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

AUSTRIA

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Written for the European coalition ENDCAP by the Born Free Foundation

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Country Report **AUSTRIA**

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ABBREVIATIONS USED

APOS	Animal Protection Ordinance of Switzerland, Tierschutzverordnung 2008
CBD	Convention on Biodiversity (1992)
DEFRA	UK Department for Environment, Food and Rural Affairs
EAZA	European Association of Zoos and Aquaria
EEP	European Endangered Species Breeding Programme
ESB	European Studbook
EU	European Union
IAS	Invasive Alien Species
IUCN	International Union for Conservation of Nature
TSchG	Austrian Federal Animal Protection Act 2004/2010 (BGBl I Nr. 118/2004)
NGO	Non-Governmental Organisation
OIE	World Organisation for Animal Health
OZO	Austrian Zoo Organisation
R491/2004	Zoo Regulation 491/2004 (Article 26, TSchG)
SMZP	Standards of Modern Zoo Practice, DEFRA, 2004
TSR	Animal Welfare Council (Tierschutzrat)
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 excepted.
Collection Plan: A detailed written justification for the presence of every species and individual animal in the zoo related to the institutional mission, incorporating plans for re-homing and ensuring animal welfare in the event of zoo closure.
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.
Free-roaming Animals: Animals that have been deliberately introduced to the zoo grounds and that are free to move throughout the zoo.
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 Austria.
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

Of the 78 known zoos in Austria, five zoos 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 461 species (including subspecies where appropriate) were observed in a total of 310 enclosures. 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 Austrian Federal Animal Protection Act No.118/2004 (amended on 24/01/2010) ('TSchG') and specifically, Zoo Regulation No.491/2004 (amended by BGBl II No.30/2006 ('R491/2004'). Key findings were:

- **Zoo regulation in Austria is incorporated into legislation that promotes animal welfare and principals in animal husbandry.** This is different to many other EU Member States which have incorporated the Directive's requirements into legislation that aims to conserve biodiversity.
- Zoos are licensed and regulated by the District Administrative Authorities in the nine provinces of Austria. **The results highlight an inconsistency in the interpretation and application of TSchG and R491/2004 between the different provinces.**
- **None of the District Administrative Authorities appear to hold a database of licensed zoos. One of the five identified and assessed zoos was unlicensed but operational.** This raises the question whether all zoos (as defined) have been properly identified and licensed.
- Whilst some zoos in Austria maintain high standards of legal compliance, **results indicate that conditions in some zoos remain substandard and that these zoos are failing to meet their obligations.**
- **Austrian zoos are making an insignificant contribution to the conservation of biodiversity.** The majority of species exhibited in the zoos are either of Least Concern (species of low conservation priority) or are Not Listed by the IUCN Red List of Threatened Species™. Overall, only 8% of species observed at the zoos were classified as Threatened.
- **Of the *Category A zoos* included in this assessment, not one appeared to comply with all the required conservation measures.** Notably, only 2% of species observed were listed as being part of European co-ordinated captive breeding programmes (EEPs or ESBs) and only one of the five *Category A* zoos appeared to participate in, or contribute to, *in situ* conservation.
- **The commitment to and standard of public education in all zoos was poor.** On average, 43% ospecies holdings completely lacked any form of species information signage and 80% of signs did not include all best practice criteria (SMZP).
- **Poor enclosure design, a lack of stand-off barriers, unlocked enclosures and a shortage of available zoo staff often placed the public at risk of injury and exposure to disease.**
- **On average, nine out of ten enclosures did not provide the animals with any behavioural or occupational enrichment opportunities by way of items, specifically toys or feeding devices.**
- **On average, only half the enclosures were environmentally complex.** The zoos appear to have give little consideration to the essential biological, spatial and behavioural needs of the animals.
- Despite the emphasis on maintaining high standards of animal welfare and husbandry through a multi-level framework of Federal and Provincial enforcement and advisory bodies, **the majority of zoos assessed failed to comply with the appropriate minimum standards for the keeping of wild animals (Live stock Regulations No. 1 (485/2004), TSchG and No. 2 (486/2004)). In some cases, animal welfare was compromised.**

RECOMMENDATIONS

The Federal Ministry of Health and the Animal Protection Commission should take the necessary measures to:

1) Review the findings of this report in relation to the identified inconsistencies in the interpretation of requirements and application of TSchG and R491/2004. Ensure consistency across provinces in the correct identification of a 'zoo' and the interpretation of exemption criteria to ensure compliance with Article 2 of the Directive.
2) Encourage all District Administrative Authorities to establish and maintain a zoo database to monitor and regulate zoos in their province. This should be updated annually to ensure all 'zoos' are correctly licensed, categorised and administered. Details should be provided to the Federal Ministry on an annual basis.
3) Establish criteria to evaluate and improve educational and conservation measures in zoos. This should not be developed and implemented by the zoos themselves but through the independent Animal Welfare Council and provincial Ombudsmen.
4) Ensure that all enforcement personnel and State veterinarians involved in the inspection and regulation of zoos are provided with the relevant training and skills pertaining to the care and welfare of wild animals in captivity.
5) Ensure that all zoo keepers, being those people who have responsibility to care for animals in zoos, are provided with relevant training and skills in animal care and welfare. All keepers should attain a nationally-recognised qualification in wild animal care and husbandry.
6) Ensure zoos keep and conserve predominantly indigenous and European Threatened species rather than non-European species.
7) Publish guidance to assist zoos, enforcement personnel, veterinarians, NGOs and other stakeholders to effectively interpret the requirements of R491/2004, specifically their participation in, and application of, recognised peer-reviewed conservation and education programmes.

The District Administrative Authorities should take the necessary measures to:

1) Ensure all permanent establishments open for seven days or more in a year, that display any number of wild animal species to the public, are licensed, receive regular inspections and meet the specified requirements of TSchG and R491/2004.
2) Ensure zoo operators are aware of the minimum standards for the keeping of animals (Livestock Regulations No. 1 (485/2004) and No. 2 (486/2004)) and take the necessary steps to meet these species-specific requirements.
3) Ensure zoos employ professionals with the relevant training and skills to provide high standards of animal husbandry.
4) Ensure, through effective enforcement, that all zoos *(as defined by the Directive)* abide by the requirements of national zoo law and apply existing available penalties (Articles 20, 38 & 39, TSchG) to zoos that fail to meet the requirements.
5) Close any zoo unable, within a specified period of time, to meet the requirements of TSchG and R491/2004.

THE EU ZOO INQUIRY 2011
Introduction and methodology

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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 the responsibility to oversee and ensure the effective implementation of the Directive by Member States and to take legal action in the event of non-compliance.

The Directive provided 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). 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 regards how application 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 the 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 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, dolphinaria, 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.

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 DEFRA 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.

'. . . 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)

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.

AUSTRIA
Country Report

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Country Report

INTRODUCTION

Austria joined the European Union in 1995. By April 2002 Austria, along with 14 other EU Member States, was required to transpose the requirements of the European Council Directive 1999/22/EC into its national law. However, this was not fully achieved until 2005 as a result of delays in the transposition of the Directive's requirements into regional State law (Eurogroup 2008).

The Directive has been transposed into the Austrian Federal Animal Protection Act (Tierschutzgesetz TSchG) 2004/2007 (BGBl. I Nr. 118/2004) (last amended on 24/01/2010) ('TSchG') and, specifically, the Regulation on the Minimum Requirements for Zoos, Article 26 of TSchG, (Zoo-Regulation, Federal Law Gazette II No.491/2004 as amended by BGBL II No. 30/2006) ('R491/2004'). TSchG provides a legal basis for the protection of all [vertebrate] animals in Austria, irrespective of their circumstance or use, with only animals used in hunting or fishing exempt from the provisions (Article 3, TSchG). TSchG provides a nationally-standardised framework, based on the internationally recognised 'Five Freedoms' and under Section 2, provides a basis for secondary regulations. Article 26, Section 2 of TSchG, refers to the Zoo Regulation (R491/2004) and the provision of minimum requirements specific to zoos.

Despite the Federal Ministry for Health (Bundesministerium für Gesundheit, BMG) having overall responsibility for implementation of TSchG, animal protection is an issue that is largely administered and enforced at a Provincial level through nine District Administrative Authorities. A matter of apparent significance in Austria is that animal welfare and protection are presided over by a series of administrative and advisory bodies at both Federal and Provincial level. The Animal Protection Commission (Article 41a, TSchG), consisting of representatives from each political party of the National Assembly and four designated experts, directly assists and advises the Minister of Health and the Executive Advisory Board (Article 42a, TSchG) on all relevant legal and political matters, including providing instruction to the Animal Welfare Council. The Animal Welfare Council (Article 42, TSchG) (Tierschutzrat) ('TSR'), consists of 31 partly-elected members representing: the Federal Ministries of Health and Agriculture, Forestry, Environment and Water Management; Chamber of Commerce; Chamber of Veterinarians; Chamber of Agriculture; scientific institutions; stakeholders (NGOs, Austrian Zoo Association, etc.); representatives from the nine Provinces of Austria; and the nine Animal Welfare Ombudsmen (Article 42(2), TSchG and EuroFAW). Its role is to monitor, evaluate and develop animal welfare law through six working groups, one of which is concerned with the protection of animals in zoos (Ministry of Health and EuroFAW websites), and advise the Federal Government.

