

THE EU ZOO INQUIRY 2011

An evaluation of the implementation and enforcement of the EC Directive 1999/22, relating to the keeping of wild animals in zoos

BELGIUM



Written for the European coalition ENDCAP by the Born Free Foundation



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Country Report Belgium

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ABBREVIATIONS USED

APOS	Animal Protection Ordinance of Switzerland, Tierschutzverordnung 2008
CBD	Convention on Biodiversity (1992)
DAWC	Department for Animal Welfare and CITES
DEFRA	UK Department for Environment, Food and Rural Affairs
DIAWC	Department for Inspection of Animal Welfare and CITES
EAZA	European Association of Zoos and Aquaria
EEP	European Endangered Species Breeding Programme
ESB	European Studbook
EU	European Union
FPS	Federal Public Service for Public Health, Food Safety and Environment
GAIA	Group Action in the Interest of Animals
IAS	Invasive Alien Species
IUCN	International Union for Conservation of Nature
NGO	Non-Governmental Organisation
OIE	World Organisation for Animal Health
RD8/1998	Royal Decree 10/08/1998, <i>Arrêté royal relatif a l'agrément des parcs zoologiques</i>
RD7/2004	Royal Decree 14/08/1986, <i>Law on the Protection and Welfare of Animals</i> (last amended 19/05/2010)
SMZP	Standards of Modern Zoo Practice, DEFRA, 2004
WAZA	World Association of Zoos and Aquariums

TERMS USED

Animal: A multicellular organism of the Kingdom Animalia, including all mammals, birds, reptiles, amphibians, fish, and invertebrates.

Animal Sanctuary: A facility that rescues and provides shelter and care for animals that have been abused, injured, abandoned or are otherwise in need, where the welfare of each individual animal is the primary consideration in all sanctuary actions. In addition the facility should enforce a non-breeding policy and should replace animals only by way of rescue, confiscation or donation.

Circus: An establishment, whether permanent, seasonal or temporary, where animals are kept or presented that are, or will be, used for the purposes of performing tricks or manoeuvres. Dolphinaria, zoos and aquaria are excluded.

Domesticated Animal: An animal of a species or breed that has been kept and selectively modified over a significant number of generations in captivity to enhance or eliminate genetic, morphological, physiological or behavioural characteristics, to the extent that such species or breed has become adapted to a life intimately associated with humans.

Environmental Quality: A measure of the condition of an enclosure environment relative to the requirements of the species being exhibited.

Ex situ: The conservation of components of biological diversity outside their natural habitats. (Glowka et al., 1994)

Free-roaming Animals: Animals that have been deliberately introduced to the zoo grounds and that are free to move throughout the zoo.

In situ: The conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings. (Dudley, 2008)

Not Listed: Species of animal that are not listed on the IUCN Red List of Threatened Species™, including species that have yet to be evaluated by the IUCN and domesticated animals.

Pest: An animal which has characteristics that are considered by humans as injurious or unwanted.

Species Holding: The presence of a species in a single enclosure. For example, two separate enclosures both exhibiting tigers would be classed as two *species holdings*; while a single enclosure exhibiting five species of birds would be classed as five *species holdings*.

Threatened Species: A species that is categorised by the IUCN Red List of Threatened Species™ as *Vulnerable*, *Endangered* or *Critically Endangered* (IUCN Red List website).

Wild Animal: An animal that is not normally or historically domesticated in Belgium.

Zoonoses: Those diseases and infections which are naturally transmitted between vertebrate animals and man.

Zoo: All permanent establishments where animals of wild species are kept for exhibition to the public for seven or more days in a year, with the exception of circuses, pet shops and establishments which Member States exempt from the requirements of the Directive on the grounds that they do not exhibit a significant number of animals or species (Directive 1999/22/EC).

SUMMARY

Six zoos in Belgium were assessed as part of a pan-European project to evaluate the effectiveness and level of implementation and enforcement of European Council Directive 1999/22/EC (relating to the keeping of wild animals in zoos) in European Union (EU) Member States. A total of 816 species (including subspecies where appropriate) and 1,108 *species holdings* were observed in 636 enclosures in the six zoos. Information was collected about a number of key aspects of each zoo's operation including: participation in conservation activities; public education; enclosure quality; public safety; and the welfare of the animals. These parameters were evaluated against the legal requirements of Directive 1999/22/EC, the Royal Decree 10/08/1998, *Arrêté royal relatif à l'agrément des parcs zoologiques* ('RD8/1998') and the Royal Decree 14/08/1986 for the protection of animals (last amended 19/05/2010) ('RD7/2004'), taking into consideration the minimum requirements specified by the Ministerial Orders 03/05/1999, 07/06/2000 and 23/06/2004. Key findings were:

- Whilst Belgian zoo law has adopted the majority of requirements specified by the Directive, **RD8/1998 makes little reference to the conservation of biodiversity, no mention of the regularity of or procedures for zoo inspections, and includes no details on actions to be taken on the event of zoo closure, particularly with regard to the relocation of the animals. These are all requirements of the Directive.**
- The *laissez-faire* approach to zoo licensing, as per Article 2(4) of RD8/1998, appears to permit the *automatic* licensing of establishments as zoos, without the legally-required zoo inspection. **This may contravene the requirements of Article 4 of the Directive, concerning the licensing and inspection of zoos.**
- **Lack of definitions in Article 1(1) of RD8/1998 for 'circuses', 'travelling expositions' and 'commercial establishments for animals', facilities that are exempt from the zoo law, weaken the application of RD8/1998 since facilities that may require a zoo licence may be incorrectly identified as not requiring one.**
- **The results highlight inconsistencies in the interpretation and application of RD8/1998. This report identified significant variability in zoo activities and levels of compliance, with some zoos not meeting any of the requirements of RD8/1998.**
- **Zoo inspections appear to be dependent on workload and may take place more in response to notifications and complaints, rather than being undertaken as part of a regular, structured process as required by the Directive.**
- **Unlike the Directive, the RD8/1998 only stipulates that zoos should participate in international cooperative captive breeding programmes.** It has not adopted the other conservation options cited in Article 3 of the Directive, indicating a weak commitment to species conservation.
- **In addition, Belgian zoos are not making the commitment to species conservation, particularly those species that are regionally Threatened with extinction, that might be expected.** Of the total observed species at the six zoos, 15% (n=124) are recognised as globally Threatened, of which 5% are listed on the European Red List. A total of 42% (n=52) of all the identified 124 threatened species were confirmed as participating in the European Species Management Programmes (EEPs and ESBs).
- Recognising that an education programme should include multiple levels of engagement with a variety of audiences, **only two zoos appeared to have established such a programme despite this being a**

requirement of RD8/1998. The remaining four zoos appeared to undertake minimal educational activities or none at all.

- Of the 153 randomly-selected enclosures, **78% of signage present did not contain all the required information (Article 23 of RD8/1998), with the majority not including reference to the species' conservation status and 24% not including reference to species' biological characteristics.**
- **The public could come into unsupervised, uncontrolled direct contact with potentially dangerous wild animals and few zoos appeared to recognise these risks and inform the public accordingly.**
- **Three of the six zoos actively encouraged members of the public to have direct contact with their animals.** This included the use of certain wild animals as props in souvenir photographs.
- **Further investigation is necessary by the DAWC and the Zoos Commission as to whether the dolphinarium in Boudewijn Seapark is able to meet the requirements of RD8/1998 and the Directive 1999/22/EC.**
- **On average, 98% of the assessed enclosures did not include any behavioural or occupational enrichment items or techniques such as toys or feeding devices.** This may not only violate Article 6 of RD8/1998, but it could also breach Article 4 of RD8/1998 and Article 4 of RD7/2004, particularly in relation to the tethered birds.
- Of the randomly-selected enclosures, **39% of enclosures containing mammals, birds or reptiles, failed to meet all the minimum requirements for appropriate animal keeping in Belgium.**

RECOMMENDATIONS

The Federal Public Service (FPS) for Public Health, Food Safety and Environment, through the Department for Animal Welfare and CITES (DAWC) should take the necessary measures to:

- 1) Amend RD8/1998 to include all requirements of the Directive in particular: its key objective to conserve biodiversity by adopting all options cited by Article 3 of the Directive with additional explanatory guidance; definitions for all terms used, including exemptions to the law; a zoo licensing procedure that is reliant on regular inspection; and a clear indication as to who is responsible for the animals in the event of zoo closure.
- 2) Review and improve the zoo licensing procedure to ensure that ‘*all establishments open to the public, where live animals of non-domesticated species are kept and exhibited*’ are inspected **before** a fixed term licence is granted and that, once licensed, regular, periodic inspections take place to ensure all zoos meet *all* the specified requirements of RD8/1998.
- 3) Establish an annual zoo inspection regime where all zoos are regularly inspected using a structured auditing procedure during the on-site visit.
- 4) Ensure consistency in zoo inspection and compliance of zoos with all licensing requirements before the granting, refusal, extension of, or amendment of a licence (Article 4(4) of the Directive).
- 5) Ensure that all national and regional enforcement personnel and veterinarians involved in the inspection and regulation of zoos are equipped with relevant, regular training and skills pertaining to the care and welfare of wild animals in captivity.
- 6) Establish criteria to evaluate and improve educational, scientific research and conservation measures in zoos, including species information signage. This should not be developed and implemented by the zoos themselves but through the Zoos Commission and the DAWC.
- 7) Ensure the Zoos Commission consists of individuals who operate zoos, independent educators, veterinarians and academics, together with representatives of regional enforcement agencies, central government; and animal welfare NGOs.
- 8) Ensure that all zoo keepers, being those people responsible for the care of animals in zoos, are provided with relevant training and skills in animal care and welfare.
- 9) Ensure zoos keep and conserve predominantly indigenous and European Threatened species rather than non-European species. All Threatened species, particularly European species, should be included in cooperative Species Management Programmes. All zoos should provide the DAWC with an annual report relating to all activities involving species involved in international captive breeding programmes.
- 10) Ensure a coordinated effort is made to create a national Red List of endangered species for Belgium, in line with similar lists created by the authorities in other European countries such as Poland or Cyprus (see National Red Lists, 2011).
- 11) Discourage animal presentations but, where these do take place, ensure that presentations only focus on natural behaviour and biological facts. Anthropomorphic and comic performances should be prohibited as, for example, required by the European Association for Aquatic Mammals (EAAM 1995). Existing animal presentations which consist of unnatural behaviour, involve disciplined training regimes, or are accompanied by loud and/or inappropriate music, should cease.
- 12) Prohibit all public contact with ‘Hazardous Animals’ and those known to harbour zoonoses. All other public contact is to be discouraged but, where it does take place, it must be supervised, controlled, limited, provide the animals with a significant rest period and must not be detrimental in any way to the

welfare of the individual animals involved. The public must be made aware of any physical or disease risks.

- 13) Publish guidance, as necessary, to assist zoos, enforcement personnel, veterinarians, NGOs and other stakeholders effectively in interpreting the requirements of RD8/1998 and RD7/2004, specifically with regard to their participation in, and their application of, recognised peer-reviewed conservation and education programmes and species-specific environmental enrichment.

The Department for Inspection of Animal Welfare and CITES (DIAWC), the veterinary services and the Zoos Commission should take the necessary measures to:

- 1) Ensure zoo operators are aware of the need for species-specific environmental enrichment, by providing guidance wherever possible and taking the necessary steps to ensure all animals are kept in conditions that meet their species-specific needs.
- 2) Ensure, through effective enforcement, that all zoos (*as defined*) abide by the requirements of national zoo law and apply existing available penalties (Article 2(5), RD8/1998) to zoos that fail to meet their legal obligations.
- 3) Close any zoo that is unable, within a specified period of time, to meet the requirements of RD8/1998 and ensure high standards in animal welfare are maintained.

THE EU ZOO INQUIRY 2011

Introduction and methodology

INTRODUCTION

Council Directive 1999/22/EC ('the Directive'), relating to the keeping of wild animals in zoos, was adopted in 1999. The Directive came into force in April 2002, when the EU comprised 15 EU Member States. Since then, all countries that are Members of the EU have been obliged to transpose the requirements of the Directive into national legislation and, from April 2005 (2007 in the case of Bulgaria and Romania), fully implement and enforce its requirements. The European Commission has responsibility for overseeing and ensuring the effective implementation of the Directive by Member States and for taking legal action in the event of non-compliance.

The Directive provides a framework for Member State legislation, through the licensing and inspection of zoos, to strengthen the role of zoos in the conservation of biodiversity and the exchange of information to promote the protection and conservation of wild animal species. This is in accordance with the Community's obligation to adopt measures for *ex situ* conservation under Article 9 of the *Convention on Biological Diversity* (1992) (CBD website). Member States are also required to adopt further measures that include: the provision of adequate accommodation for zoo animals that aims to satisfy their biological needs; species-specific enrichment of enclosures; a high standard of animal husbandry; a programme of preventative and curative veterinary care and nutrition; and to prevent the escape of animals and the intrusion of outside pests and vermin.

Although the Directive has been transposed in all Member States, national laws often lack detailed provisions relating to educational and scientific activities, guidance on adequate animal care, licensing and inspection procedures, as well as clear strategies for dealing with animals in the event of zoo closure. The Directive's requirements themselves are relatively ambiguous and allow for inconsistencies in interpretation. Competent Authorities in Member States have not been provided with comprehensive guidance or training to facilitate the adoption of the provisions of the Directive and, as a consequence, many are failing to ensure these provisions are fully applied by zoos (Eurogroup for Animals, 2008; ENDCAP, 2009).

