for example for blood sampling. If the corral is designed as a forced passage, animals can also be driven into it when luring is unsuccessful. For this purpose, entrance gates should be designed in such a way that animals cannot see from the entrance that the exit gate on the opposite side is closed.
- For larger mixed grazing areas with cattle and horses, fixed handling facilities suitable for both species are recommended. This allows for rapid action in emergencies without causing additional disturbance from setting up a mobile facility.
- It is advisable to regularly lure the herd to and into the handling facilities using positive stimuli. The handling facilities should remain open so that animals do not associate the combination of human presence and handling facilities with negative experiences. This allows animals to be caught quickly in emergency situations.

6 Animal Removal and Slaughter

6.1 Handling the Removal and Slaughter of Pregnant Animals

- Reference is made to the wording of § 4 of the German Animal Products Trade Prohibition Act [Tiererzeugnisse-Handels-Verbotsgesetz], as amended on 1 September 2017, according to which it is prohibited to send cattle and horses in the last third of pregnancy for slaughter. In cases of doubt, a pregnancy examination is recommended.

6.2 Slaughter by Gunshot on Pasture and Mobile/Semi-Mobile Slaughter

- Slaughter by gunshot on pasture is the most animal welfare-compliant method of slaughter for cattle kept outdoors year-round. Meat quality is also positively influenced by this method (SCHIFFER 2015, TIERÄRZTLICHE VEREINIGUNG FÜR TIERSCHUTZ 2013).
- In September 2021, new federal regulations on mobile and semi-mobile slaughter were introduced (Regulation (EC) No. 853/2004, Annex III, Section I, Chapter VI a). Slaughter by gunshot on pasture is covered by this legislation but remains limited to animals kept outdoors year-round in Germany. In principle, any holding that meets the legal requirements for slaughter by gunshot on pasture is entitled to approval. The new regulations are clearly summarised in IBRAHIM (2021) and HESSISCHER LEITFADEN SCHLACHTUNG IM HERKUNFTSBETRIEB (2022) [Hessian Guide to Slaughter on the Farm of Origin], which also includes guidance on the application procedure. In practice, however, approval for slaughter by gunshot is handled very differently between districts. It is recommended to refer to the legal provisions that have been in force since 2021.

Slaughter by gunshot on pasture is the most animal welfare-compliant method for slaughtering cattle kept outdoors year-round (Photo: Christina Czybik).

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List of Abbreviations

BCS	Body Condition Score
BImA	Bundesanstalt für Immobilienaufgaben (Federal Agency for Real Estate Tasks)
BoHV-1	Bovine Herpesvirus Typ 1
BVD	Bovine Viral Diarrhoea
BVerwG	Bundesverwaltungsgericht (Federal Administrative Court)
BZWW	Bundeszentrum Weidetiere und Wolf (Federal Centre for Grazing Animals and Wolves)
DBU	Deutsche Bundesstiftung Umwelt (German Federal Environmental Foundation)
EU	European Union
FAWC	Farm Animal Welfare Council
GIS	Geographic Information System
GPS	Global Positioning System
LU/ha	Livestock Units per hectare
NABU	Naturschutzbund Deutschland e.V. (Nature and Biodiversity Conservation Union, Germany)
TierSchG	Tierschutzgesetz (German Animal Welfare Act)
TVT	Tierärztliche Vereinigung für Tierschutz e.V. (German Veterinary Association for Animal Welfare)
Regulation (EC)	Regulation of the European Community