Since 2005 and the establishment of TSchG, animal protection (which includes zoo regulation (R491/2004)) has been regulated by the District Administrative Authority (Standard Member State Questionnaire). This is overseen by a locally-elected Animal Welfare Ombudsman (Article 41, TSchG and Ministry of Health website). As part of this investigation, the Federal Ministry for Health and all nine Provincial Competent Authorities were asked to complete a Standard Member State Questionnaire. Responses were received from the Federal Ministry of Health, Province Vorarlberg and Province Styria, information from which has been included throughout this report. This interpretation of the law has been reviewed by our Austrian partner organisation, Österreichische Tierschutzverein.

At the time of going to press, Austria had a total of 78 recognised zoos included on the commercial website known as 'The Austrian Zoo Database' (www.at.zoo-infos.org). Neither the Federal Ministry, nor the Provincial Authorities appear to maintain a database of zoos (Standard Member State Questionnaire).

Zoo licensing requirements

In Austria, zoos are defined in terms similar to those set out in the Directive, '*all permanent establishments where animals of wild species are kept for exhibition to the public for 7 or more days a year*' (Article 4(10), TSchG). This includes all kinds of zoological collections from the traditional zoo and small menageries, to specialised collections such as aquaria, dolphinaria, aviaries and terraria (referred to as 'zoos' in this report). Only circuses and pet shops are exempt, in addition to '*other facilities that do not exhibit a significant number of animals or species*', or when the *'species [is not] of conservation-significance'* (Articles 4(10) and 26 (paragraph 2), TSchG and Article 1, R491/2004). No further guidance or explanation is provided by the Competent Authority to clarify the criteria for Exemption (Standard Member State Questionnaire).

Under the Animal Protection Act, TSchG, all persons keeping an animal(s) are required to comply with the provisions of the Act, which include provisions relating to animal welfare and animal husbandry and the prohibition of animal cruelty. Zoos (as defined) are required to have a licence to operate (Article 26, TSchG and Article 2, R491/2004), issued by the District Administrative Authority for an undefined period, on confirmation that the licensing requirements have been met (Article 23, TSchG).

Annual zoo inspections are undertaken by the District Administrative Authority in accordance to the advice of the Provincial veterinary authority (Landesveterinärdirektion) (Standard Member State Questionnaire) (Articles 26(5) and 35(2), TSchG). A zoo's operating licence can be revoked at any time by the licensing authority if the establishment fails to meet the licensing requirements (Articles 23 and 35, TSchG and Article 2(2), R491/2004).

Minimum requirements specific to the management and operation of zoos are specified under Article 2 of R491/2004. These include provisions similar to those specified by Article 3 of the Directive ('Requirements for zoos') and include the following:

Conservation

Zoos must participate in at least one of the following activities:

- *'Research from which conservation benefits accrue to the species*
- *Training in relevant conservation skills*
- *The exchange of information relating to species conservation*
- *Where appropriate, captive breeding, repopulation or reintroduction of species into the wild'*

(Article 2(1)5, R491/2004 and Article 3 of the Directive)

Furthermore, zoos must ensure their animals are kept in accordance to the *'conservation requirements'* of the respective species.

(Article 2(1)3, R491/2004 and Article 3 of the Directive)

No further guidance is provided by the Competent Authority to help local authorities or zoo operators interpret the individual requirements of Article 2, R491/2004.

Education

- *'Promote education and awareness of the conservation of biodiversity, particularly by providing information about the species exhibited and their natural habitats'.*

(Article 2(1)6, R491/2004 and Article 3 of the Directive)

No further guidance is provided by the Competent Authority to help local authorities or zoo operators interpret the individual requirements of Article 2, R491/2004.

Animal welfare provisions

The promotion of high standards in animal welfare and principals of animal husbandry is given importance within both the TSchG (Articles 2 and 13) and R491/2004 (Articles 1, 3 and 4).

- *'Any person who keeps an animal must ensure that the space, substrate, enclosure infrastructure, environmental enrichment, climate (in particular the lighting and temperature), animal care and nutrition, species social composition, age and level of development, adaption and domestication of animals to their physiological and ethological needs, are appropriate.'*

  (Article 13(2), TSchG)
- *'Accommodating their animals under conditions which meet the biological and conservation requirements of individual species, inter alia,'*

  (Article 2(1)3, R491/2004 and Article 3 of the Directive)

- *'providing species-specific enrichment of enclosures and care by a sufficient number of caregivers'*

  (Article 2(1)4, R491/2004)

Furthermore, R491/2004 also stipulates other minimum requirements, including measures to prevent the escape of animals (Article 2(7), A191/2002); the need for each zoo to have a veterinarian with sufficient knowledge of zoo biology and veterinary science; an established nutrition programme (Article 2(1)8, A191/2002) and to maintain an up-to-date register of animals kept at the zoo (Article 3, R491/2004).

In addition to the requirements under Article 13, TSchG, zoos must also comply with specifications listed within Livestock Regulation No. 1 (Federal Law GazetteIINo.485/2004), applicable to horses, pigs, goats, cattle, sheep, llamas, rabbits, ostriches, poultry and commercial fish, and No. 2 (Federal Law Gazette IINo.486/2004), applicable to animals of wild species. These Regulations set species-specific 'minimum standards' which specify, amongst other requirements, the minimum dimensions of the indoor and outdoor enclosures (if applicable), dependent upon the numbers of animals contained, and guidance on appropriate environmental conditions and enrichment.

Categorisation of zoos

In Austria, zoos are identified as permanent establishments that exhibit wild animal species, of significant numbers (of individuals and/or species), to the public for seven or more days in 12 months. Once licensed under Articles 23 and 26, R491/2004, zoos are separated into three different categories depending upon the species kept. These are described as follows:

Zoos in ***Category A*** are:

1. Entitled to keep all species of mammals, reptiles, amphibians, fish and birds, without limitation in either number or species.
2. Required to have a zoo manager, who holds a degree in biology, zoology or veterinary science, with significant knowledge and experience in animal husbandry.
3. Required to have a sufficient number of animal carers (or keepers) that have received appropriate training and have a recognised qualification in the management and care of wild animal species.
4. Required to undertake **all** those actions as specified in Article 2(1)5 of R491/2004 (and Article 3 of the Directive), concerning species conservation.

(Article 4, R491/2004)

Zoos in ***Category B*** are:

1. Entitled to keep up to 20 species of wild animal, in addition to those animals listed under Article 7 of R491/2004 (Category C zoos). However, these zoos are prohibited from keeping species listed under Articles 6(1) and 6(2) (see below).
2. Required to have a zoo manager with the necessary knowledge and experience to provide a high standard in animal care, as required by TSchG and R491/2004, or alternatively, a contract with a person who has an appropriate qualification, for example, a veterinarian from the Animal Health Service (in accordance with Article 7(2) of the Animal Medicines Control Act – TAKG).
3. Required to have a sufficient number of animal keepers, with at least one individual who has:
   a. Had appropriate training and qualifications in the management and care of wild animal species;
   b. A qualification from a higher education institute in agricultural or forestry;
   c. Had sufficient training in relation to the requirements of zoos (Article 2, 491/2004); or
   d. Had at least five years of experience under the supervision of an animal keeper, or under the guidance of a manager from a ***Category A*** zoo.
4. ***Category B*** zoos must fulfill at least one of the requirements in Article 2(1)5, on species conservation.

(Article 5, R491/2004)

Category B zoos are prohibited from keeping:

1) Mammalia of all species of Monotremata; Marsupialia (except *Macropus rufogriseus* and *Macropus parma*); Insectivora; Chiroptera; Dermoptera; Tupaiidae; Xenarthra; Primates; Pholidota; Viverridae; Hyaenidae; Canidae (except *Canis lupus, Vulpes vulpes, Nyctereutes procyonoides* and *Canis aureus*); Pantherini; Felini (except *Felis silvestris* and *Lynx lynx*); *Acinonyx jubatus;* Ursidae (except *Ursus arctos*); *Ailurus fulgens; Ailuropoda melanoleuca;* Pinnipedia; Cetacea; Tubulidentata; Sirenia; Rhinocerotidae; Tapiridae; Hippopotamidae; Giraffidae; and Proboscidea. As well as commonly-kept birds, reptiles and amphibians;

(Article 6(1), R491/2004)

2) Birds, reptiles and amphibians of conservation-significance

(Article 2, R491/2004); Article 6(2), R491/2004)

Category B zoos can be:

3) Specialised zoos that keep more than 20 species of reptile, amphibian and fish, providing the responsible manager has the necessary knowledge and experience to provide appropriate animal care.