Estimates place the total number of licensed zoos in the EU to be at least 3,500. However, there are thought to be hundreds of unlicensed and unregulated zoological collections that have yet to be identified and licensed by the Competent Authorities. No more than 8% of the total number of zoos in Europe are members of the European Association of Zoos and Aquaria (EAZA) which therefore should not be regarded as a representative of zoos in the European Community.

Preliminary investigations revealed that many zoos in the EU are substandard and are failing to comply with the Directive. Furthermore, EU Member States are inconsistent in their application of the Directive but little effort has been made to identify and address the reasons behind this. The project aims to assess the current situation in the majority of Member States, identify any issues requiring attention and provide recommendations with regard to how implementation can be improved.

METHODOLOGY

Between March and December 2009, an assessment of 200 zoological collections in 20 EU Member States was made as part of an evaluation of the level of implementation and enforcement of European Council Directive 1999/22/EC. The project included an evaluation of national laws pertaining to zoos in each EU Member State compared to the requirements of the Directive, an analysis of the implementation and enforcement of those laws and an assessment of the status and performance of randomly-selected zoos in each Member State.

A Zoo Assessment Protocol was developed and tested to ensure consistency in data collection. For certain Member States (England, France, Germany, Ireland, Italy, Malta and Portugal) individual, locally-fluent investigators were contracted to undertake the work. In other Member States (Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Poland, Romania and Slovenia) a single investigator from the UK collected and analysed the data.

Implementation and enforcement of Member State legislation

Data were collected and evaluated through:

- Completion of a questionnaire by the Competent Authorities in each Member State
- Informal interviews with the Competent Authority
- Reviewing national zoo legislation

Status and performance of zoos

Using the definition of a zoo in the Directive*, a variety of zoological collections was assessed including: traditional zoos, safari parks, aquaria, dolphinarium, aviaries and terraria. In some cases, national legislation does not use this definition, which can lead to inconsistencies in application. Where this is the case, any variance was noted, but zoos, *as defined by the Directive*, were nevertheless included in the project to maintain consistency.

Zoos were selected for evaluation using two methods: A. For those Member States with large numbers of zoos, 25 zoos were randomly-selected (France, Germany, Italy and England). B. For those Member States (n = 16) with a small number of zoos, between three and ten collections were selected, dependant upon the total number of zoos in the country and their accessibility. Zoos were identified by referring to Government records (if these exist), using online resources, published media and information from local NGOs.

Data were collected using a video camera which recorded a complete overview of the structure and content of each zoo, including: all enclosures; all visible animals; signage; public education facilities; any talks, shows or interactive animal handling sessions; public/animal contact and security issues. Additional information was collected from the zoo website and literature that was, occasionally, provided by the zoos themselves. Data collection was undertaken without the prior knowledge of the zoo management and therefore only areas accessible to the general public were recorded. Thus, for example, off-show areas, food preparation and storage rooms, quarantine and veterinary facilities were not included.

*'... all permanent establishments where animals of wild species are kept for exhibition to the public for seven or more days a year.'
... (Article 2 European Council Directive 1999/22/EC)

Data were analysed using a Zoo Assessment Protocol that had been developed and refined during an assessment of zoos in Spain (InfoZoos 2006 - 2008) and which took into consideration the requirements of the Directive, national zoo law and the *EAZA Minimum Standards for the Accommodation and Care of Animals in Zoos and Aquaria* (available on the EAZA website and referred to in the preamble of the Directive). Information and guidance was also drawn from the UK's Standards of Modern Zoo Practice 2004 (SMZP) and Zoos Forum Handbook. The Zoo Assessment Protocol was adapted for each Member State dependent upon the specific requirements of national law.

The analysis was separated into the following sections:

- A. General Zoo Information.
- B. Conservation Commitment.
- C. Public Education.
- D. Evaluation of Animal Enclosures.
- E. Animal Welfare Assessment.

Further details of the assessment methodology are available at www.euzooinquiry.eu

All zoos included in the evaluation were asked to complete a Standard Zoo Questionnaire that asked for details of their participation in: European coordinated captive breeding programmes; *in situ* conservation projects; public education; and current research activities.

The Questionnaire also sought information relating to levels of staff training, veterinary care, and programmes to provide environmental enrichment and appropriate nutrition.

Resources dictated that the EU Zoo Inquiry 2011 included an assessment of the following EU Member States: **Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovenia and United Kingdom (England only).**

The remaining seven Member States were not included in this zoo assessment (March – December 2009). However a further report focussing on zoo regulation in **Spain** will be published in 2011.

BELGIUM

Country Report

INTRODUCTION

Belgium was a founding member of the EU (then EEC) in 1957. As with a few other EU Member States, Belgium established and implemented zoo-specific legislation before the ratification and implementation of European Council Directive 1999/22/EC ('the Directive'). The Royal Decree 10/08/1998, *Arrêté royal relatif à l'agrément des parcs zoologiques* (SG(1999)A/06453) ('RD8/1998'), which requires all zoos to be licensed and meet specified requirements in both operation and animal care, came into force in 1999 (Article 29, RD8/1998). Since its implementation, secondary legislation has been introduced, which stipulates specific requirements for the keeping of mammals (Ministerial Order 03/05/1999, (MB 19/08/1999, page 30836)), birds (Ministerial Order 07/06/2000, (MB 05/09/2000, page 30330)) and reptiles (Ministerial Order 23/06/2004, (MB 27/07/2004, page 57381)). In 2002, Belgium, along with all EU Member States, was also obliged to have incorporated the requirements of the Directive into national law, which, according to the European Commission, was achieved by the specified deadline (European Commission, 2003).

The regulation of RD8/1998 is the responsibility of the Federal Public Service (FPS) for Public Health, Food Safety and Environment (Article 30, RD8/1998). Zoos are licensed through the Department for Animal Welfare and CITES (DAWC), whilst zoo inspection is administered by the Department for Inspection of Animal Welfare and CITES (DIAWC) and the veterinary services (Article 5(3), Royal Decree 14/08/1986). Both governmental Departments are governed by the FPS for Public Health, Food Safety and Environment (Standard Member State Questionnaire).

As part of this investigation, the Competent Authority was asked to complete a Standard Member State Questionnaire. Information received from the Department for Animal Welfare and CITES of the Federal Public Service for Public Health, Food Safety and Environment (Standard Member State Questionnaire, pers. comm., 19th April 2010), has been included throughout this report.

The RD8/1998 provides a legislative framework for the accreditation of zoos, which includes details of the zoo licence application procedure (Chapter II, Article 2 of RD8/1998) and requirements applicable to zoos (Chapter III of RD8/1998). Article 8 of RD8/1998 permits the Minister responsible for animal welfare ('the Minister') to establish further requirements for the keeping of animals in zoos. Currently these include three separate pieces of secondary legislation: each a set of minimum standards for the keeping of mammals, birds, and reptiles in zoos. In addition to RD8/1998 and the minimum standards, all zoos (and any individual or establishment keeping animals of any kind), must comply with the basic principles of animal care as specified by the Royal Decree 14/08/1986, *Law on the Protection and Welfare of Animals* (last amended 19/05/2010) ('RD7/2004'). This Decree aims to ensure that all species of animal are protected from harm and neglect and are provided with conditions that meet their welfare needs (Article 4, RD7/2004). In addition, and specific to zoos, Article 5(2)2 of RD7/2004 refers to the formation of the Zoos Commission, an independent body of Ministerially-appointed experts with knowledge of the welfare needs of wild animals in captivity and an understanding of the requirements of the Directive (Ministerial Decree 05/08/2002). The Zoos Commission is apparently regularly consulted on matters concerning the Directive, the development of legislation and zoo licensing, which advises the Minister accordingly (Standard Member State Questionnaire).

In Belgium, establishments wishing to operate as a zoo (as defined below) must apply for an operating licence

from the DAWC following the application procedure described in Chapter II, Article 2 of RD8/1998 and by submitting the form in Annex B of RD8/1998, attaching all required documentation. This includes, amongst other things, an inventory of the species kept, a plan of the zoo and confirmation that the establishment has the necessary regionally-acquired permissions and a contract with a chartered veterinarian (Article 2 and Annex B of RD8/1998). According to the Standard Member State Questionnaire, the licence is issued following one or more on-site inspections and on confirmation that conditions meet the requirements of RD8/1998. The Minister is required to inform applicants within 180 days of application but it is recognised that if no announcement is given within that time frame, the licence will be automatically issued (Article 2(5) of RD8/1998). This *laissez-faire* approach to zoo licensing was highlighted in a previous review of zoo regulation in Belgium (Eurogroup 2008). In Belgium, a zoo licence is valid indefinitely, but can restrict the zoo to keeping a certain number of, or particular, species and, if a violation is identified, the Minister can suspend the licence at any time (Article 2(5) of RD8/1998). Licensed zoos are listed on a national database, maintained by the DAWC (Standard Member State Questionnaire), which at the time of correspondence (Standard Member State Questionnaire, pers. comm., 19th April 2010), included 42 zoos.

Following the accreditation of a zoo, inspections are reportedly carried out but governed by work schedules that apparently take into account any notifications or complaints received. The DIAWC is responsible for zoo inspections, which are carried out by the veterinary services, together with advice and guidance of the Zoos Commission (Standard Member State Questionnaire).

Zoo licensing requirements

A ‘zoo’ is defined as ‘*all establishments open to the public, where live animals of non-domesticated species are kept and exhibited, that include animal parks, safari parks, dolphinariums, aquariums and specialised collections, but exclude circuses, travelling expositions and commercial establishments for animals*’ (Chapter I, Article 1, RD8/1998; Article 3(9), RD7/2004). Unlike the Directive, the Belgian zoo definition makes no reference to the duration that the ‘*non-domesticated species*’ should be on display to constitute the need for a licence, nor are there any specifications over the minimum number of animals / species (Article 2 of the Directive).

As stated above, exemptions from this definition, and therefore those establishments not required to hold a zoo licence in Belgium, include: ‘*circuses [and] travelling expositions*’, ‘*commercial establishments for animals*’ and establishments that keep only domesticated animal species. Chapter I ‘*Definitions*’ of RD8/1998 does not define ‘*circuses [and] travelling expositions*’ or ‘*commercial establishments for animals*’, however, domesticated species are defined as ‘*farm animals and companion animals*’ and in addition, refers to “*animal species usually kept by man and listed in Annex A*” to RD8/1998, ‘*List of domesticated species*’, which currently includes llama (*Lama glama*); alpaca (*Lama pacos*); fallow deer (*Dama dama*) and peafowl (*Pavo cristatus*). The content of the list can be edited by the Minister on the advice from the Zoos Commission (Chapter I, Article 1(2), RD8/1998).

Licensed zoos in Belgium are required to meet the specifications of RD8/1998 and RD7/2004, in addition to the Ministerial Orders stipulating the minimum standards for the keeping of animals in zoos. They include the following:

Conservation

Chapter III, Section IV of RD8/1998 concerns ‘*animal breeding and species conservation programmes*’ in zoos. It states:

- ‘*The zoo must collaborate with coordinated exchange and breeding programmes if it has animals targeted by these programmes. The animals’ paperwork must be provided to the coordinators or holders of the relevant registers.*’

(Chapter III, Section IV, Article 25, RD8/1998)

- ‘*Any uncontrolled breeding must be avoided. Hybrid breeding is prohibited except if it is part of a justified scientific breeding programme.*’

(Chapter III, Section IV, Article 26, RD8/1998)

- ‘*The Minister can decide on a list of species whose breeding in zoos can be prohibited or limited*’

(Chapter III, Section IV, Article 26, RD8/1998)

According to the Standard Member State Questionnaire, the Zoos Commission provides advice and guidance to the Minister on matters concerning species conservation and captive breeding programmes, referring specifically to the Species Management Programmes coordinated by EAZA: the European Endangered Species Breeding Programmes (EEPs) and the European Studbooks (ESBs). However, no further information was provided, no reference was made to the Minister’s list as referred to above, nor was there any indication given as to what guidance is provided to the zoo operators to help them interpret the meaning or significance of these requirements.

Education

Chapter III, Section III of RD8/1998 concerns the ‘*educational programme and information for the visitor*’ in zoos. It states:

- ‘*Basic information that is clearly legible and scientifically and linguistically accurate, and that is directly related to the animal species that are being kept (common and scientific names of the species, range and conservation status), must be posted onto or near each place where the animals are being housed.*’

- ‘*The information provided to the public by the zoos must place animals in their biological and ecological context as much as possible.*’

(Chapter III, Section III, Article 23 paragraphs 1 and 3, RD8/1998)

- ‘*The zoo must establish an educational and informational programme targeting students that is based on an introduction to biology, ecology and nature conservation. The advice of an expert with biological knowledge and teaching experience must be obtained.*’

(Chapter III, Section III, Article 24, paragraph 1, RD8/1998)

Furthermore, where animals are used in shows or performances to the visiting public, zoos are expected to ensure that these are based on the natural behaviour of the respective species. Additionally, any information offered during the performance must be based on biological facts to facilitate an understanding of the natural attributes of the species exhibited (Chapter III, Section III, Article 24, RD8/1998).

According to the Standard Member State Questionnaire, the Zoos Commission provides further guidance to zoos to help them meet their obligation to educate the public about species and nature conservation. However, no further information was provided, nor was any indication given as to the specifications of the required education programme.

Animal welfare provisions

Belgian zoos are regulated by the Royal Decree 10/08/1998 ('RD8/1998'), which primarily aims to protect the welfare of animals in zoos, as well as the health and safety of the public. Animals in zoos are also referenced in the country's animal protection law, Article 3(9) of Royal Decree 14/08/1986 (last amended 19/05/2010) ('RD7/2004'). A 'duty of care' imposed on the animals' owner/holders to ensure, amongst other things, their well-being and good health (Chapter II, Article 4, RD7/2004).

Chapter III, Section I of RD8/1998 refers to the '*housing and equipment*' and requires, amongst other things, that:

- '*Animal housing must be suitable and well maintained so not to cause the animals harm or injury.*'
(Article 4, RD8/1998)
- '*Animals kept outdoors must be able to take shelter when weather conditions are unfavourable.*'
(Article 5, RD8/1998)
- '*Housing for animals must be designed and developed in order to stimulate behaviours as varied and as natural as possible.*'
(Article 6, RD8/1998)
- '*Concerning animal housing... it is important to ensure that::*
 - 1) *specimens belonging to social species be housed in groups, except if verified by a zootechnical or veterinarian;*
 - 2) *specimens belonging to solitary species be kept alone ;*
 - 3) *no detrimental interaction occur during the formation of a group of animals.*'
(Article 7, RD8/1998)
- '*Food must be kept and prepared in good hygienic conditions, in buildings sheltered from pests and in a location separate from where animals are housed.*'
(Article 9, RD8/1998)
- '*A clean, well-ventilated and well-lit building must be available for examinations of and interventions on vertebrate animals. An area allowing for the isolation of animals for veterinary reasons must also be planned.*'
(Article 10, RD8/1998)

Article 8 refers to additional requirements on the conditions for keeping certain animals, which the Minister may choose to establish. Currently these include separate standards for the keeping of mammals (Ministerial Order 03/05/1999), birds (Ministerial Order 07/06/2000) and reptiles (Ministerial Order 23/06/2004), which stipulate minimum species-specific housing requirements: predominantly enclosure sizes. These were reportedly developed by independent scientists using available scientific knowledge of the given species (both in the wild and in captivity), together with the advice of the Zoos Commission (Standards Member State Questionnaire). No

additional housing requirements, other than those general requirements specified by RD8/1998, exist for amphibia, fish or other taxa.

Furthermore, Chapter III, Section II of RD8/1998 refers to the ‘*care, hygiene and veterinary guidance*’ and requires, amongst other things, that:

- ‘*The person in charge must be in contact with a certified veterinarian to perform regular health and welfare controls on vertebrate animals other than fish.*’ (Article 15)
- ‘*The areas where the animals are housed, and the equipment they contain, must be cleaned regularly and disinfected if necessary.*’ (Article 18)

RD8/1998 also stipulates other requirements including measures to: protect the public from harm (Chapter III, Section II, Article 20, RD8/1998) and; prevent the escape of animals (Chapter III, Section I, Articles 3 and 22, RD8/1998).

As specified by Article 3(5) of the Directive, there is a requirement for zoos in Belgium to maintain a stocklist of the animals kept and any identification, their origin and date of acquisition and their destination, if transferred to a further owner/establishment. However, this information is not provided to the Competent Authority (Chapter III, Section V, Article 27, RD8/1998) (Standard Member State Questionnaire).

The Zoo Investigation

A total of six zoos in Belgium were selected. Data were collected at the following zoos during April 2009 and June 2010 (Fig. 1):

- Domaine des Grottes de Han: La Réserve d'Animaux Sauvages (1)
- Serpentarium (2)
- Parc Animalier de Bouillon (3)
- Boudewijn Seapark (4)
- Pairs Daiza (5)
- Zoo Antwerpen (6)



Figure 1 Geographical locations of the six zoos visited in Belgium.

RESULTS AND INTERPRETATION

GENERAL ZOO INFORMATION

Overview

The investigation evaluated six zoos in Belgium. All six are believed to be privately-owned, however there are thought to be approximately nine zoos in Belgium owned by local government. Zoo Antwerpen is run by the Royal Zoological Society of Antwerp, a non-profit organisation that also oversees Planckendael Zoo and the Centre for Research and Conservation (CRC website). All six meet the definition of a 'zoo' (Article 2 of the Directive; Chapter I, Article 1, RD8/1998) and were listed on the national database (Standard Member State Questionnaire, pers. comm., 19th April 2010). Entrance fees for one adult ranged from €8 to €44.

Of the six zoos evaluated, three are members of a zoo association. Zoo Antwerpen, Pairi Daiza and Domaine des Grottes de Han are members of the *European Association of Zoos and Aquaria* (EAZA). EAZA has a total membership of 277 zoos in the EU (EAZA website), but represent a small minority of the total number of regional zoos (8% of an estimated total of 3,500 zoos in the EU). All EAZA zoos are expected to follow the *EAZA Minimum Standards for the Accommodation and Care of Animals in Zoos and Aquaria*. Zoo Antwerpen is also a member of the *World Association of Zoos and Aquaria* (WAZA).

A total of 816 species (including subspecies where appropriate) and 1,108 *species holdings* were identified in 636 enclosures in the six zoos. A total of 68 *species holdings* could not be identified (see online Methodology).

Despite all six zoos being sent the Standard Zoo Questionnaire, which provides an opportunity for the zoo to describe, amongst other things, their conservation and education activities, none of the zoos completed and returned the Questionnaire. Therefore, information concerning their performance and activities was gathered from published materials produced by the zoos, including information contained on zoo websites.

Prevention of animal escapes

'Animal housing must be designed and maintained in such a way that under any normal circumstances, animals are not able to escape and the security of animals and of the public is ensured'

(Chapter III, Section I, Article 3, RD8/1998)

The importance ascribed to this issue in the Directive and Belgian zoo law appeared to be sufficiently implemented in all six zoos. Despite one zoo, Pairi Daiza, having free-roaming animals (including ruddy-headed goose (*Chloephaga rubidiceps*) and greylag goose (*Anser anser*)), all of the zoos had a perimeter fence that appeared to be of an adequate height and strength to contain an escaped animal.

Public placed at risk of injury and disease transmission

'Direct contact between the public and dangerous animals should be made impossible through the use of fences ensuring sufficient distance between them.'

'The public [should] be informed about any possible danger.'

Three of the six zoos actively encouraged members of the public to have direct contact with certain animals (Zoo Antwerpen, Boudewijn Seapark and Serpentarium). In addition, the frequently poor design of enclosures, lack of stand-off barriers and, in one zoo, the close proximity of wild animals to the public during an animal presentation (Pari Daiza), allowed for direct contact. In some cases, this placed the public at significant risk. Findings reveal that the public could easily come into direct contact with animals in 50 out of the 153 randomly selected enclosures (see Sections D and E in online Methodology). This included potentially dangerous Category 1 'Greater Risk' Hazardous Animals, as categorised by SMZP, such as, plains zebra (*Equus quagga*), yak (*Bos grunniens*), snowy owl (*Bubo scandiaca*), harbour seal (*Phoca vitulina*) and Rüppell's vulture (*Gyps rueppellii*). Signage warning the public of the risks of direct contact with potentially dangerous animals was lacking in all the assessed zoos.



Figure 2 Boudewijn Seapark.

A child has a souvenir photograph taken with a Californian sea lion (*Zalophus californianus*) unaware of the potential risks. Females of this species weigh, on average, 110kg and are recognised as a Category 1 Hazardous animal (SMZP). Belgian zoo law stipulates that *'direct contact between the public and dangerous animals should be made impossible through the use of fences ensuring sufficient distance between them.'*

Boudewijn Seapark encourages members of the public to have photographs with sea lions, following the sea lion show, which often involves direct contact with the animals. This zoo also advertises the opportunity for the public to be photographed with a dolphin (at €100 a photograph) and of bird of prey (at €95 a photograph), but it is not known if the direct contact is permitted (Boudewijn Seapark website).

The Serpentarium encouraged direct contact between zoo visitors and some of the wild animals on display. This included reptiles and amphibians. No signage encouraging hand-washing or notifying the public of the risks of direct animal contact were observed. Zoo Antwerpen also encourages the public to *'pet a real snake'* during the

talk, 'Faced with Pythons' (Zoo Antwerpen website). The 'kidsite' at the Zoo Antwerpen permits children to touch various small animals (A View on Cities website).

The Bird of prey shows at Pairi Daiza and Boudewijn Seapark both involved of a variety of falcons, owls, eagles and vultures in a free-flying display, controlled by zoo staff. Although the viewing public was not encouraged to touch these potentially hazardous animals, the birds were often flown dangerously close to, or amongst, the viewing public. In some instances, the public had to move to avoid the birds' claws or wings.

CONSERVATION

The conservation of biodiversity is the main objective of the Directive and it requires zoos in the EU to participate in at least one of four possible conservation activities (Article 3 of the Directive). Whilst the zoo law in Belgium focuses predominately on animal welfare standards, zoos are required to participate in the coordinated exchange of animals and international captive breeding programmes (Section IV, Article 25 of RD8/1998), which have been established by the zoo community with the aim of preserving gene pools of Threatened species, to maintain captive populations of species *Extinct in the Wild*, or to enable repopulation or reintroduction of Threatened species (e.g. AZA Amphibian Conservation Resource Manual, 2007; EAZA News, 2008).

However, the results of this investigation have identified that the commitment by Belgium's zoos to the conservation of biodiversity, particularly with regard to the protection of Threatened species, appears to be a low priority.

Percentage of Threatened Species

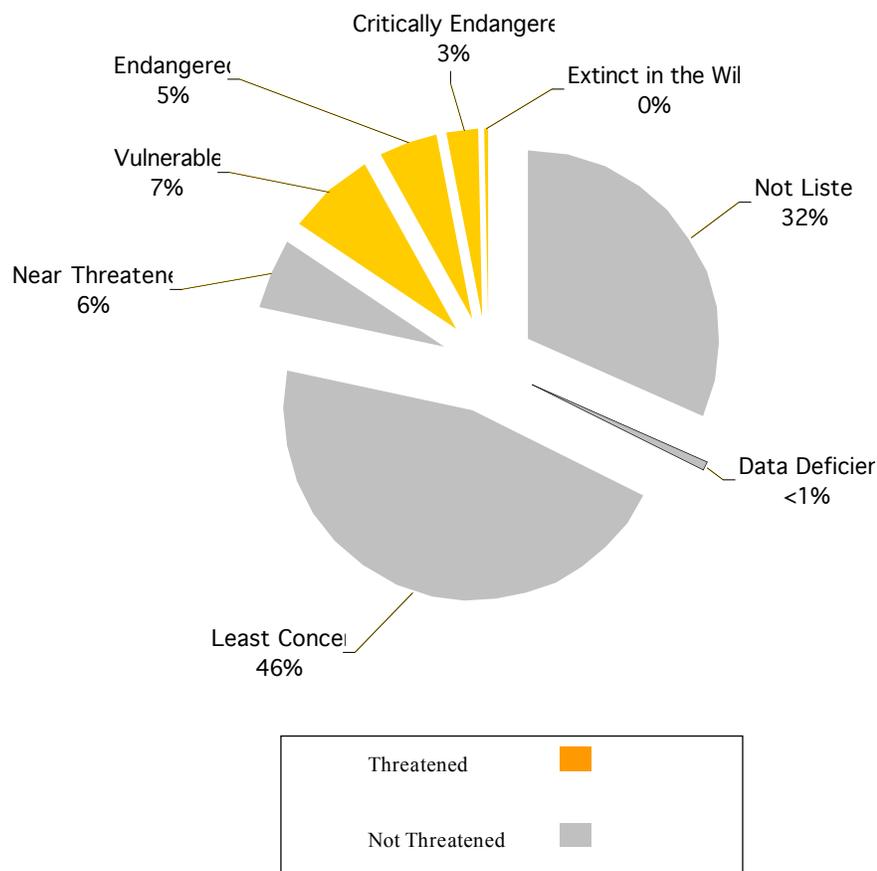


Figure 3 Proportion of the 816 species identified (including subspecies where appropriate) in the six Belgian zoos that are categorised by the IUCN Red List of Threatened Species™ as Threatened and Not Threatened.

Percentage of Threatened Species and Taxa

IUCN Red List of Threatened Species™ Categorisation	Taxonomic Group						Total No. Species	Proportion of total number of species (%)
	Mammals	Birds	Reptiles	Fish	Amphibians	Invertebrates		
Not Listed	13	7	66	115	2	56	259	32%
Not Evaluated	0	0	0	0	0	0	0	0
Data Deficient	1	0	0	3	1	0	5	1%
Least Concern	64	215	37	45	14	0	375	46%
Near Threatened	10	24	10	5	1	0	50	6%
Vulnerable	15	24	18	3	1	0	61	7%
Endangered	15	18	5	2	1	0	41	5%
Critically Endangered	11	3	4	1	2	1	22	3%
Extinct in Wild	2	0	0	1	0	0	3	0%
Total No. Species	131	291	140	175	22	57	816	100%
Proportion of total no. Species (%)	16%	36%	17%	21%	3%	7%	100%	

Table 1 Proportion of the 816 species (including subspecies where appropriate) identified in six Belgian zoos, categorised as Threatened and Not Threatened by the IUCN Red List of Threatened Species™ by taxa.

The results indicate that 15% (n = 124 species) of the total number of species from the selected zoos can be described as Threatened (*Vulnerable* (7%), *Endangered* (5%) and *Critically Endangered* (3%)) (Table 1). Of the 124 Threatened species, 36% were birds, 33% were mammals, 22% were reptiles, 5% were fish, 3% were amphibians and 1% were invertebrates. The remaining 85% of the Not Threatened species were either classified as *Least Concern* (46%) or *Near Threatened* (6%) by the IUCN Red List of Threatened Species™ categorisation, or *Not Listed* (32%) (Fig. 3). **The majority of species exhibited in the zoos were of Least Concern, and of a low conservation priority.** Of the six zoos, Zoo Antwerpen exhibited the highest proportion of Threatened species (20% of the zoo’s total observed collection), whilst Serpentarium had the least (6% of the zoo’s total observed collection).