(Article 6(3), R491/2004)

4) An establishment that exceeds 20 species of animal (not listed under Article 6(1) or 6(2)), but requires additional licensing requirements regarding individual animal care and husbandry.

(Article 6(4), R491/2004)

Zoos in ***Category C*** are:

1. Entitled to keep the following animals of wild species:
    - i. Ungulates, Przewalski's horses, bison, Barbary sheep, Thar, Markhor or Bezoar goats, blackbuck, nilgai, ibex and axis deer, camelids
    - ii. Chipmunks, prairie dogs, nutria, mara, European marmot
    - iii. Beech marten, polecat, European badger, raccoon, raccoon dog, red fox, European wild cat, lynx,
    - iv. Bennett wallaby, Parma wallaby,
    - v. European owls, European birds of prey (expect travelling outside the zoo), falcons, sparrow hawks and hawks, European species of ducks, geese and swans, rheas, emus, European corvids, pheasant species (hunting, ear, gloss, gold, silver, diamond and king), partridge, rock partridge, quail, peacocks, white and black stork,
    - vi. Freshwater fish.

2. There should be an adequate number of keepers relative to the number of animals kept at the zoo, but there should be at least one keeper on-site at all times. The keepers must have at least one of the following:
    - a) A professional qualification in animal keeping;
    - b) An academic apprenticeship in the discipline of agriculture or forestry;
    - c) An apprenticeship through the treaty of Europe; or
    - d) Be under the supervision and guidance of an animal keeper with at least five years experience in wild animal husbandry.

3. ***Category C*** zoos must fulfill at least one of the requirements of Article 2(1)5, on species conservation.

The Zoo Investigation
A total of five zoos were selected. All five were ***Category A*** zoos.

Data was collected at the following zoos in June 2009 (Fig. 1):
- Wild & Erlebnispark Enghagen (1)
- Tierpark Stadt Haag (2)
- Tiergarten & Reiterhoff Walding (3)
- Haus des Meeres – Aqua Terra Zoo (4)
- Naturhistorisches Museum Wien (5)

Figure 1 Geographical locations of the five zoos visited in Austria.

RESULTS AND INTERPRETATION

GENERAL ZOO INFORMATION

Overview

The investigation evaluated five out of the 78 listed zoos in Austria. Three of those assessed are privately-owned, one (Tierpark Stadt Haag) reportedly receives State funding and the Vivarium is housed in the Natural History Museum in Vienna. All the selected zoos charged the public an entrance fee.

One of the zoos evaluated, Haus des Meeres – Aqua Terra Zoo, is a member of the *Austrian Zoo Organisation* (OZO), *the European Association of Zoos and Aquaria* (EAZA) and the *World Association of Zoos and Aquariums* (WAZA). The remaining four zoos are not affiliated with any zoo association. Members of OZO and EAZA in particular are required to meet higher standards than those often required by national law. OZO has a membership of seven zoos from a total of 78 zoos in Austria and EAZA has a membership of 277 zoos (Full Members) in the EU (8% of an estimated total of 3,500 zoos in the EU): each association represents a minority of the total number of national or regional zoos.

According to The *Austrian Zoo Database* website there are 78 zoos in the country. However, this does not include the Vivarium at the Natural History Museum, which, at the time of the investigation, complied with the zoo definition (Article 4, TSchG). According to the returned Standard Member State Questionnaires (a questionnaire was sent to the Federal Ministry of Health and all nine Provincial Competent Authorities), all of the zoos are licensed, but none of the authorities appear to maintain a zoo list or database.

A total of 461 species (including subspecies where appropriate) were identified in 310 enclosures in the five zoos. A total of 57 *species holdings* could not be identified (see online Methodology).

Only one of the five zoos, Tierpark Stadt Haag, responded to the Standard Zoo Questionnaire by letter requesting that reference should be made to the zoo's website. None of the selected zoos returned a completed questionnaire.

Prevention of animal escapes

'Zoos should prevent the escape of animals to avoid possible ecological threats to indigenous species, except in the case of endemic wild birds, which should have free access in and out of the zoo'.

(Article 2(1)7, R491/2004)

All the selected zoos either had a secure perimeter fence that should adequately contain escaped animals, or were self-contained units within a secure building. However, on the day of the assessment, a gate on the perimeter of Tierpark Stadt Haag was left wide open and unsupervised.

Three of the five zoos, including Tierpark Stadt Haag, had free-roaming species. These included DAISIE-listed species such as Indian peafowl (*Pavo cristatus*), greylag geese (*Anser anser*) and Canada geese (*Branta canadensis*) at Tierpark Stadt Haag. Domesticated rabbits from the zoo's collection were observed moving unhindered throughout the majority of animal enclosures within this zoo. Domestic chickens (*Gallus gallus domesticus*), Indian peafowl (*Pavo cristatus*) and a domestic cat (*Felis catus*) were observed at Tiergarten & Reiterhoff Walding. At Wild & Erlebnispark Enghagen, a Barbary macaque (*Macaca sylvanus*) was observed free-roaming within the zoo. A DAISIE-listed species, there did not appear to be adequate measures in place at the zoo to prevent this animal's escape from the zoo grounds.

Figure 2
Wild & Erlebnispark Enghagen zoo. This male Barbary macaque appeared to have escaped from his enclosure and was observed moving unhindered into the enclosures occupied by other animals. A potential carrier of disease, this a nimal may not only be potentially dangerous, but could carry infectious diseases.

Public placed at risk of injury and disease transmission
The public could easily come into direct contact with animals in 68 of the 150 (45%) randomly-selected enclosures (Section D and E). Of these 68 enclosures, 42 allowed unsupervised contact with potentially dangerous wild animals. This included Category 1 'Greater Risk' Hazardous Animals, as classified by SMZP, such as grey wolves (*Canis lupus*), Przewalski's horse (*Equus ferus przewalskii*), Lar gibbons (*Hylobates lar*) and Bactrian camel (*Camelus bactrianus*); and a variety of Category 2 'Less Risk' Hazardous Animals (SMZP), including species such as greater rhea (*Rhea americana*), coati (*Nasua nasua*) and capybara (*Hydrochoerus hydrochaeris*).

The lone, male Barbary macaque observed free-roaming at Wild & Erlebnispark Enghagen could pose a significant risk to the public, particularly because staffing was minimal at this zoo.

Of the randomly-selected enclosures, 29 (Section D & E) (from the five zoos) exhibited Category 1 'Greater Risk' Hazardous Animals, 11 displayed signage warning the public about potential risks.

Figure 3
Tierpark Stadt Haag.
Unsupervised direct contact between the public and animals was observed where dried pasta was fed to Hamadryas baboons (Papio hamadryas). Livestock Regulation No. 2 (486/2004) states that these animals should have a diet of fruit, vegetables, grain, meat and foliage.

CONSERVATION

The conservation of biodiversity is the main objective of the Directive and, as a result, transposition of the Directive's requirements into EU Member State national law is usually incorporated into conservation or biodiversity legislation. However, this is not the case for Austria where conservation has been relegated in favour of requirements to maintain high standards in animal welfare. Despite this fact, R491/2004 does include 'conservation requirements of species' in zoos through Articles 2(1)3 and 2(1)5, which refer to measures similar to those of Article 3 in the Directive:

- *'Research from which conservation benefits accrue to the species*
- *Training in relevant conservation skills and knowledge*
- *The exchange of information relating to species conservation*
- *Where appropriate, captive breeding, repopulation or reintroduction of species into the wild'*

(Article 2(1)5, R491/2004 and Article 3 of the Directive)

In the Directive, zoos are required to partake in at least one of the above conservation measures. This same requirement applies to those zoos classified as *Category B* and *Category C* (under the Austrian zoo Category system). However, *Category A* zoos are required to partake in all the above listed conservation measures (Article 4(4), R491/2004). All the zoos selected in this investigation were identified as *Category A* zoos.

It is understood that no further guidance is available to explain or provide examples of each of these vague requirements and therefore broad interpretation is likely.

Analysis of collected data from the zoos has evaluated all possible conservation measures, that may be applicable to Austrian zoos. This has included a review of the species exhibited by the zoos, their conservation status and their involvement in ex situ conservation programmes. The results demonstrate that the conservation of biodiversity, particularly Threatened species, is not a significant priority, with the majority of species exhibited in the zoos either of *Least Concern* (species of low conservation priority) or *Not Listed* by the IUCN Red List of Threatened Species™.

Percentage of Threatened Species

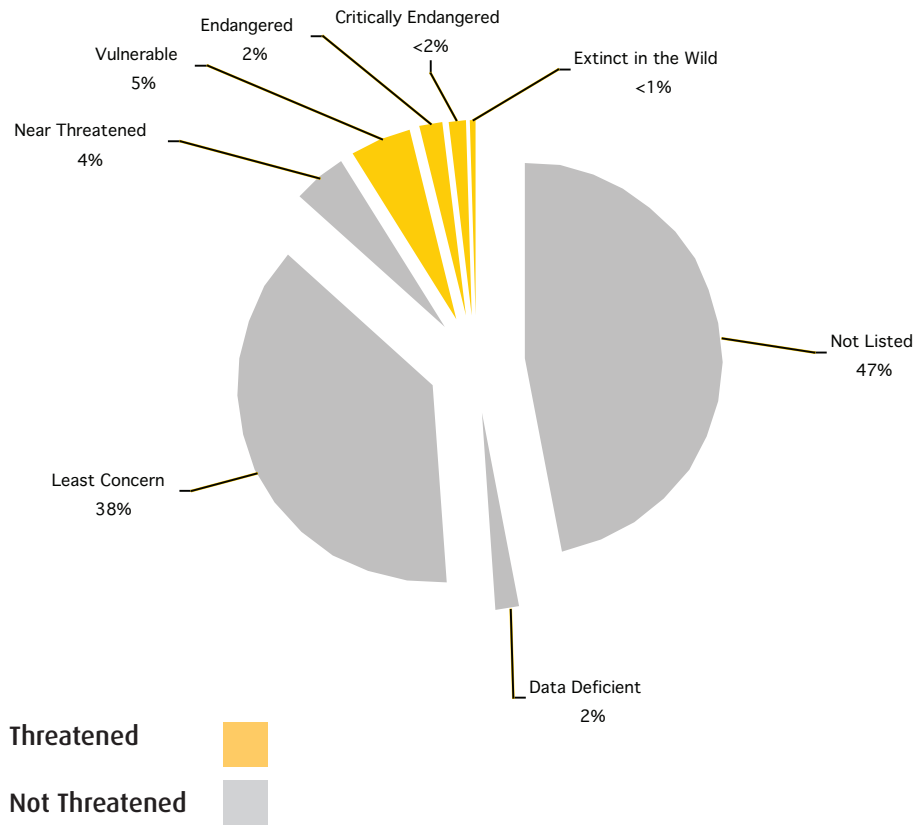

Figure 4 Proportion of the 461 species identified (including subspecies where appropriate) in the five Austrian zoos that are categorised by the IUCN Red List of Threatened Species™ as Threatened and Not Threatened.

Percentage of Threatened Species and Taxa

IUCN Red List of Threatened Species™ Categorisation	Taxonomic Group						Total No. Speciesl	Proportion of total no. Species (%)
	Mammals	Birds	Reptiles	Fish	Amphibians	Invertebrates		
Not Listed	12	6	21	146	0	31	**216**	**47%**
Not Evaluated	0	0	0	0	0	0	**0**	**0%**
Data Deficient	0	1	0	7	0	1	**9**	**2%**
Least Concern	33	56	10	64	12	0	**175**	**38%**
Near Threatened	6	5	3	4	1	1	**20**	**4%**
Vulnerable	5	6	6	5	0	1	**23**	**5%**
Endangered	4	0	0	4	1	0	**9**	**2%**
Critically Endangered	3	0	0	2	2	0	**7**	**<2%**
Extinct in Wild	0	0	0	2	0	0	**2**	**<1%**
Total No. Species	**63**	**74**	**40**	**234**	**16**	**34**	**461**	**100%**
Proportion of total no. Species (%)	**14%**	**16%**	**9%**	**51%**	**3%**	**7%**	**100%**	

Table 1. Proportion of the 461 species (including subspecies where appropriate) identified in five Austrian zoos, categorised as Threatened and Not Threatened by the IUCN Red List of Threatened Species™ by taxa.

The results indicate that 8% (n = 39) of the total number of species from the five zoos can be described as Threatened (*Vulnerable (5%), Endangered (2%) and Critically Endangered (2%)*) (Table 1). Of the 39 Threatened species, 31% were mammals, 28% were fish, 15% were birds, 15% were reptiles, 8% were amphibians and the remaining 3% were invertebrates. The remaining 91% of the Not Threatened species were either classified as *Least Concern (38%), Near Threatened (4%) or Data Deficient (2%)* by the IUCN Red List of Threatened Species™ categorisation, or were *Not Listed* (47%) (Fig. 4). None of the zoos evaluated kept any European Threatened mammal species, according to the European Red List (European Red List website). **The majority of species exhibited in the zoos are either of *Least Concern* (species of low conservation priority) or are *Not Listed* by the IUCN Red List of Threatened Species™.**

Participation in European coordinated captive breeding programmes

A further indicator of a zoo's commitment to the conservation of biodiversity is their participation in the *ex situ* conservation and the management of species through coordinated captive-breeding programmes. This is stipulated as an option under the 'requirements of zoos' by Article 3 of the Directive (and *Category B* & *C* zoos), but is an obligation for *Category A* zoos in Austria (Article 2(1)5 of R491/2004). The results of the assessment indicate, that only a minimal number of species kept by the selected zoos are registered on European captive breeding programmes.

Percentage of species in Austrian Zoos involved in coordinated captive breeding programmes (EEPs or ESBs)

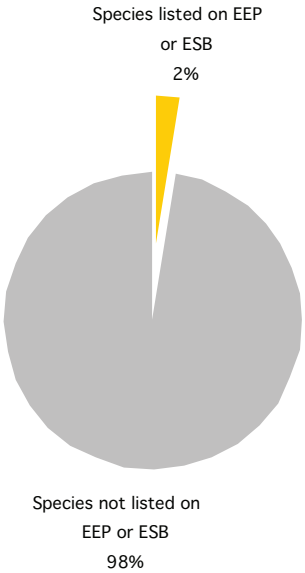

Figure 5. The percentage of the 461 species (including subspecies where appropriate) identified in the five Austrian zoos that are part of an ESB or EEP.

Only 2% of species (n = 11) of the total 461 species exhibited by all five zoos are listed on the register of European Endangered Species Breeding Programmes (EEPs) or European Stud Books (ESBs) (Fig. 5). It is impossible to confirm whether the individual animals observed were actually partaking in these programmes. Further investigation during the on-site visit, which included reviewing available signage and analysing the zoos' websites and guidebooks (if available), confirmed that less than half of these registered species (n = 5) were actively involved in EEPs or ESBs. Of the selected zoos, only one of the five mentioned EEPs or ESBs on their website.

Figure 6
Wild & Erlebnispark Enghagen. It was not always possible to confirm from the zoo whether species for which international breeding programmes exist, including this Barbary macaque (*Macaca sylvanus*), were actively participating within the programmes.

Notably, Haus des Meeres – Aqua Terra Zoo, a *Category A* zoo and the only Member of the Austrian Zoo Organisation (OZO) assessed as part of this investigation, had two registered species out of a total of 265 species. Evidence could only be found (from the on-site visit) to confirm that one species (Giant Asian Pond Turtle (*Heosemys grandis*)) was actually participating in a European captive-breeding programme. No relevant information was available on the zoo's website to confirm its participation in any captive-breeding, species repopulation or reintroduction programmes.

Participation in scientific research and contribution to in situ conservation

Results indicate that three of the five zoos participate in scientific research activities but it is not clear whether all the research directly benefits the conservation of the species. Both Haus des Meeres – Aqua Terra Zoo and the Naturhistorisches Museum Wien undertake in-house research and in particular, Haus des Meeres – Aqua Terra Zoo has contributed to marine life research, including seahorse nutrition, flatworm analysis, jellyfish reproduction and analysis of pharmacological active substances in the sea (through cooperation with SeaLife Pharma GmbH) (Haus des Meeres website).

Of the five zoos, only one activity at one zoo (Tierpark Stadt Haag) appeared to have a clear conservation agenda. Through collaboration with *BirdLife Austria*, Tierpark Stadt Haag has established bird boxes for jackdaws (*Corvus monedula*) within the zoo grounds, to encourage nesting of this nationally threatened species (Tierpark Stadt Haag website).

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). This is transposed word for word into Article 2(1)6 of R491/2004 with no further information provided.