Of the total 816 species kept by the six zoos, 29 species (3%) are listed on the European Red List (European Red List website), this included 17 species of mammal, seven reptile species and five fish species. In addition, within the six zoos, there was a total of 48 species of bird included on the BirdLife International Status Assessment for Birds (BirdLife International, 2004). The BirdLife International Status Assessment for Birds is the recommended tool to assess the conservation status of birds in the EU (IUCN, pers. comm., 21st July 2011). No European Red listed amphibians or invertebrates were recorded. Of the European Red listed mammals, 15 species are categorised as *Least Concern* (including *Canis lupus*, *Lynx lynx* & *Genetta genetta*), one as *Data Deficient* (*Tursiops truncatus*) and one as *Vulnerable* (*Bison bonasus*). Of the birds listed on the BirdLife International Status Assessment for Birds, 27 species are listed as ‘*Secure*’, two as ‘*Localised*’, two as ‘*Depleted*’, six as ‘*Rare*’, four (e.g. *Oxyura leucocephala* & *Gypaetus barbatus*) are ‘*Vulnerable*’ and one (*Neophron percnopterus*) is ‘*Endangered*’.

Of the six zoos, Pairi Daiza kept the highest number of observed species (n=416), of which 13% were recognised as Threatened species, whilst Zoo Antwerpen was observed to keep a total of 308 species, of which 20% were globally-Threatened species (IUCN Red List of Threatened SpeciesTM). However, only 1 of the 62 globally-threatened species observed in Zoo Antwerpen is listed on the European Red List (*Pelecanus crispus*, listed as *Vulnerable* by IUCN Red List of Threatened SpeciesTM and is considered ‘*Rare*’ in Europe by BirdLife International). **The findings appear to demonstrate that none of the six zoos are making as significant a contribution to the conservation of globally, or European Threatened Species as might be expected.**

Participation in European coordinated captive breeding programmes

Belgian law requires zoos to participate in international captive breeding programmes, but to avoid the breeding of hybrid species (Article 26, RD8/1998). The results indicated however that only 13% of the species kept by the selected zoos are listed on the register of European captive breeding programmes, which primarily focuses on endangered species.

Percentage of species in Belgian Zoos that have coordinated captive breeding programmes (EEPs or ESBs)

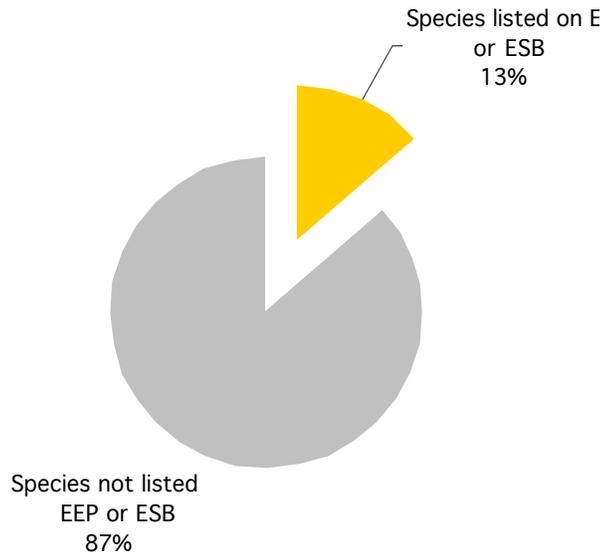


Figure 4 The percentage of the 816 species (including subspecies where appropriate) identified in the six Belgian zoos that are part of an ESB or EEP.

Only 13% (n = 110) of the 816 species in the zoos investigated are listed on the register of European Endangered Species Breeding Programmes (EEPs) or European Stud Books (ESBs). All six zoos kept at least one species listed on either EEP or ESB, with the highest numbers kept by Zoo Antwerpen (78 species) and Pairi Daiza (42 species).

All zoos were contacted, via the Standard Zoo Questionnaire, and asked to provide details about, amongst other things, their Species Management Programmes and additional conservation activities, but none of the zoos responded. Published literature, which included the zoo's website and information recorded during the zoo visit, was then used to assess as far as possible each zoo's involvement in the Species Management Programme of each identified listed species (i.e. whether the zoo was actively participating in the Programme). The findings revealed that, despite all zoos keeping at least one EEP or ESB-listed species, only the three EAZA Member zoos appeared to have animals actively involved in the Programmes, but their involvement was minimal:

- Of the 42 species at Pairi Daiza, listed on either of the European Species Management Programmes, 30 were **confirmed** to participate in the Programmes (EAZA Yearbook 2007-2008), while Pairi Daiza itself **claims** to be involved in '*more than 30 breeding programmes*' (Pairi Daiza website).
- Of the two EEP and two ESB-listed species observed at Domaine des Grottes de Han, three were involved in the Programmes (EAZA Yearbook 2007-2008).
- At the time of the investigation, Zoo Antwerpen appeared to be making the greatest contribution to captive breeding programmes. Of the total of 308 species observed at the zoo, 62 were listed as Threatened by IUCN Red List of Threatened SpeciesTM, and 78 species were registered as part of either an EEP or an

ESB. Overall it was possible to confirm that individual animals of 67 species of the 78 registered species were actively participating in the European Species Management Programmes during 2008 (EAZA Yearbook 2007-2008). This included 40 species listed on the IUCN Red List of Threatened Species™, of which 20 species are listed as *Vulnerable* (e.g. *Bison bonasus*), 12 *Endangered* species (e.g. *Elephas maximus*) and 8 *Critically Endangered* species (e.g. *Gorilla gorilla gorilla*) (Zoo Antwerpen website and EAZA Yearbook 2007-2008). Currently, Zoo Antwerpen makes no reference to the number of European Species Management Programmes operational at the zoo, however, seven Programmes are known to be coordinated by staff members at Zoo Antwerpen (ZooCrew website).

Overall, of the 124 Threatened Species recorded in six zoos, 64 are listed on the register of European Endangered Species Breeding Programmes (EEPs) or European Stud Books (ESBs). However, **only 52 (42% of all 124 threatened species) were confirmed as participating in the European Species Management Programmes. Furthermore, there is no indication of the outputs of these Programmes: whether breeding of the species is successful; if gene pools of Threatened species are being preserved; and captive-bred animals are being reintroduced to the wild.**

Of the six assessed zoos, two (Boudewijn Seapark and Zoo Antwerpen) appeared to take part in scientific research, or *in situ* conservation, benefiting species conservation (Article 3 of the Directive). **None of the other zoos appeared to be involved in such activities.**

According to the literature search, Boudewijn Seapark appears to involve some of their dolphins in ‘*experiments*’ aimed at reducing dolphin bycatch in trawl-fishing (Boudewijn Seapark Factsheet, 2008) and the effects of wind farms on wild dolphin populations (ASCOBANS, 2011). The Royal Zoological Society of Antwerp, through The Centre for Research and Conservation (CRC), is involved in both scientific research and numerous *in situ* conservation projects. Zoo Antwerpen claims that it is ‘*constantly investing in scientific research, conservation and sustainability*’ (Zoo Antwerpen website), although it is not clear what engagement there is between CRC and the Zoo. CRC receives funding from the Flemish Government and, in 2006, won the ‘EAZA Research Award’ (EAZA News, 2006). Scientific research at the CRC includes: collaboration with scientific research institutes to help maintain a ‘Rescue Population’ of the Lake Oku Clawed frog (*Xenopus longipes*), a *Critically Endangered* species established at Zoo Antwerpen, for the global Amphibian Ark Programme (Browne *et al.*, 2009) (NB. this species does not, however, have an EEP or an ESB); DNA analysis, in the Centre’s on-site laboratory, to help determine problems with captive breeding success (CRC website); and research into the taxonomy of species such as the *Vulnerable* Congo peafowl (*Afropavo congensis*) (BirdLife International website). CRC contributes to *In situ* conservation through one local and six global projects that include: conservation of Belgium’s wetland reserve, De Zegge Nature Reserve (CRC website); Project Grands Singes in Cameroon, which aims to conserve great apes through a series of local community initiatives (PGS Cameroon website); Amphibian Outreach Project that aims to halt the decline of amphibians in Cameroon, India and China (CRC website); and collaborative research with the Royal Zoological Society of Antwerp into the *in situ* conservation of the Andean bear (*Tremarctos ornatus*) (CRC website). Zoo Antwerpen claims that ‘part of the proceeds of the zoo entry go to research and conservation’ (Zoo Antwerpen website), some of which may go to CRC.

Of the six zoos assessed, Zoo Antwerpen contributes the most to species conservation. However, **overall, the six assessed Belgian zoos are failing to contribute significantly to the cooperative European Species**

Management Programmes, as is required by Article 25 of RD8/1998, few zoos are taking part in many other recognised conservation activities (Article 3(1) of the Directive), and minimal information is available as to the outcomes of the existing activities and Species Management Programmes.

EDUCATION

The Directive states that zoos should ‘*promote public education and seek to raise awareness in relation to the conservation of biodiversity, particularly by providing information about the species exhibited and their natural habitats*’ (Article 3). Belgium’s RD8/1998 has accurately adopted this requirement, requiring zoos to actively educate the public through an established education programme that ensures a general introduction to biology, ecology and conservation of biodiversity. Zoos in Belgium (as with the majority of other EU Member States) are also required to ensure that all species exhibited are correctly labelled with easy-to-read and scientifically accurate information including their origin, biological characteristics and conservation status. If more than one *species holding* is exhibited in an enclosure, the information signage should also include an accurate illustration of the species to help in its identification in the enclosure.

The Competent Authority indicated in the Standard Member State Questionnaire that additional advice on educational activities is provided to the zoos by the Zoos Commission, which reportedly includes a specialist in zoo education (Standard Member State Questionnaire, pers. comm., 19th April 2010).

Of the six zoos: two had an established education centre, which provided the public with information about nature conservation and also offers classes for pre-arranged groups; three of the zoos host seminars for pre-arranged groups of both students and members of the public; three provided animal presentations or shows; and four provide tours and species talks. Pairi Daiza and Zoo Antwerpen provided the most educational activities which included educational classes, species talks, animal presentations and educational materials, whilst Parc Animalier de Bouillon did not appear to operate any educational activities.

Boudewijn Seapark offers an educational programme on marine mammals specifically for nursery and primary school children. This is booked in advance, and costs €3.50 per person. Each 40 minute session has a capacity of 150 participants. The programme aims to take the participant on a ‘*journey of discovery*’ with short films and an interactive presentation which involves ‘*getting to know the animals from the front row*’.

Recognising that an education programme should deliver multiple levels of engagement, to a variety of audiences, only Pairi Daiza and Zoo Antwerpen appear to have established such a programme. The four other zoos either undertake minimal educational activities or none at all.

Animal shows

At the time of the investigation, three of the six zoos offered their visitors the opportunity to see animal shows or performances. These included: seals (*Phoca vitulina*), sea lions (*Zalophus californianus*), birds of prey (*Tyto alba*, *Asio otus*, *Parabuteo unicinctus* and *Vultur gryphus*) and bottlenose dolphins (*Tursiops truncatus*) at Boudewijn Seapark; sealions (*Z. californianus*) at Zoo Antwerpen; and birds of prey (*Falco tinnunculus*, *Parabuteo unicinctus*, *Bubo bubo*, *Haliaeetus leucocephalus*, *Haliaeetus albicilla*, *Gyps africanus*, *Cathartes aura*) at Pairi Daiza. The majority of the shows were accompanied by music. All the animal shows included a commentary by a member of

zoo staff, which included some limited information about the species and their habitat. The sea lion and dolphin shows, in particular, predominantly lacked information about the species and mainly consisted of a diverse repertoire of tricks, stunts, and unnatural behaviours designed to provoke laughter and entertain, rather than to educate the public about the species. Generally there was little reference to species conservation.

For example, the dolphin show at Boudewijn Seapark lasted approximately 17 minutes, but the combined length of educational information given during the show amounted to 16% of the whole presentation which did not include the species scientific name, information about their natural habitat or distribution, reference to their conservation status or the threats they face in the wild. The remainder of the presentation comprised of the dolphins performing a variety of tricks to music, which included stranding themselves on the pool side, waving their tails, throwing balls, jumping up to touch a suspended buoy, synchronised summersaults and pushing their trainers through the water (WDCS 2011).

Minimal species information

A basic requirement of a zoo is to inform its visitors about the animals exhibited. RD8/1998 requires information on all species exhibited to be made accessible to the public. Results, however, demonstrate that species information was lacking in the majority of zoos.

Proportion of Species Information Signage Present

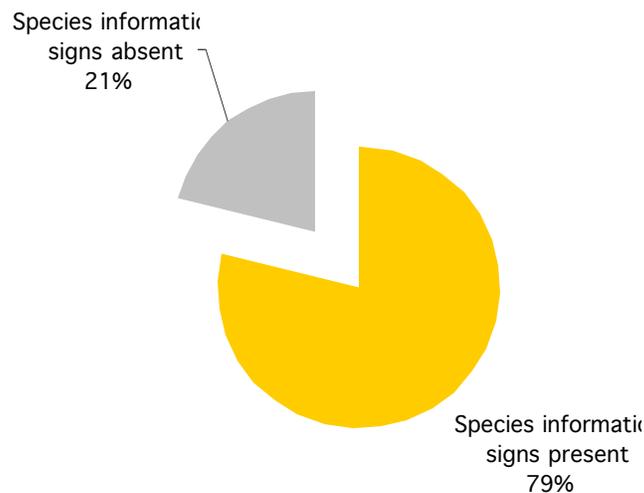


Figure 5 The average percentage of species information signage present or absent (for all 1,108 *species holdings*) in the six Belgian zoos.