The results of this assessment demonstrate that four of the five selected zoos are involved in educational activities but these appear to be limited to pre-organised school groups. Four of the five zoos (Tierpark Stadt Haag, Tiergarten & Reiterhoff Walding, Haus des Meeres – Aqua Terra Zoo and Naturhistorisches Museum Wien)

offered tours and an educational programme for school groups. Tiergarten & Reiterhoff Walding offered an opportunity for students to be 'up close to the animals' (Tiergarten & Reiterhoff Walding website).

Although an apparently unlicensed zoo, the Vienna Natural History Museum (Naturhistorisches Museum Wien) provides numerous educational programmes for schools and students, guided tours and workshops, but it is not clear if these activities are related directly to the Vivarium which was assessed as part of this Austrian zoo investigation.

Minimal species information

A basic requirement of a zoo is to inform its visitors about the animals on exhibit. R941/2004 states that this information should include: *'information about the species exhibited and their natural habitats'*. Articles 2(1)5 and 2(1)6 also stipulate that zoos need to *'exchange (..) information relating to species conservation'*. The results of this assessment indicate that the provision of this basic information was poor.

Proportion of Species Information Signage Present

Figure 7 The average percentage of species information signage present or absent (for all 770 *species holdings*) in the five Austrian zoos.

On average, 43% of *species holdings* completely lacked any species information signage (Figs. 7 & 8). Signage for six *species holdings* was incorrect (inaccurate species' scientific names) whilst others displayed only minimal information about the species. Figure 9 provides an overview of the content of the signage in the zoos.

Figure 8
Haus des Meeres – Aqua Terra Zoo. 68% of *species holdings* at this zoo did not have any species information signage. For example, here a variety of species including elephantnose fish (*Gnathonemus petersii*), black ghost knifefish (*Apteronotus albifrons*) and golden oto (*Macrotocinclus affinis*) were exhibited to the public without any species information signage

Quality of Species Information Signs

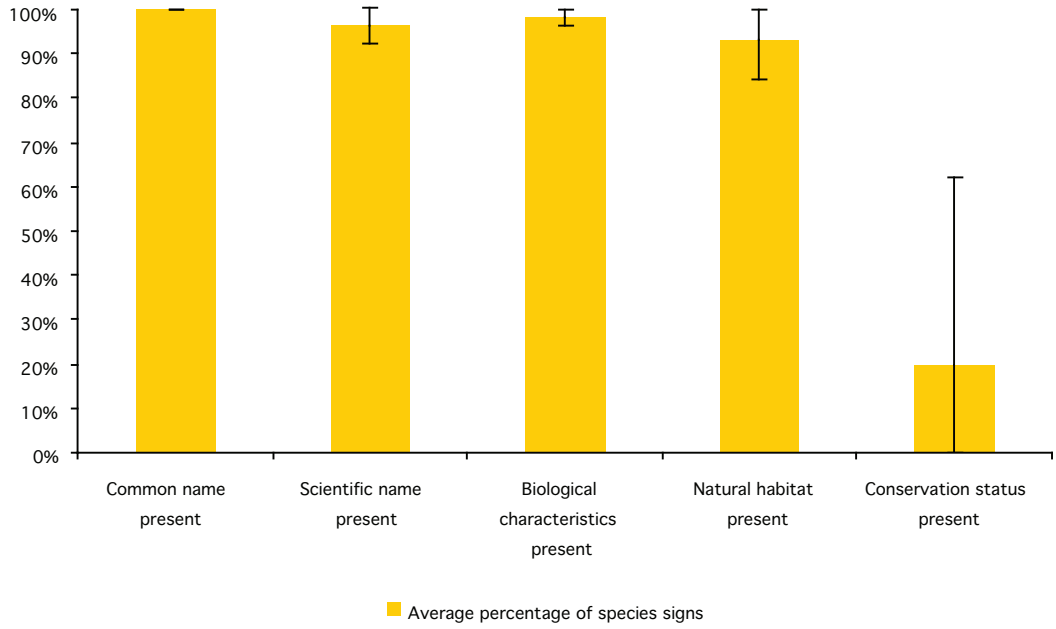

Figure 9 Content of species information signage within the five Austrian zoos. Each column represents specific information, as indicated by best practice criteria (SMZP). Each value (e.g. Conservation status present, 20%) represents the average of the 207 species information signs observed in 30 randomly selected enclosures. 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 conservation status of the species varied considerably between zoos in comparison to the presence of species common name).

The results (Fig. 9) demonstrate that whilst the majority of signage on the randomly selected enclosures contained common name, scientific name, biological details and information on natural habitat, on average, 80% of species information signage did not contain all the best practice criteria (SMZP). On average, 80% of species information signage did not specifically include information about the conservation status of the species (as required by Articles 2(1)5 and 2(1)6 of R491/2004).

Figure 10
Wild & Erlebnispark Enghagen. Information signage did not include sufficient information about the species, indicated by the best practice criteria (SMZP).

EVALUATION OF ANIMAL ENCLOSURES

To evaluate the suitability and quality of each of the 150 randomly-selected enclosures, data relating to 12 criteria regarded as vital to the health and welfare of the 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 establishing minimum standards for the keeping of animals, but the specifications of Section 1 of TSchG and other species-specific needs were also taken into account, particularly in relation to the suitability of the captive environment.

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 water are to be administered in a hygienic way; and be of the nutritive value and quantity required for the particular species...'

(Article 17, TSchG)

Some animals did not appear to have access to clean drinking water.

Freedom from Discomfort: Provision of a Suitable Environment

'Animal enclosures to be furnished, in accordance with the needs of the species in question, with such items as bedding material, perching, vegetation, burrows, nesting boxes and pools'

(Article 11, EAZA Minimum Standards for the Accommodation and Care of Animals in Zoos and Aquaria, 2006)

Enclosures for many large birds of prey such as long-eared owl (*Asio otus*), Eurasian eagle-owl (*Bubo bubo*) and snowy owl (*Bubo scandiaca*) were of an inadequate size and did not provide sufficient horizontal space to allow the animals to express their full range of natural locomotive behaviour. Similarly, enclosures for some wide-ranging species such as serval (*Leptailurus serval*) and leopard (*Panthera pardus*) were of an inadequate size and complexity to permit exercise, refuge and the expression of natural behaviour. Species requiring climbing features, sufficient water to swim in or a suitable substrate to dig or burrow in were, in many cases, housed in conditions where such features were absent and natural behaviour was therefore compromised.

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

'Proper standards of hygiene . . . be maintained'

(Article 25, EAZA Minimum Standards for the Accommodation and Care of Animals in Zoos and Aquaria, 2006)

Overall, the majority of animals were housed in hygienic conditions in well-maintained enclosures. However, in some cases animals may have been placed at risk of disease or injury, and their welfare compromised, by an accumulation of faeces or poorly maintained fencing and fixtures.

'Arrangements to be made for routine veterinary attendance'

(Article 32, EAZA Minimum Standards for the Accommodation and Care of Animals in Zoos and Aquaria, 2006)

Most of the animals observed within the zoos appeared to be healthy and in a good physical condition.

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

'Animals to be provided with an environment of sufficient space to allow an animal's physiological and behavioural needs to be met'

(Article 16(2), TSchG)

In all the selected zoos, numerous individual enclosures lacked the appropriate furnishings and materials to allow the species to express natural behaviours. For example, bare concrete flooring featured in some enclosures preventing naturally burrowing animals from being able to dig or the opportunity for other animals to rest comfortably.

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

'The enclosure must be of sufficient space so not to cause pain, injury or harm, or serious fear to the animal'

(Article 16(1), TSchG)

Social species, which should be housed with other individuals of the same kind, were often observed to be housed alone. For example in Tiergarten & Reiterhoff Walding zoo, two individual female Asian elephants (*Elephas maximus*) were housed alone, in separate enclosures. Section 7.11.1 of the Livestock Regulation No. 2 (486/2004), specifies that elephants are herd animals.

There were also notable cases where; predators were housed adjacent to, or opposite prey species; highly territorial species were housed in cramped enclosures and exhibited next to each other and; unlocked enclosures could allow public access into the enclosures. All these instances could subject the animals to undue and unremitting stress.

Environmental Quality of Enclosures

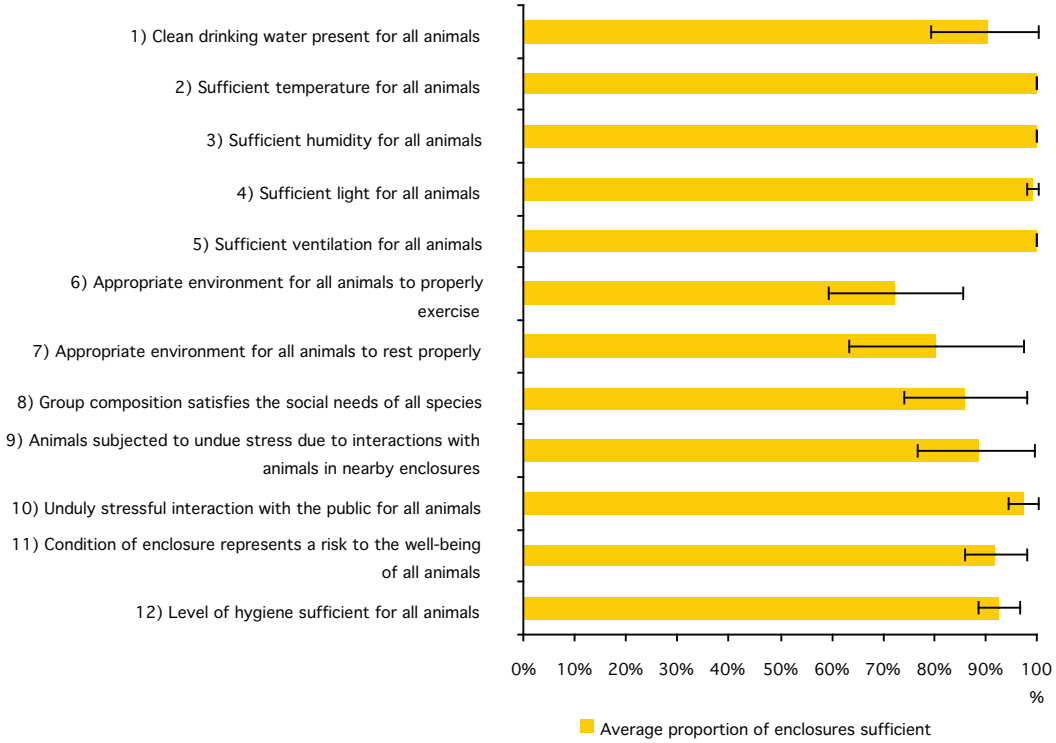

Figure 11 Environmental quality of the 150 randomly selected enclosures from five Austrian zoos. Each column represents a criterion used to assess the suitability of the enclosures to meet the needs of the animals contained. Error bars are a visual representation of the standard deviation from the mean value, demonstrating the variation in performance amongst selected zoos (e.g. the presence of clean drinking water 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. 11) demonstrate that there were enclosures analysed that failed to meet all the requirements. While most enclosures appeared to provide the animals with sufficient light, suitable temperature, humidity and ventilation, lower values were recorded when assessing; the ability of the animals to properly exercise (on average, 28% of enclosures provided insufficient environment, space and structure to permit the animal(s) contained to properly express all locomotive behaviour); the ability for all animals to rest properly (on average, 20% of enclosures did not provide all animals with sufficient space or structures to rest properly); the appropriate keeping of social species (on average, only 86% of enclosures exhibited social animals in appropriate groupings) and; possible stress caused by interactions with animals in nearby enclosures (on average, 11% of enclosures contained animals held in close proximity to animals in other enclosures that had the potential to cause undue stress). Of the 150 randomly-selected enclosures across the five zoos, on average, 10% did not appear to have clean drinking water.

Figure 12
Wild & Erlebnispark Enghagen.
Black swans (*Cygnus atratus*) were provided with a pond of insufficient size and depth, thereby severely limiting the ability for these animals to exercise properly and express all locomotive behaviour.

Figure 13
Tiergarten & Reiterhoff Walding.
An Asian elephant (*Elephas maximus*) exhibited in an enclosure on its own and without any mud bath or bathing pool, both of which are requirements of Livestock Regulation No. 2 (486/2004).

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 of the suitability of the 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.

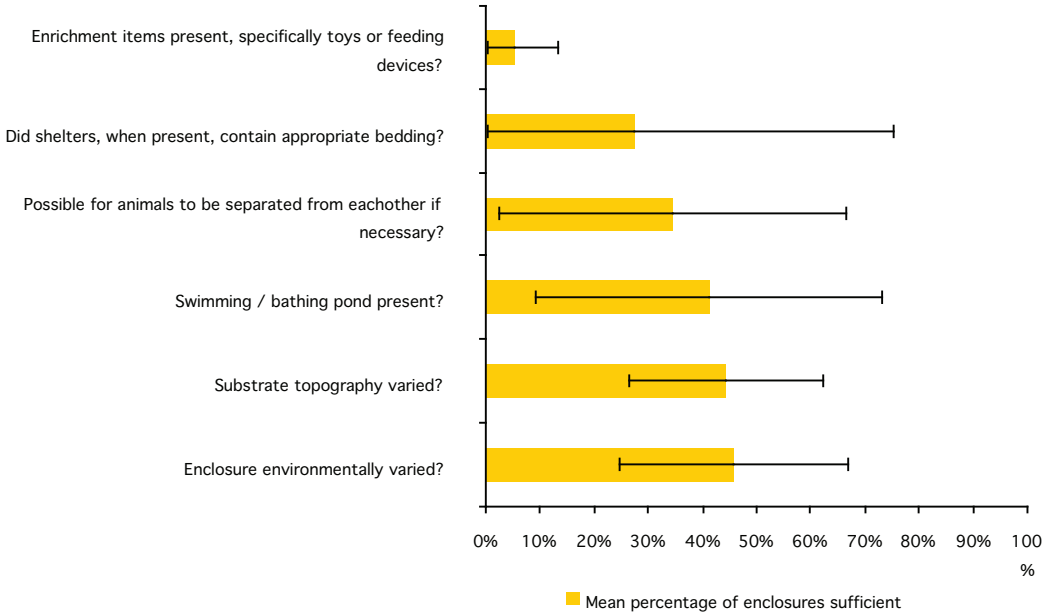

Figure 14 Issues requiring immediate attention following assessment of 150 randomly selected enclosures from the five Austrian zoos. Error bars are a visual representation of the standard deviation from the mean value, demonstrating the variation in performance (e.g. the presence of appropriate bedding in shelters varied 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 150 randomly selected enclosures in the five zoos (Fig. 14). Issues requiring immediate attention include: the lack of any behavioural or occupational enrichment items or techniques such as toys or feeding devices (on average, 95% lacking); the possibility for animals to be separated from each other if necessary (66%); and the lack of environmental variation (54%).

Widely Represented Issues of Concern (where the percentages of enclosures complying score between 51% and 70%)

- On average, 46% of enclosures did not provide all of the animals with access to multiple privacy areas.
- On average, 44% of enclosures that exhibited species listed on APOS did not meet these minimum requirements.

Less Widely-Represented Issues of Concern (where the percentages of enclosures score above 71%)

- On average, 24% of enclosures did not appear to be large enough to allow the animals to sufficiently distance themselves from potentially aggressive or dominant cage companions.
- On average, 24% of enclosures did not appear large enough to permit the animals to express their full repertoire of normal locomotive movements.
- On average, 14% of enclosures did not appear to be able to mitigate climatic extremes effectively.
- On average, 8% of enclosures appeared to be overcrowded.

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 represented an independent set of recognised 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, 44% of enclosures that exhibited species listed on APOS did not meet these minimum requirements.

The Austrian species-specific 'minimum standards', Livestock Regulations No. 1 (485/2004) and No. 2 (486/2004) (Article 2(1)1, R491/2004), were also included as part of the assessment of Enclosure Quality and Animal Welfare. These were only used for the 150 randomly-selected enclosures and for those animals listed within the standards. The results indicated that, on average, 71% of the enclosures met the Austrian minimum requirements whilst 29% did not.

CONCLUSION

CONCLUSION

This investigation has covered 6% of all the known zoos in Austria and despite logistical constraints, which meant the researchers were only able to sample a small proportion of the zoos in the country, the results have identified inconsistencies in the application of the EC Directive 1999/22 and R491/2004 between the different Provinces of Austria. Furthermore, in some cases, **standards are below those required by the Animal Protection Act, TSchG**.

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

1. Implementation of the Directive

The Directive has been accurately transposed into the TSchG, through the Zoo Regulation R491/2004, which in most cases has been a direct translation without additional legal requirements or guidance.

The Directive came into force in Austria in 2005 following delays in the integration of the requirements into Provincial law. Unlike the majority of other EU Member States, Austrian zoo law has been incorporated into the Animal Protection Act TSchG and not legislation dedicated to the conservation of biodiversity. Therefore, instead of specifically seeking to meet their obligations under Article 9 of Convention of Biological Diversity (CBD), Austrian zoo regulations are implemented and enforced through a legal and administrative framework that aims to promote animal welfare and best practice in animal husbandry (Article 2 and Section 1 of TSchG).