On average, 21% of *species holdings* completely lacked any form of species information signage (Figs. 5 & 6). Species information signage was absent for 56% of *species holdings* in Boudewijn Seapark, 25% in Pairi Daiza, 21% for Domaine des Grottes de Han, 17% at the Serpentarium and 3% at Zoo Antwerpen. Parc Animalier de Bouillon displayed signage for all the species exhibited. Signage for 6% of *species holdings* was incorrect (inaccurate species' scientific or common names), whilst others displayed only minimal information about the species. Figure 7 provides an overview of the content of the signage in the zoos.



Figure 6 Serpentarium.

Species information signage is absent from this enclosure. Belgian zoo law requires all exhibited species to be accurately labeled including information about the species and its origins.

Quality of Species Information Signs

Belgian zoo law is very specific about the minimum information required on species information signage. Not only is it required to be scientifically accurate, but content must include their common name; scientific name; information about their range (and thus their geographical origins and details about their habitat), biological characteristics and conservation status (Chapter III, Section III, Article 23 of RD8/1998).

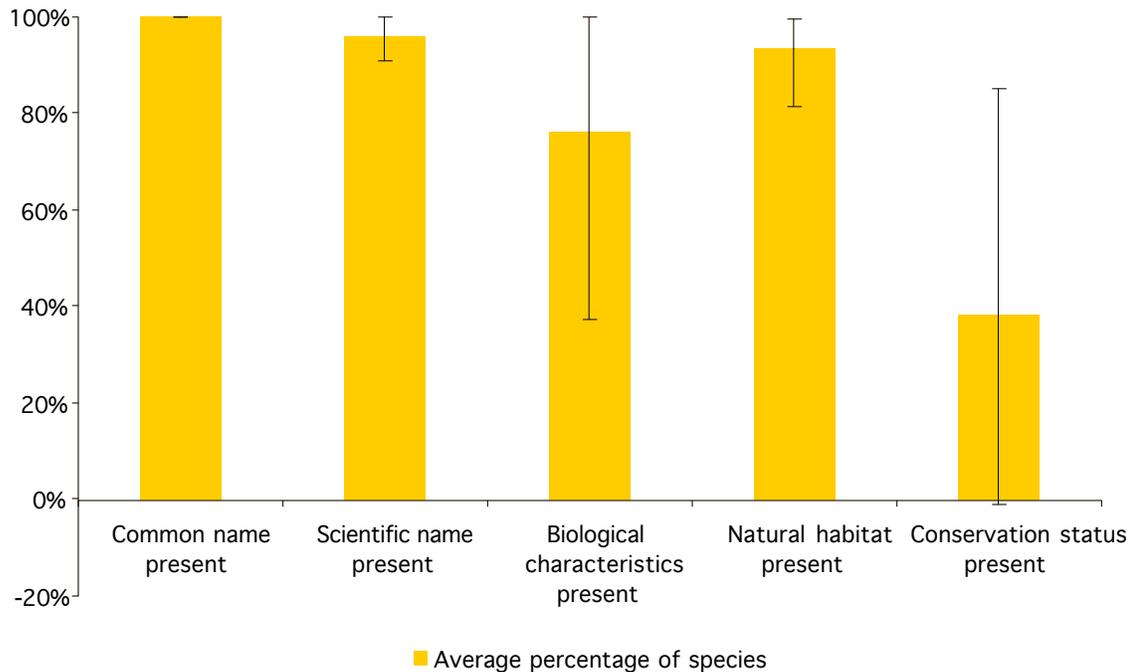


Figure 7 Content of species information signage within the six Belgian zoos. Each column represents specific information, as indicated by best practice criteria (SMZP). Each value (e.g. Conservation status present, 38%) represents the average of the 186 species information signs observed in 153 randomly-selected enclosures in the six zoos. Error bars are a visual representation of the standard deviation from the mean value, demonstrating the variation in performance amongst selected zoos (e.g. the presence of the species conservation status varied considerably between zoos in comparison to the presence of species scientific name).

The results (Fig. 7) show that of the signage present in the randomly-selected enclosures, on average, 78% did not contain all the required information with, on average, 62% not including reference to the species conservation status and 24% not including reference to species' biological characteristics. However, it is important to note that this varied significantly between the zoos. For example, some signage at: Zoo Antwerpen lacked information about the biological characteristics of the exhibited species; some signs in Boudewijn Seapark, Zoo Antwerpen, Pairs Daiza and the Serpentarium failed to provide information about the conservation of the species; whilst Domaine des Grottes de Han and Parc Animalier de Bouillon included this information on most, if not all, the species information signage present.

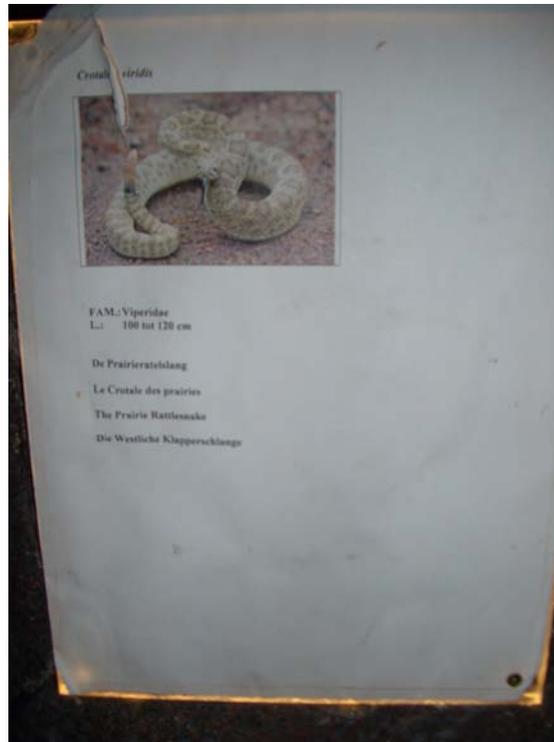


Figure 8 Serpentarium.

Of the species information signage present at enclosures in the six zoos, some were illegible or in a poor condition, whilst others contained incorrect information or did not include sufficient details about the species exhibited. This sign for a prairie rattlesnake (*Crotalus viridis*) is not only in a poor condition, but it does not contain all the information required by Belgian law.

EVALUATION OF ANIMAL ENCLOSURES

To evaluate the suitability and quality of each of the 153 randomly selected enclosures, data relating to 12 criteria regarded as vital to the health and welfare of wild animals in captivity were analysed using the evaluation method as described in Sections D and E of the Methodology. The ‘Five Freedoms’ (*OIE Terrestrial Animal Health Code, 2010*) were referenced as the basis for minimum standards for the keeping of animals, but species-specific needs were also taken into account, particularly in relation to the suitability of the captive environment.

In addition, analysis also included an evaluation using the Belgian species-specific minimum standards for the keeping of mammals, birds and reptiles in zoos, specifically to verify whether the housing conditions complied with these legal requirements. These minimum standards were developed by independent scientists together with the advice from of the Zoos Commission (Standard Member State Questionnaire).

In reference to the Five Freedoms and the 12 criteria used to assess enclosure quality, the following observations were made:

Freedom from Hunger and Thirst: Provision of Food and Water

‘Food and drink provided for animals to be of the nutritive value and quantity required for the particular species and for individual animals within each species . . .’

(Article 20, EAZA Minimum Standards for the Accommodation and Care of Animals in Zoos and Aquaria, 2006)

Although the majority of animals had access to clean food and drinking water, there were some cases where unconsumed food was observed rotting and available drinking water was dirty or stagnant. Of particular note was an enclosure at Zoo Antwerpen for a sea otter (*Enhydra lutris*), where a significant build-up of rotting dead fish were recorded.

Freedom from Discomfort: Provision of a Suitable Environment

‘Animals kept outdoors must be able to take shelter when weather conditions are unfavourable.’

(Article 5, RD8/1998)

‘The Minister may establish additional requirements for the keeping of animals, particularly regarding the minimum size of housing for the animals and their management.’

(Chapter III, Section I, Article 8, RD8/1998)

For many animals, conditions were often cramped and did not adequately take into account species-specific needs. This was particularly apparent in enclosures housing wide-ranging species and large birds of prey, which did not appear to have sufficient space to exercise and to express natural behaviour, in the case of birds, vertical and horizontal space for flight. The majority of birds of prey, including owls, eagles and vultures, were tethered by means of leather anklets (‘aylmeri’) and a length of cord (‘jesses’), by one leg to a fixed position or, in the case of Boudewijn Seapark, to a frame. Furthermore, numerous enclosures did not have sufficient shelter for all animals in the enclosure.



Figure 9 Boudewijn Seapark.

The majority of the birds of prey, including this Andean condor (*Vultur gryphus*) were tethered by a length of cord to one leg which was looped around a horizontal frame. This only permitted the birds to jump from one perch to another and the cord did not allow the bird to fly. The UK's SMZP (Appendix 8) states: '*New World vultures should not be kept tethered*'.

Freedom from Pain, Injury and Distress: By Preventative Measures and Provision of Suitable Health Care

'Animal housing must be suitable and well maintained so not to cause the animals harm or injury.'

(Chapter III, Section I, Article 4, RD8/1998)

'The areas where the animals are housed, and the equipment they contain, must be cleaned regularly and disinfected if necessary.'

(Chapter III, Section II, Article 18, RD8/1998)

Some animals were housed in unacceptably unhygienic conditions. Problems included the build-up of faeces, stagnant water and in some cases, uneaten, rotting food.



Figure 10 Zoo Antwerpen.

Many of the enclosures in the bird house were extremely dirty with a significant build-up of faeces, which in turn could cause build-up of harmful pathogens. This enclosure exhibits a rainbow lorikeet (*Trichoglossus haematodus*).

Freedom to Express Normal Behaviour: Provision of Suitable Space and Proper Facilities

'Animals to be provided with an environment, space and furniture sufficient to allow such exercise as is needed for the welfare of the particular species.'

(Article 3, EAZA Minimum Standards for the Accommodation and Care of Animals in Zoos and Aquaria, 2006)

'Housing for animals must be designed and developed in order to stimulate behaviours as varied and as natural as possible.'

(Article 6, RD8/1998)

'Concerning animal housing... it is important to ensure that::

1) specimens belonging to social species be housed in groups, except if verified by a zootechnical or veterinarian;

2) *specimens belonging to solitary species be kept alone ;*

3) *no detrimental interaction occur during the formation of a group of animals.'*

(Article 7, RD8/1998)

'In cases where shows featuring animals are organized, their natural behavior must be emphasized and the comments provided must also put an emphasis on their natural behaviour.'

(Article 24, RD8/1998)

Many enclosures lacked the appropriate furnishings and environmental enrichment which would permit and encourage the animals to rest, seek privacy, exercise and exhibit natural behaviour. In particular, enclosures lacked the potential for all animals exhibited to find shelter.

Numerous examples of animals displaying abnormal, repetitive behaviours were recorded. Furthermore, a number of social species were housed in inappropriate social groups.

Freedom from Fear or Distress: *Ensuring that conditions do not cause mental suffering*

'Direct contact between the public and dangerous animals should be made impossible through the use of fences ensuring sufficient distance between them.'

(Chapter III, Section I, Article 3(7), RD8/1998)

'Direct physical contact between animals and the public must be avoided. If authorised, it should only be supervised and for a limited period of time, but must not compromise the animal's welfare.'

(Chapter III, Section II, Article 20, RD8/1998)

Results indicated that, in numerous instances, the location of animal enclosures was poorly considered, for example, predators were housed in close proximity to prey species. This could cause the animals concerned unnecessary stress. Furthermore, poorly-designed enclosures allowed for potential contact between the public and animals, and two zoos in particular, actively encouraged visitors to have direct interaction with animals. Direct or close contact between humans and wild animals can cause unnecessary distress to the animals concerned. Numerous observations were recorded where the animals exhibited appeared agitated and nervous, potentially due to the close proximity of the animals to the public and possibly exacerbated by the fact that the animals often could not find privacy.



Figure 11 Zoo Antwerpen.

Enclosures for many species were inappropriate. In the wild, okapi (*Okapia johnstoni*) live in the dense tropical forests of central Africa, where it is an incredibly shy and elusive animal, reliant on thick foliage for cover. This enclosure clearly does not allow this animal the opportunity to escape public view. It appears to be denied access to the indoor enclosures and is not provided with a sufficient area in which to exercise.

Environmental Quality of Enclosures

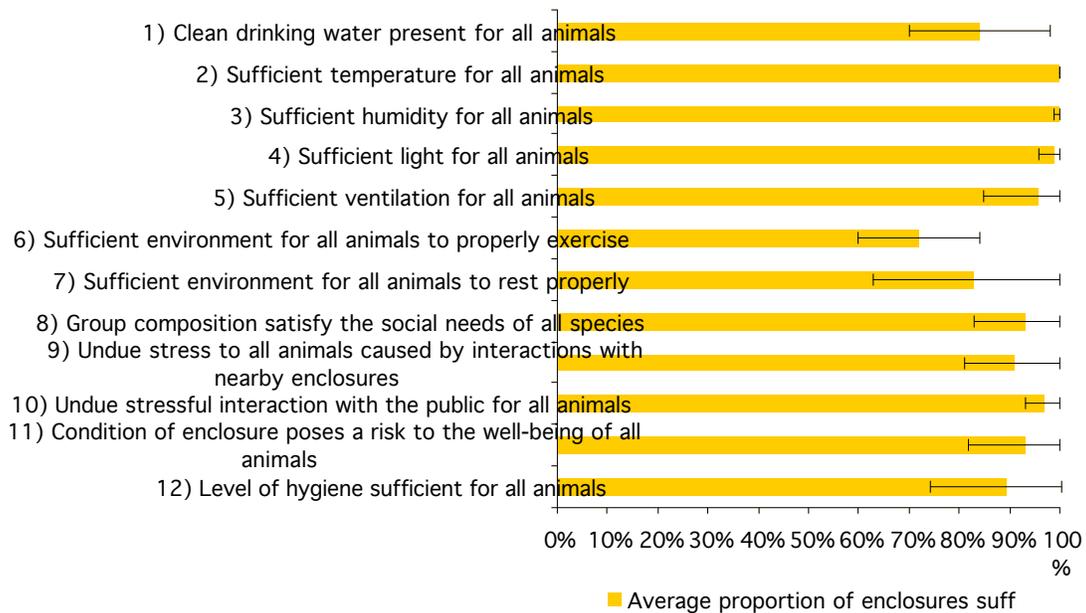


Figure 12 Environmental quality of the 153 randomly-selected enclosures from six Belgian zoos. Each column represents a criterion used to assess the suitability of the enclosures to meet the needs of the animals contained. Error bars are a visual representation of the standard deviation from the mean value, demonstrating the variation in performance amongst selected zoos (e.g. the provision for all the animals to rest in enclosures varied considerably between zoos compared to the temperature which was consistently adequate). Where the presence of a condition or factor could not be determined, data were not included.