Although the implementation of the Directive by Member States is an issue for subsidiarity, it is important to note that the interpretation of the Directive by Member States lacks uniformity which has led to inconsistencies in its application. This includes varying interpretations of important definitions, in particular the definition of a 'zoo'. This has resulted in large numbers of zoological collections being exempt from the Directive and, therefore, licensing and compliance with standards. As shown in the breadth of this EU zoo project, it appears that hundreds of zoos are unregulated and that the main focus of the Directive, the conservation of biodiversity, is not being addressed. Austria may not be an exception to these findings.

In Austria the definition of a 'zoo' is similar to that of the Directive: all *'permanent establishments that display animals of wild species to the public in 12 months'*, with the exception of pet shops and facilities breeding animals for hunting and fishing purposes (Article 4(10) TSchG). Neither the Federal Ministry, nor the Provincial Authorities appear to maintain a zoo list or database. However, all claim that all the zoos are licensed (Standard Member State Questionnaire). The Austrian Zoo Database (www.at.zoo-infos.org), which lists 78 zoos, was the only zoo list identified but this website does not appear to be hosted by any specific authority. The actual number of zoos in Austria remains unknown. During the investigation, one zoo (as defined), the Vivarium in the Natural History Museum in Vienna, was identified as meeting the definition, but this zoo is not included in the Austrian Zoo Database. It therefore seems feasible that **other zoological collections in Austria may have also fallen through the legislative net and be fully operational, but unlicensed.**

It is possible for the Competent Authority to exempt an establishment from the requirements of R491/2004 (but TSchG still applies), particularly when there is a facility that does *'not exhibit a significant number of animals or species', or where the species exhibited are not of 'conservation-significance'* (Article 1 of R491/2004). However, both of these exemption criteria appear to be open to the interpretation and discretion of the Competent Authority as no further explanation or guidance is provided to specify species/animal numbers or to define the *'conservation significance'* of a species. Failure to provide clarification in this regard not only causes ambiguity, but it also potentially undermines the objectives of the Directive leading to zoos (as defined) not being properly licensed and regulated under R491/2004 (Article 4 of the Directive).

Once an establishment has been correctly identified as a zoo, Austria has developed a novel approach towards their regulation and their compliance with specified legal requirements, by classifying zoos in *Category A, B* or *C*: dependent upon the numbers of species and animals kept. This aims to ensure that all zoos (as defined) meet the minimum requirements as specified by the Directive (transposed into Article 2 of R491/2004). Then, dependent upon the size of the zoo and its range of activities (actual or potential), additional requirements apply. Zoos in *Category A* (Article 4, R491/2004), which are larger collections of wild animal species from all vertebrate taxa, are expected to partake in all conservation requirements (Article 2(1)5, R491/2004), whilst *Category B* and C zoos (Articles 6 and 7, R491/2004) are expected to partake in <u>at least one</u> of these specified conservation

requirements. Larger zoos, with a more diverse collection of species, should be expected to contribute more to species conservation and public education than smaller, specialised zoos (Zoos Forum Handbook).

Despite the concerns raised about the accurate identification of 'zoos' and the use and interpretation of the exemption criteria, licensed and effectively-regulated Austrian zoos should be able to meet their obligations under R491/2004 and TSchG. However, results indicate that **without additional explanation and guidance to harmonise knowledge and understanding amongst the District Administration Authorities, there are likely to be inconsistencies in interpretation and application. Additionally, a comprehensive national zoo database should be created to maintains records of all licensed zoos.**

2. Ineffective enforcement

By April 2005, all zoos in Austria were required to be licensed and meet the specifications of the Directive, through TSchG and R491/2004. At the time of the investigation (June 2009), the nine District Administrative Authorities in Austria appeared to have identified a total of 78 zoos. According to the authorities, all have been licensed. However one zoo (included in the assessment), the Vivarium at the Natural History Museum, appeared to be unlicensed and there is little to suggest this is the only unlicensed zoo. It is possible that this situation has arisen **as a result of a failure by the Competent Authority to correctly identify the establishment as a 'zoo'.** According to Article 26 of R491/2004, zoos (as defined) are required to have an operational licence (Article 23 of R491/2004).

At the time of the investigation, none of the zoos assessed appeared to fully comply with requirements of either the Zoo Regulation (R491/2004) or the Animal Protection Act (TSchG). Identified problems include failure to: demonstrate a commitment to conserve biodiversity and meet the criteria for *Category A* zoos; provide sufficient information about all the species exhibited and; keep animals in an appropriate manner. Taking into account all requirements specified for *Category A* zoos (Article 4, R491/2004), **conditions in all of the selected Austrian zoos remain substandard.**

The results highlight an inconsistency in compliance with the requirements of R491/2004 and TSchG, particularly concerning the interpretation of requirements and the quality of zoo inspection. Whilst it is acknowledged that some zoos in Austria may well meet the legal requirements and perhaps, maintain higher standards (Hochwarter, 2009), it appears that the knowledge and efficiency of the enforcement personnel between Provinces may vary. Of the five zoos selected for this investigation, Wild & Erlebnispark Enghagen and Tiergarten & Reiterhoff Walding are regulated by the Administrative Authorities of Upper Austria (Oberösterreich), Tierpark Stadt Haag by Lower Austria (Niederösterreich) and Haus des Meeres – Aqua Terra Zoo and Naturhistorisches Museum Wien by the District Administrative Authorities in Vienna (Wien).

Zoos should be inspected at least every 12 months by the District Administration Authority, which is expected to revoke the licence if the legal requirements are not met by the zoo (Articles 20 and 23 of TSchG) (Standard Member State Questionnaire). This investigation has identified non-compliance in all the zoos selected. Deficiencies include: minimal conservation measures; the absence of, or presence of incomplete, species information signage; and cases of low standards of animal welfare. **Further training in the effective inspection of zoos, identification of poor welfare and the care of wild animals should be considered. This should be in addition to the development of national guidance for zoos which will encourage consistency in application of, and compliance with, the law.**

3. Prevention of animal escapes

There are two recognised barriers that prevent the escape of a 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.

Austrian law warns of the possible ecological threats animals that have escaped from a zoo, could pose to indigenous species (Article 2(1)7, R491/2004). The DAISIE website identifies biological invasions by Invasive Alien Species (IAS) as one of the greatest threats to the ecological and economic well-being of the planet. Free-roaming DAISIE-listed species were observed in three of the five selected zoos and whilst all establishments appeared to have a secure perimeter fence, the apparently escaped Barbary macaque at Wild & Erlebnispark Enghagen and the domestic rabbits at Tierpark Stadt Haag warrant concern. In particular, the domestic rabbit population at Tierpark Stadt Haag appeared to be out of control and individuals were observed in all areas

including numerous animal enclosures. Concerns over disease transmission and the possibility of the introduction of a non-native species to the surrounding natural habitat are therefore justified.

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). **It has long been recognised that zoos pose a significant risk of presenting pathways for the introduction of alien species:** from the invasion of the ruddy duck (*Oxyura jamaicensis*) into Europe, which now threatens the indigenous white-headed duck (DAISIE website) to, more recently, an investigation of 63 zoos in Spain (2010), which found that 75% had enclosures that were 'non-secure'. In the Spanish investigation, 80% of these enclosures housed non-indigenous species, including 21 species listed by the European Inventory of IAS (Fábregas *et al.*, 2010). In August 2010, a kangaroo escaped from another zoo in Austria (Austrian Independent, 2011), and there are many more examples where wild animals have escaped from zoos into the natural environment (BBC, 2009a; Piller, 2007; BBC, 2009b).

4. Public placed at risk of injury and illness

Although none of the zoos actively encouraged members of the public to have direct contact with the animals, frequently poor design, the lack of stand-off barriers, free-roaming animals and minimal zoo staff, allowed direct and unsupervised or unplanned contact to take place which, in some cases, placed the public at significant risk. In two of the five zoos, the public were observed feeding the wild animals. The public could easily come into direct contact with potentially dangerous wild animals, which included enclosures exhibiting Category 1 'Greater Risk' and Category 2 'Less Risk' Hazardous Animals (SMZP), as well as species known to carry *zoonoses*. The apparent attraction for some zoos to permit their visitors to openly feed or have 'close encounters' with wild animals, may, in fact, be placing the public at risk. Notably, zoos do not appear to be providing appropriate warnings to the public concerning potential risks.

Of specific concern is the lone, male Barbary macaque, observed free-roaming at Wild & Erlebnispark Enghagen. This animal could potentially cause serious injury. At the time of going to press, a boy was bitten by a Barbary macaque at another zoo in Austria. A spokesperson from the local hospital stated that this was the third time such an incident had happened at that particular zoo and, in his opinion, no preventative measures had been taken (Austrian Independent, 2011).