The results (Fig. 12) demonstrate that while most enclosures appeared to provide the animals with sufficient temperature, light, humidity and ventilation at the time of assessment, lower values were recorded for a range of criteria including: an opportunity for the animal(s) to exercise and express their natural locomotive behaviour (on average, 28% of the selected enclosures were of an inadequate size and complexity); availability of suitable facilities to allow the animals to rest (on average, 17% of the selected enclosures failed to provide appropriate structures or facilities to allow the animals to rest properly); and the provision of clean drinking water and the general cleanliness of the enclosures (on average, 16% of enclosures did not appear to provide clean drinking water and 11% of enclosures were unhygienic).

EVALUATION OF ANIMAL WELFARE

Keeping an animal in a restrictive, predictable and barren captive environment is known to compromise welfare (Mallapur *et al.*, 2002; Lewis *et al.*, 2006) and may result in the development of abnormal behaviours which can become increasingly more difficult to reverse, even with the application of environmental enrichment techniques (Swaisgood & Sheperdson, 2006). The following represents the results of an assessment into the suitability of those enclosures assessed to permit the expression of most natural behaviours. The results have been ranked, with the most severe issues indicated in the graph below.

Issues requiring immediate attention (where the percentage of enclosures complying is below 50%)

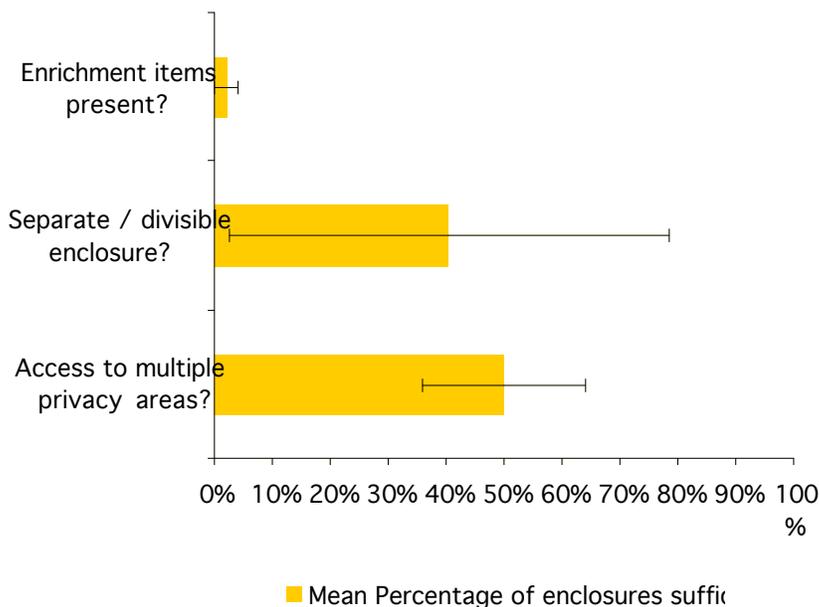


Figure 13 Issues requiring immediate attention following assessment of 153 randomly selected enclosures from the six Belgian zoos. Error bars are a visual representation of the standard deviation from the mean value, demonstrating the variation in performance (e.g. the ability to divide the enclosure and each animal's ability to access privacy areas varies considerably between zoos). Where the presence of a condition or factor could not be determined, data were not included.

The level of animal welfare was assessed in 153 randomly selected enclosures in the six zoos (Fig. 13). Findings have identified that the majority of the enclosures assessed did not adequately provide for the species-specific needs of the animals exhibited. Specifically enclosures lacked environmental enrichment that would encourage natural behaviour. On average, 98% of the assessed enclosures did not include any behavioural or occupational enrichment items or techniques such as toys or feeding devices; 60% of the enclosures did not provide the opportunity to divide or separate the animals; and 50% of the enclosures failed to provide the animals with access to multiple privacy areas. Article 10 of RD8/1998 particularly requires the ability to separate animals within the enclosures for veterinary reasons and Article 5 requires animals kept outdoors to have access to shelter.



Figure 14 Zoo Antwerpen.

Limited space and lack of furnishings in this enclosure fail to provide the lions (*Panthera leo*) with an opportunity to express all locomotive behaviour, exercise, shelter from extreme weather conditions and seek privacy from public view. APOS stipulates that enclosures containing lions should contain possibilities to climb and hide, together with access to elevated places.

Widely Represented Issues of Concern (where percentages of enclosures not complying ranged between 30% and 50%)

- On average, 47% of the enclosures did not have a varied substrate.
- On average, 46% of enclosures did not appear to meet all of the minimum requirements of the Animal Protection Ordinance of Switzerland, Tierschutzverordnung 2008.
- On average, 40% of enclosures were not environmentally varied.
- **On average, 39% of enclosures, containing mammals, birds and reptiles, did not appear to meet all of the Belgian Minimum Standards.**
- On average, 33% of enclosures did not have food provided in more than one place.

Less Widely Represented Issues of Concern (where percentages of enclosures not complying were below 30%)

- On average, 26% of enclosures did not contain species-appropriate permanent features and furnishings that could be moved around the enclosure.
- On average, 24% of enclosures did not mitigate climate extremes.
- On average, 23% of enclosures did not provide shelters that contained bedding within.
- On average, 21% of enclosures did not provide enough distance to the back of the enclosure for the animal to retreat from the public.

- On average, 21% of enclosures were not considered to be large enough.
- On average, 20% of enclosures did not provide any shelters.
- On average, 19% of enclosures contained animals that were restrained.
- On average, 16% of enclosures allowed for public feeding.
- On average, 15% of enclosures did not contain enough privacy areas to accommodate all animals in the enclosure.
- On average, 14% of enclosures did not contain any species-appropriate permanent features and furnishings.
- On average, 13% of enclosures did not provide access to clean drinking water.

Using the Ministerial Orders, which each set minimum standards for the keeping of mammals, birds and reptiles respectively, housing conditions for species in these taxons, were evaluated against the specified legal requirements. **Analysis of these data revealed that on average, 39% of enclosures failed to meet the Belgian minimum standards.**

The Animal Protection Ordinance of Switzerland, Tierschutzverordnung 2008 (APOS) was used in the investigation to ascertain whether the enclosures were suitable for the species contained. APOS was selected as it represents an independent set of internationally-recognised, species-specific and environmental enrichment standards from a non-EU Member State. All selected enclosures (from Sections D and E analysis) were assessed against the standards. **The results determined that, on average, 66% of enclosures that exhibited species listed on APOS did not meet these minimum requirements.** This means that two thirds of the enclosures failed provide the species contained with its species-specific needs, as required by Article 6, RD8/1998, Article 4(1), RD7/2004 and Article 3(3) of the Directive.

CONCLUSION

This investigation has assessed six zoos in Belgium all of which are reportedly licensed and comply with the requirements of Royal Decree 10/08/1998, *Arrêté royal relatif a l'agrément des parcs zoologiques* ('RD8/1998') (Standard Member State Questionnaire). Despite there being no amendments of the law since its implementation, and the adoption of the Directive by the European Community, in 1999, RD8/1998 does incorporate the majority of the Directive's requirements. However, the *laissez-faire* method of licensing, the lack of inspection regularity, the inconsistent quality of the zoo inspection and the limited focus by the zoos on species conservation, does raise substantiated concerns. The standards in zoos in Belgium vary significantly and not one zoo was found to comply with all legal requirements. Shortfalls include: the minimal proportion of Threatened species involved in international captive breeding programmes; lack of an established education programme in the majority of zoos; the potential risks of physical injury and disease transmission often imposed on the unaware public; and the regular presence of cramped animal housing that largely fails to provide the animals with their basic to species-specific needs.

These Conclusions are divided into seven sections for ease of reading:

1. Implementation of the Directive

In Belgium, zoos are regulated through the Royal Decree of 10/08/1998, *Arrêté royal relatif a l'agrément des parcs zoologiques* ('RD8/1998'), which specifies requirements in zoo licensing, operation and animal care. Zoo regulation is undertaken by the Department for Animal Welfare and CITES (DAWC), in consultation with the Zoos Commission, and in conjunction with the Department for Inspection of Animal Welfare and CITES (DIAWC). The Federal Public Service for Public Health, Food Safety and Environment ('FPS') is responsible for both Departments and ultimately, the regulation of zoos in Belgium (Article 30, RD8/1998).

According to the DAWC, the RD8/1998 was established following a catalogue of evidence detailing poor conditions in many of the country's zoos (Born Free Foundation, 1988; GAIA, 1991; GAIA, 1995, GAIA, 2003; GAIA, pers. comm., 1st August 2005). The DAWC admits that conditions were 'pretty bad' before the implementation of RD8/1998, but states that following its implementation, all zoos in Belgium have drastically improved, or those that failed to meet the standards, have since closed (Standard Member State Questionnaire).

All EU Member States (15) were required to transpose the Directive (1999/22/EC) into national legislation by April 2002. The implementation of the Directive by Member States is an issue for subsidiarity and although transposition is overseen by the European Commission, it is the responsibility of the Member State to accurately transpose all the requirements of the Directive into the respective national law and apply it. Unlike other EC Directives, Directive 1999/22/EC includes no guidance or explanatory notes which has led to inconsistencies in its application amongst EU Member States as a result of different interpretations of requirements, definitions and licensing and inspection procedures.

Notably, RD8/1998 has not been amended since its implementation in 1999 (FPS Santé publique, Sécurité de la Chaîne alimentaire et Environnement, pers comm., 10th August 2011), the same year the Directive was adopted by the EC. This then indicates that either Belgian zoo law already complied with the requirements of the Directive and did not require amendment prior to the April 2002 transposition deadline, or that officially, transposition had never taken place. Following a review of RD8/1998, the latter could well be possible: there is no reference to the Directive in the preamble to RD8/1998; and numerous key components of the Directive have not been accurately and completely transposed, yet the European Commission were reportedly satisfied that the Belgium zoo law did comply with the Directive's objectives and requirements.

Unlike the Directive, RD8/1998 is not legislation dedicated to the conservation of biodiversity, but instead applies more emphasis to the appropriate keeping of animals in zoos. Zoos in Belgium are *required* to take part in cooperative captive breeding programmes, but other 'species conservation' options cited in Article 3 of the Directive, including participation in scientific research, training in relevant conservation skills and, where appropriate, exchange of information relating to species conservation, the repopulation or reintroduction of species into the wild, are not included in RD8/1998. **This calls into question priority-setting applied to the conservation of biodiversity through the licensing, inspection and regulation of zoos in Belgium (a key requirement of Article 1 of the Directive)**. Similar concerns were previously highlighted in both reports published in 2003 and 2008, which identified a minimal contribution to the conservation of biodiversity by Belgian zoos (GAIA 2003; Eurogroup for Animals 2008). Both these observations have seemingly been ignored.

Similarities with the provisions of the Directive include the requirement for all zoos in Belgium to be licensed and to meet specific requirements in zoo operation, public education, collection management and animal care. The definition of a 'zoo' is largely the same as Article 2 of the Directive, although the term '*animals of wild species*'

has been substituted with ‘*non-domesticated species*’ and the types of ‘zoos’, to which the law would apply, have been listed. However, these alterations, whilst different from the Directive, do not necessarily provide a stricter law, as claimed (Standard Member State Questionnaire). In fact, the lack of definitions in Article 1(1) of RD8/1998 for ‘*circuses*’, ‘*travelling exhibitions*’ and ‘*commercial establishments for animals*’, **facilities that are exempt from the zoo law, weaken the application of RD8/1998 since facilities that may require a zoo licence may be incorrectly identified as not requiring one.**

Of particular concern is the *laissez-faire* approach to zoo licensing, in Article 2(4) of RD8/1998, which appears to permit the automatic licensing of establishments as zoos, seemingly without the necessary and legally required zoo inspection. **This may contravene the requirements of Article 4 of the Directive, concerning the licensing and inspection of zoos.** RD8/1998 makes little reference to the zoo inspections (e.g. frequency, make up of inspectorate, terms of reference, reporting mechanism, etc.) as required by Article 4.3 of the Directive. Information which has however, been provided to the authors by the Standard Member State Questionnaire.

Although the European Commission were apparently satisfied with the transposition of the Directive, inconsistencies between the RD8/1998 and the Directive do require further investigation. It is clear that whilst RD8/1998 incorporates the majority of the requirements applicable to zoos (Article 3 of the Directive), **details about zoo inspections, species conservation activities and actions taken on the event of zoo closure, including provisions relating to the relocation of the animals and their care, have been omitted.** The Federal Public Service for Public Health, Food Safety and Environment should consider amending the RD8/1998 at the earliest opportunity to ensure all requirements of the Directive are effectively and accurately transposed.

2. Ineffective enforcement

The RD8/1998 was implemented in 1999, from which time all zoos in Belgium were required to meet the specified obligations it contained (unless an extension of up to 12 months was granted by the Minister, Article 28, RD8/1998). Additionally, from April 2005, in the EU (25), any zoo found not licensed in accordance to the Directive would face possible closure (Article 4.5 of the Directive). The FPS noted that nine zoos in Belgium have closed since the implementation of the RD8/1998 (Standard Member State Questionnaire).

Findings from this investigation, which included the assessment of the status and performance of six zoos and their compliance with RD8/1998, conclude that whilst some perform better than others, **the representative sample of Belgian zoos is not fulfilling all their legal requirements.** Reasons behind this could be due to a lack of knowledge of some of the zoo operators, but it is more likely to be as a result of the apparent poor and inconsistent enforcement of RD8/1998.

In 2002 and 2003 investigations undertaken by the Belgian NGO, GAIA, identified that the majority of zoos were still provisionally licensed. At that time, five years following the implementation of RD8/1998, only nine of the then 31 identified zoos had been officially approved by the Competent Authority (where a zoo inspection had confirmed compliance) (Annex, GAIA 2003). However, of the 14 zoos assessed by the study, not one, including three officially approved zoos, were identified as meeting the requirements of RD8/1998. GAIA called on the Minister for animal welfare to abolish the *laissez-faire* method of zoo licensing and to ensure all zoos were inspected and met their legal requirements, before a zoo licence is granted. GAIA also denounced the prevalence of circus-style animal performance in zoos; uncontrolled breeding; and surplus animals in Belgian zoos (GAIA 2003).

Five years on from the GAIA investigation, and ten years since the implementation of the Belgian zoo law, the same concerns over the automatic licensing system and the regularity and quality of zoo inspections of zoos remain. According to the DAWC, zoo inspections are carried out, but these are dependent upon workload and more often, limited to those zoos where notifications or complaints have been received (Standard Member State Questionnaire). These identified failures in the application and enforcement of the RD8/1998 appear to have a direct affect on the standards of zoos, and although some zoos do comply with more requirements than others, this appears to be due to actions taken by the zoos themselves, rather than the influence of the DAWC, DIAWC or the Zoos Commission.

The DAWC has acknowledged that the zoo inspectorate requires further training. Despite their apparently adequate knowledge in terms of animal welfare and health, there is a need to improve knowledge of the species-specific needs of animals and relevant environmental enrichment. According to the DAWC this advice should be provided to the zoo operator by the zoo inspectorate, in consultation with the Zoos Commission (Standard Member State Questionnaire).

The findings have identified that ineffective enforcement of the RD8/1998 could have caused the inconsistent compliance observed in the representative sample of zoos in this investigation. Furthermore, it is concerning that even after the investigations in 2002 and 2003 no improvements to the zoo licensing and inspection of zoos appear to have been made. **Further investigation is required by the European Commission into the quality and regularity of the inspections, and whether there is a breach of the Directive.** It is uncertain to what degree the Zoos Commission is involved in zoo regulation, and the prevalence of non-compliance in some zoos may suggest that it is minimal. Recognising that the Zoos Commission is required to be a neutral entity (Standard Member State Questionnaire), perhaps it should be involved in the suggested overhaul of the RD8/1998 to bring it more inline with the Directive and, further, ensure species-specific environmental enrichment advice is provided within revised Ministerial Orders on the appropriate keeping of animals. Finally, Belgium's Competent Authorities should seek to ensure all enforcement agencies are adequately trained to undertake zoo inspections and competent to provide advice to zoo operators on required activities. There should be a change to the duration of the zoo licence from an indefinite period to a fixed and limited term, in order to warrant an inspection before an extension is granted.

3. Prevention of animal escapes

There are two recognised barriers that prevent the escape of an animal in a zoo into the natural environment. The *enclosure fencing*, which prevents an animal from escaping from its enclosure, and the *perimeter fence*, which prevents an escaped animal from leaving the zoo grounds. Both barriers should be secure and of an adequate height and strength to contain the animals.

Belgian zoo law acknowledges the importance of establishing such measures in zoos, recognising the abilities and attributes of the different species and their possible escape routes, requiring high levels of security, prevention of pest infiltration and strict measures to protect the safety and welfare of the public (Chapter III, Section I, Article 3; Section II, Article 18, RD8/1998). All the zoos assessed by this investigation appeared to have adopted such measures, which included a perimeter fence that seemingly could contain an escaped animal or, in the case of Pairi Daiza, contain their free-roaming animals.

It has **long been recognised that zoos pose a significant risk of presenting pathways for the introduction of Invasive Alien Species (IAS)** (Fábregas *et al.*, 2010). In 2001 the European Commission recognised the need to address IAS as an integral part of halting biodiversity decline and initiated the development of an EU strategy to substantially reduce their impacts (Shine *et al.*, 2009, 2010). In The EU Zoo Inquiry investigations in other Member States, animals were observed moving freely between enclosures and in some case, into the natural habitat. This included non-indigenous, as well as DAISIE-listed, species. However, security and the prevention of escape appeared to be more of a priority in Belgium

4. Public placed at risk of injury and illness

Public safety is a prominent component of the RD8/1998, with requirements that aim to protect the public from direct contact with potentially dangerous species. The legislation requires; adequate barriers between the public and the animals to prevent contact, prohibition of animal feeding, the presence of appropriate warning signage and established reactive measures in case of an accident (Chapter III, Section I, Articles 3 and 11; Section II, Articles 17, 20 and 21 of RD8/1998). However, findings have revealed that some of the zoos assessed have not adopted such strict measures.

Three of the six zoos actively encouraged visiting members of the public to have direct contact with wild animals, including a sea lion (*Z. californianus*) and dolphin (*T. truncatus*) at the Boudewijn Seapark, various reptile species at the Serpentarium and Zoo Antwerpen and other ‘small animals’ at Zoo Antwerpen. Boudewijn Seapark offers the public the opportunity to have their photograph taken with a sea lion, dolphin or bird of prey, for an additional cost. Furthermore, the free-flying practices observed during bird of prey presentations at both Boudewijn Seapark and Pairi Daiza appeared to provide the public with opportunities to have direct contact with the animals, including flying birds of prey and vultures into, or in very close proximity to, the audience. This, in particular, could have serious consequences to the safety of the public, should they not sit down or keep still as instructed, or if the trainer loses control of the bird.

These practices are regarded as ‘educational’ by some. However, the close proximity of humans to animals, the repetitive handling of animals and the potential for the encounter to physically or psychologically harm the animal, could have severe consequences removing all perceived educational substance.

The legislation is somewhat confusing in regard to direct contact. Article 20 of RD8/1998 discourages physical contact between the public and animals. Then, in the same Article, contradicts this requirement by stating that if direct contact does occur, constant supervision is required and that the animal’s welfare should not be compromised. We recommend that the Competent Authority authorise an evaluation of all such practices, assess their educational value and then only permit those that truly respect the animal’s welfare, **prohibiting all exploitative use**, such as the photographic opportunities in Boudewijn Seapark.

Of the 153 randomly-selected enclosures across the six zoos, the public could have possible direct and unsupervised contact with animals in 50 enclosures and, in some cases this placed the public at risk. This included 14 cases where poor enclosure design, the lack of sufficient stand-off barriers and the lack of zoo staff allowed the public to have contact with potentially dangerous Hazardous-listed species (SMZP). **These failures violate various requirements in RD8/1998. Particularly, Chapter III, Section I, Articles 3(6) & 3(7), which**

specifies no contact between the public and dangerous animals. However, this does appear to compromise Article 20.

The risk of disease transmission, particularly zoonoses is often overlooked in zoos. Animals, particularly wild animals, are thought to be the source of >70% of all emerging infections (Kuiken *et al.*, 2005). For example, both reptiles and birds can harbour *salmonella* (Centres for Disease Control and Prevention website; Memmin *et al.*, 2004) and numerous bacterial and fungal diseases are associated with marine mammals, including, streptococci, staphylococci, pseudomonas, mycobacteria and lobomycosis, which are known to pose health threats to people who have contact with infected animals (Buck & Schroeder, 1990). The risk of infection of people who hold, stroke or 'kiss' the above listed animals, is therefore highly probable (Warwick *et al.*, 2009; WDCS, 2011). Despite a study undertaken at the reptile department at Zoo Antwerpen which confirmed the risk to zoo staff and visitors of *salmonella* infection (Bauwens, et al, 2006), the public at Zoo Antwerpen, Boudewijn Seapark, Serpentarium or Pairi Daiza were not made aware of these risks or informed of preventative measures to be taken.

Precautionary measures should be in place to protect the health and welfare of the public and the animals. Direct contact with animals should be discouraged, but where it does occur, precautionary measures (such as hand-washing prior to and after supervised contact with approved species) should be taken. **All public contact with 'Hazardous Animals', and those species known to harbour zoonoses, should be prohibited. Zoos should be required to take a far greater responsibility for the safety of the visiting public and the welfare of their animals.**

5. Poor record for conservation

The Directive requires all zoos in the European Community to contribute to the conservation of biodiversity in accordance with the Community's obligation to adopt measures for *ex situ* conservation under Article 9 of the *Convention of Biological Diversity* (1992) (CBD website). The Royal Decree, RD8/1998, requires zoos in Belgium to participate in international captive breeding programmes and the exchange of information to benefit the conservation of species (Section IV, Article 25 of RD8/1998). However, it does not include the other options cited in Article 3(1) of the Directive which include; the participation of zoos in scientific research; training in relevant conservation skills; the exchange in information relating to species conservation and where appropriate, the repopulation or reintroduction of species into the wild. It is not clear why these key, although optional, activities included in the Directive have been omitted from RD8/1998.

A review of Belgian zoo law has identified that the conservation of biodiversity seems not to be a significant priority in the RD8/1998, when compared to the Directive. Instead its main objective is the protection and welfare of animals (Article 1(7), RD8/1998). Findings from the investigation into the conservation performance of six zoos in Belgium appear to reflect this observation. The proportion of Threatened species is no more than 20% of the total number of species in a zoo's collection, and of those species listed on the international captive breeding programmes (EEP & ESB) only 39% are actively participating in either Programme. **This does not appear to fulfill the requirement of Article 25 of RD8/1998.** In addition, European Threatened species are largely under-represented with only 9% of total 816 of species observed in the six visited zoos listed on the European Red List (for mammals, reptiles, amphibians and fish) and the BirdLife International Status Assessment for Birds. Zoo Antwerpen, which demonstrated the highest species conservation record of the six zoos, only kept

19 European Threatened species. **Belgian zoos are not seemingly committed to species conservation, particularly those species that are regionally threatened with extinction.**

As acknowledged, RD8/1998 does not include all species conservation options as cited in Article 3(1) of the Directive. As a result, zoos in Belgium are only expected to partake in coordinated captive breeding programmes through communication with the respective species co-ordinators. Two of the six zoos go beyond this requirement, in particular Zoo Antwerpen. This zoo not only coordinates a number of the EEP/ESB programmes, but it also undertakes scientific research on species within its collection, ensures that a proportion of the zoo entry costs are used in its conservation activities and contributes to a variety of local and global *in situ* conservation projects. Despite a minimal contribution to *ex situ* conservation, Zoo Antwerpen appears to be making a more significant contribution to *in situ* conservation, and could be regarded as a minimum example to which other zoos in Belgium should aspire.

Although findings have identified some commitment to species conservation programmes by individual zoos, overall, it seems clear that Belgian zoos are making a far less significant contribution to the conservation of European and global biodiversity than might have been expected. Publically displayed information about the conservation of biodiversity is lacking in all assessed zoos and less than 40% of the randomly-selected species information signage included specific information about the species' conservation status, as is required by Article 23 of RD8/1998.

6. Limited educational value

In addition to a commitment to the conservation of biodiversity, zoos in the EU are required to promote public education and awareness in relation to the conservation of biodiversity, particularly by providing information about the species exhibited and their natural habitats (Article 3(2) of the Directive). RD8/1998 requires zoos to establish an education programme that raises awareness about animal biology and ecology, as well as detailed information about the species exhibited (Chapter III, Section III of RD8/1998). Requirements are similar to those of the Directive, and further guidance is reportedly available from the Zoos Commission (Standard Member State Questionnaire).

The findings of this investigation demonstrate that whilst two of the six zoos offer a variety of educational activities for both pre-arranged school groups and the general public, which included classroom facilities, workshops, guided tours, talks and informative signage, this certainly was not the case for all the assessed zoos. **The varied degrees of activity between the zoos, with one zoo identified as not having any obvious educational programmes at all, suggest that such activities may be being left to the discretion of the zoo management rather than imposed as a licensing requirement.** This is despite the claim by the DAWC that the Zoos Commission oversees all educational activities and provides advice where appropriate.

Over 20% of signage for species holdings was absent and, of the signage present, 6% contained incorrect information. Boudewijn Seapark had the highest number of absent species information signage. Furthermore, of the overall available species information signage that was randomly selected within the six zoos, on average, 78% did not contain all the required information, the majority did not include reference to the species' conservation status and 24% did not include reference to species' biological characteristics. **These findings violate the requirements of Article 23 of RD8/1998.**

Among the six assessed zoos, there was huge variance in the quality of educational material produced and promoted. Some zoos encouraged direct contact between the public and wild animals, three zoos presented some of their animals in performance, whilst others exhibited species from different continents in the same enclosure. Recognising that the EU Zoo Inquiry 2011 relied to some degree upon published information, **further investigation into the quality of the education, as well as assurances that the practices only involve natural behaviour and do not compromise the welfare of the animals, should be an urgent undertaking of the Zoos Commission and the DAWC.** To date, we are not aware of any independent quality assurance assessment having been undertaken to identify whether European zoos can effectively deliver these objectives and justify their role as educators about the conservation of biodiversity.

Animal shows

Shows using wild animals were observed in three of the six zoos. Performances included birds of prey; seals (*P. vitulina*), sea lions (*Z. californianus*) and bottlenose dolphins (*T. truncatus*). Although live animal shows should be generally discouraged, those shows involving birds of prey predominantly presented the animals displaying natural behaviour and were to some degree informative about the species habitat and behaviour. However, performances involving marine mammals incorporated circus-style tricks, props and stunts set to music, showed the animals displaying a minimal amount of natural behaviour and only limited information was provided on their natural attributes. **These findings appear to violate the requirements of Article 24 of RD8/1998.**

Similar observations were made and reported in an assessment of Boudewijn Seapark dolphinarium in September 2005 by behavioural biologist and consultant on captive dolphin issues, Dr. Toni Frohoff (Frohoff 2005). Frohoff questioned the educational value of the dolphin and sea lion show, describing it as a '*comic circus act*' as opposed to an educational presentation, commenting that the dolphins in particular were displayed in '*a subservient and exploitive manner and elicited to behave more like clowns than dolphins*'. Frohoff made a number of recommendations that included; regular inspection by recognised experts, prohibition of all physical interactive contact, review of all concerns raised, a ban on further imports of dolphins (captive-bred and wild-caught) and the phasing-out of dolphinarium in Belgium, exploring alternatives to captivity (Frohoff 2005). It is not known if any of Dr. Frohoff's recommendations were taken onboard but, at the time of this investigation (2009), the dolphins and the sea lions were still displayed as a '*comic circus act*'.



Figure 15 Boudewijn Seapark.

A trainer rides on the back of a bottlenose dolphin (*Tursiops truncatus*) during the twice-daily dolphin show. The performance is set to loud and inappropriate music and mainly consists of dolphins performing circus-style stunts to entertain the public. This appears to contravene Belgian zoo law which requires all animal performances to focus on an animal's natural attributes and behaviour.

Animal performance, which is focused on unnatural or anthropomorphic behaviours, provides a distorted view of an animal's natural behaviour and, as a result, the public are less likely to learn much of value about the animal's natural attributes (Frohoff 2004; Barney *et al.* 2005; Curtin & Wilkes 2007; WDCS 2011). This is also the conclusion of the European Association of Aquatic Mammals, which recommends that in dolphinarium 'commentary... should focus on biological facts. Any confusing or foolish comments should be omitted. Anthropomorphic and comic performances should be omitted' (EAAM 1995). A further recommendation seemingly ignored by the Boudewijn Seapark dolphinarium.

It is questionable whether the animal performances observed at the three zoos are compliant with the requirements of Article 24, RD8/1998. The DAWC and Zoos Commission should seek to phase-out all such animal performances in zoos at the earliest opportunity.

7. Unsuitable living conditions for animals

The assessment of zoo enclosures in Belgium identified a wide range of conditions in the six assessed zoos, seemingly, at least in part, dependent upon the location of the zoo (e.g. an urban, or rural setting). This was particularly evident in the differing environmental quality found in enclosures, the availability of space and furnishings for animals to express their natural behaviour, or rest and the level of hygiene observed in enclosures. However, there were some common trends identified across the six zoos, which included:

- many species, particularly far-ranging species, were kept in small enclosures that did not attempt to meet their spatial needs;
- birds of prey species were usually tethered by the leg, rather than housed in aviaries;
- the majority of enclosures were devoid of furniture, apparatus, suitable substrate and materials to allow the species to exercise, rest and express normal behaviour;

- little consideration had been given to the essential biological and behavioural needs of the animals, particularly concerning environmental complexity and privacy from view;
- some enclosures, and some activities in several of the zoos, placed the animals at risk of public contact, supervised and unsupervised, and potentially heightened levels of distress.

Belgian law requires all housing for animals to be designed to safeguard their welfare and to ‘*stimulate behaviours as varied and as natural as possible*’ (Articles 4 and 6, RD8/1998). It is widely recognised that the keeping of animals for prolonged periods in ‘impoverished’, cramped, captive conditions can compromise both their physical and mental health, and their general welfare. Conditions that fail to provide the animal with its basic needs can cause abnormal behaviour, disease and early mortality. Zoos must, therefore, seek to provide all their animals with more suitable environments that encourage exercise and natural behaviour.

Of the 153 randomly-selected enclosures assessed as part of this investigation, many were of insufficient size and lacked environmental complexity, suitable substrate and the necessary furnishings required by the different species to allow for exercise and rest, to escape public view or potential conflict with cage companions and to express natural behaviour. Of the randomly-selected enclosures, **39% of enclosures containing mammals, birds or reptiles, failed to meet all the minimum requirements of the Belgian Ministerial Orders in appropriate animal keeping. The lack of opportunities for species to express natural behaviours** was further emphasised through analysis using the Animal Protection Ordinance of Switzerland, Tierschutzverordnung 2008 (APOS), which identified that 46% of the enclosures failed to adequately provide the species concerned with their spatial, biological and behavioural needs and appropriate species-specific environmental enrichment. **Although not applicable to all enclosures, findings seem to confirm that that there are conditions in each zoo that appear to violate animal housing requirements in RD8/1998 and in many cases, enclosures lack species-specific environmental enrichment (as also required by Article 3(3) of the Directive).**

It is widely recognised that the inclusion of varied environmental enrichment is integral to reducing the negative impacts of confinement on animals in captivity (maintaining healthy animals in a captive environment) (Pruetz & Bloomsmith, 1992; Crockett *et al.*, 1989; Jordan, 2005). Without such stimulation, animals are likely to develop abnormal repetitive behaviours, recognised as indicators of poor animal welfare (Mason & Rushen, 2006). Equally, a cramped and ‘predictable’ captive environment can lead to obesity and muscular atrophy, which may, in turn, lead to welfare impacts with secondary health consequences (Fowler & Mikota, 2006; Harris *et al.*, 2008).



Figure 16 Zoo Antwerpen.

This new enclosure for the Asian elephants (*Elephas maximus*) is deceiving. To the viewing public, the animals appear to have a large, open enclosure. However, for the elephants the use of an electric fence creates a restrictive environment. One elephant was observed displaying stereotypic behaviour.



Figure 17 Parc Animalier de Bouillon.

Enclosures for many species were inappropriate. In the wild, Eurasian lynx (*Lynx lynx*) roam forested wilderness, often travelling 10 km per day. Belgian mammal standards specify that lynx require 60m² of space with the potential to climb and individual boxes for each animal. In addition, APOS requires privacy from view and access to elevated lying places. These individuals have no opportunities to climb or seek privacy from view.

Numerous wide-ranging species were observed displaying abnormal, and often repetitive, behaviour during the zoo assessments, which could be reflective of an impoverished environment at the zoo. Furthermore, birds of prey were observed tethered for the duration of the day and in Boudewijn Seapark, in particular, appeared agitated, displaying possible *baiting* behaviour. Although common practice in zoos, the tethering of a bird by its leg and

preventing flight is highly restrictive of natural behaviour - subjecting other animal species to such a limiting practice would be considered unacceptable. According to UK VET (Rees Davies, 2005), whilst keeping birds in aviaries is preferred, the tethering does not usually compromise the welfare of some species, providing the bird is well-trained and given regular free flying opportunities. Behavioural problems do, however, arise from a lack of stimulation, namely repetitive *baiting* (jumping from the perch, which can result in the fracture of both legs), feather plucking and screaming, which can be addressed through environmental enrichment (Rees Davies, 2005). **A failure of Belgian zoos to provide adequate environmental enrichment may not only be a violation of Article 6 of RD8/1998, but could also breach Article 4 of RD8/1998 and Article 4 of RD7/2004, particularly in relation to the tethered birds.**

The suitability of enclosures and conditions at Belgian zoos have previously been raised in the GAIA zoo investigations in 2002/2003, where violations in animal housing conditions were recorded in all 14 zoos assessed, including 81 violations of the law at Zoo Antwerpen (GAIA 2003). Dr. Toni Frohoff described the welfare of the dolphins at Boudewijn Seapark dolphinarium as poor and severely compromised (Frohoff 2005). Despite reports by GAIA that conditions in some zoos have improved since their investigation, including Zoo Antwerpen (GAIA, pers. comm., 1st August 2005), improvements were not forthcoming in all zoos in the country, with housing conditions in many zoos not meeting the country's minimum standards (Expatica 2008). **Findings in this investigation indicate that improvements in animal housing and husbandry are still necessary.**

In a recently published report by the Whale and Dolphin Conservation Society (WDCS, 2011), which included a review of the Boudewijn Seapark dolphinarium, **it was concluded that no captive environment can ever provide cetaceans (whales and dolphins) with conditions that meet their biological requirements, or provide an appropriate, species-specific, enriched environment, as required by the Directive (Cook, 2011).** The report highlighted the fact that, perhaps to facilitate ease of cleaning, the pools are mostly smooth-sided, small in comparison to the volume of waters the species' naturally occupy and empty of stimuli, such as rocks, substrate, live weed and fish, and that the inclusion of such features is made impossible by the need to keep the water filtered and chemically treated. As a result, these animals lack the natural stimulation they would receive in the wild. Stress and stereotypic behaviour are apparently very common among captive cetaceans, notably caused by sounds of a mechanical origin, such as pumps, filters and music (EAAM, 1995), an unnatural social structure of unrelated individuals (Waples & Gales, 2002), a conditioned and disciplined training regime (Desmond, 1999) and interaction with humans (Brakes & Williamson, 2007), all of which can result in behavioural changes, such as heightened aggression (Frohoff, 2004; Morgan & Tromborg, 2007), weight loss and a variety of other health issues (Rose *et al.*, 2009). Recognising that conditions in EU dolphinarium cannot meet the requirements of the Directive, and the substantial evidence that the captive environment is severely damaging to cetaceans, it is surprising that such facilities are deemed appropriate by the authorities. **Further investigation is necessary by the DAWC and the Zoos Commission on whether the dolphinarium in Boudewijn Seapark is able to meet the requirements of RD8/1998 and the Directive 1999/22/EC.**

Poor hygienic conditions were observed in numerous enclosures within all six assessed zoos. This included an unacceptable presence of faeces, unconsumed and rotting food, and stagnant drinking and bathing water. All these examples could result in a build-up of potentially harmful disease in an animal's enclosure, potentially causing the animal harm. Article 12 of RD8/1998 requires the zoo manager and staff to be aware of such potential threats to an animal's welfare and Article 13 of RD8/1998 stipulates that regular checks (at least once a day) should be undertaken. Article 15 requires regular veterinary checks and preventative measures to safeguard the

health of animals. **The poor hygienic conditions observed during the compilation of this report, although not notably severe, do raise concerns over the regularity and the quality of the required inspections.**

The DAWC is of the opinion that the standard of animal husbandry and care is satisfactory in zoos in Belgium (Standard Member State Questionnaire). However, the findings of this investigation indicate that **only a modest number of enclosures assessed in the six zoos meet all their obligations in this regard.** Furthermore, there are a number of activities in some of the zoos which could seriously compromise animal welfare, such as direct interaction with animals, particularly for souvenir photographs, which is known to be detrimental (Brakes & Williamson, 2007; Eisfeld *et al.*, 2010; Born Free Foundation, 2011; WDCS, 2011). For example, the practice of using animals as photographic props has been banned from many resorts by the travel industry (International Tourism Services Ltd 2008) and contact between the public and dolphins is prohibited by Italian Regulations (Decree 469 of 6 December 2001) (WDCS, 2011). Furthermore, these activities appear to violate various requirements in RD8/1998.

More must be done by the DAWC and DIAWC, supported by guidance and advice from the Zoos Commission, to ensure animals of all taxa are housed in the most appropriate of conditions that meet their spatial, biological, psychological and behavioural needs. If a zoo is unable to provide such conditions, then the zoo should not be permitted to keep that species. The Ministerial Orders for the appropriate keeping of mammals, birds and reptiles should be revised to incorporate guidance on species-specific environmental enrichment and similar codes should be developed for other commonly kept taxa.

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Born Free Foundation is an international wildlife charity, founded by Virginia McKenna and Bill Travers following their starring roles in the classic film Born Free. Today, led by their son Will Travers, Born Free is working worldwide for wild animal welfare and compassionate conservation.

Born Free supports and manages a diverse range of projects and campaigns. We embrace both compassion and science in setting an agenda that seeks to influence, inspire and encourage a change in public opinion away from keeping wild animals in captivity, while in the short term working with governments, the travel industry and like minded organisations to seek compliance with existing legislation and improve the welfare conditions for wild animals currently held in zoos. Via our Compassionate Conservation agenda, we provide protection for threatened species and their habitats across the globe. Working with local communities, Born Free develops humane solutions to ensure that people and wildlife can live together without conflict.

www.bornfree.org.uk

ENDCAP

ENDCAP is a European coalition of 27 NGOs and wildlife professionals from 20 European countries that specialise in the welfare and protection of wild animals in captivity. Working with the European Institutions, national governments and experts, ENDCAP aims to improve knowledge and understanding of the needs of wild animals in captivity, uphold current legislation and seek higher standards, whilst challenging the concept of keeping wild animals in captivity.

www.endcap.eu

EU Zoo Inquiry 2011

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Report Methodology: For full details of methodology and to view the other Reports published as part of this project www.euzooinquiry.eu

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