Neither TSchG, nor R491/2004 provides any reference to the health and safety of the public, possible risks, or requires the implementation of preventative measures to protect the visiting public in zoos.

Austrian zoos do not appear to be taking sufficient preventative measures to protect the public. Zoos need to take a greater responsibility for the health and welfare of their animals and the safety of the visiting public. The need for warning signs, deployment of effective stand-off barriers and for zoo staff to actively discourage animal contact is evident.

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 CBD (1992). All zoos in Austria are required to contribute to this goal by complying with at least one of the options below. *Category A* zoos have to comply with all of the following options:

- *'Research from which conservation benefits accrue to the species*
- *Training in relevant conservation skills*
- *The exchange of information relating to species conservation*
- *Where appropriate, captive breeding, repopulation or reintroduction of species into the wild'*

(Article 2(1)5, R491/2004 and Article 3 of the Directive)

As with the majority of Member States, no further guidance is available to zoo inspectors or operators that would advise zoos on how to effectively conserve biodiversity and protect threatened species (Standard Member State Questionnaire). The options above are vague and interpretation may be broad but further requirements in R491/2004 stipulate that zoos keep animals under conditions that meet their 'conservation requirements' (Articles 1 and 2(1)3) and contribute to public awareness about species conservation (Articles 2(1)6).

Species conservation, captive breeding, repopulation or reintroduction
The results of this investigation demonstrate that conservation of biodiversity, particularly threatened species, is not a significant priority in Austrian zoos. The majority of species exhibited are either of *Least Concern* (species of low conservation importance) or are *Not Listed* by the IUCN Red List of Threatened Species™. Threatened species (*Vulnerable, Endangered* and *Critically Endangered*) constituted only 8% of the total number of species observed in the five zoos. Mammal, fish and bird taxa predominated the overall species kept by the selected zoos, whilst Threatened amphibian species were under-represented (8% of all Threatened species) despite the fact that Threatened amphibians vastly outnumber other Threatened mammalian taxa (IUCN Red List of Threatened Species™ website). Moreover, only 2% of the species kept at all the zoos are listed on the register of EEPs or ESBs and little information could be found as to whether the zoos were actually participating in national or international captive breeding programmes (as required of *Category A* zoos). Notably, the one Member of the OZO included in this investigation (Haus des Meeres), only kept two EEP or ESB registered species (out of a total of 265 species and reportedly 6000 individual animals (OZO website)), and only one of these appeared to be participating in the captive-breeding programme, although no information was available on the programme.

Tiergarten & Reiterhoff Walding kept two individual female Asian elephants (*Elephas maximus*). This is a Critically Endangered species (IUCN Red List of Threatened Species™ website), but there was no indication at the zoo or on their website that either of these individual animals were involved in the European captive-breeding programme. Recent research has shown that female elephants (of both species) held in European zoos demonstrate low fecundity compared to *in situ* populations and that there is a population decline of approximately 10% per annum as a result of negligible breeding success (Clubb R. *et al*, 2009).

These Category A zoos do not appear to be meeting their obligations to *'captive breeding, repopulation or reintroduction of species into the wild'* as specified by Articles 2(1)5 and 4, R491/2004. Furthermore, their apparently limited commitment to 'preserve' Threatened species raises further questions about their capacity and commitment to *'exchange (..) information relating to species conservation'.*

Participation in scientific research
Austrian zoos do appear to participate in research activities (as specified by Article 2(1)5, R491/2004). Three of the five zoos were found to be taking part in research. However, only the *in situ* jackdaw bird box project by Tierpark Stadt Haag appeared to have a measurable impact on the conservation of a species (Article 2(1)5, R491/2004). Haus des Meeres – Aqua Terra Zoo, whilst appearing to offer substantial opportunities for marine research, did not provide information on how this benefits the conservation of the species involved.

According to Rees (2005), most current zoo research is concerned with [captive animal] behaviour, environmental enrichment, nutrition and reproduction, and is therefore largely irrelevant to conservation. Field-based studies are likely to be more relevant to conservation than zoo studies and, according to Rees, a good deal of zoo research is unsuitable for publication in academic journals. These considerations call into question the significance of zoo research.

To date, no independent quality assurance assessment has been undertaken to identify whether European zoos can effectively deliver on their conservation objectives and evaluate their role in the conservation of biodiversity. Overall, **the results demonstrate that these Austrian zoos are making an insignificant contribution to the conservation of biodiversity.**

6. Limited educational value
In addition to a commitment to the conservation of biodiversity, zoos in the EU must promote education of the public, particularly about the conservation of biodiversity. The Austrian law TSchG recognises the need for the public, especially young people, to appreciate the importance of animal welfare in the keeping of animals (Article 2). Furthermore in R491/2004, zoos are required to promote the significance of species conservation as well as inform the public about the species exhibited by the zoo (Article 2(1)6).

The results of this investigation demonstrate that whilst the majority of the zoos offer educational activities for pre-organised school groups, the educational value for the general public was minimal. Overall, almost half the signage for *species holdings* was absent and, of those present, the majority did not contain all the best practice criteria (SMZP), with **80% failing to include information about the conservation status of the species.**

Concerning the exhibits, only Haus des Meeres – Aqua Terra Zoo appeared to house their animals in specific geographical or temperate zones within the zoo, although in some instances the mixed exhibits did appear to have species from various continents. The other assessed zoos did not appear to take into account the possible educational value of displaying their animals in exhibits that reflected the natural habitats of the species concerned. In fact, many did not contain appropriate furniture, substrate or vegetation to encourage natural behaviours which not only failed to deliver from an educational perspective but may well have contributed to compromised animal welfare (Article 13, TSchG).

To date, no independent quality assurance assessment has been undertaken to identify whether European zoos can effectively deliver appropriate educational objectives and justify their role in the educating the public about the conservation of biodiversity.

In the opinion of the authors, the Austrian zoos did not appear to deliver activities or information that could be described as being of educational value to the general public. None of the zoos assessed informed the public about the need to conserve biodiversity.

7. Animal husbandry and care

Incorporated into the Federal Animal Protection Act TSchG, the Zoo Regulation (Article 26, TSchG (R491/2004)) promotes and specifies principals in animal welfare (Article 13, TSchG); the importance of qualified or experienced zoo staff (Article 14, TSchG); appropriate veterinary care (Article 15, TSchG); freedom of movement (Article 16, TSchG); provision of suitable environment enrichment (Article 18, TSchG) and; species-specific minimum standards for animal keeping (Article 2(1)1, R491/2004). These are all compatible with the minimum requirements of the Directive, but place a lot more emphasis on the importance of maintaining high standards of animal welfare (taking into account species-specific needs) in all circumstances where animals are kept and managed by humans. It is therefore reasonable to expect zoos in Austria to have higher standards of animal care than perhaps other EU countries that do not place such emphasis on animal welfare.

However, the results appear to provide a different impression and, although the assessed sample is a small percentage of Austrian zoos, **standards in animal welfare and husbandry in many enclosures in the majority of the selected zoos were poor.** The analysis identified the following:

- many species were kept in small enclosures that did not attempt to meet their spatial needs;
- little consideration appeared to have been given to the essential biological and behavioural needs of the animals;
- many of the enclosures were devoid of appropriate furniture, apparatus and materials to allow the species to exercise, rest and express natural behaviour;
- enclosure design that may encourage public contact with animals, access by the public (authorised and unauthorised) into some of the enclosures, and the lack of identified privacy areas, could cause the animals distress and;
- some enclosures lacked clean, fresh water.

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 an 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.

Articles 13(2) and 18, TSchG recognise these basic needs and specify that the enclosures should take into account the spatial, physical, physiological and behavioural needs of the species. In addition, the Livestock Regulations No.1 (485/2004) and No.2 (486/2004) specify species-specific requirements. However, results from the assessed zoos indicate that these legal requirements are not always considered by the zoos and further suggest that substandard conditions may be overlooked or not identified during zoo inspections. Of the randomly selected enclosures within the five zoos, 29% did not meet the standards required by the Livestock Regulations No.1 (485/2004) and No.2 (486/2004).

Far-ranging species (felines, bears and elephants), for example, were often kept in restrictive enclosures that compromised their full repertoire of locomotive behaviour, whilst some bird species lacked sufficient horizontal and vertical space to allow for flight. The elephants at Tiergarten & Reiterhoff Walding deserve particular

mention. The two female Asian elephants were exhibited in enclosures that did not appear to meet the requirements in the Livestock Regulation No.2 (486/2004). The outside enclosures did not have the required mud bath, the animals were kept in separate enclosures (and not in a herd) and the indoor enclosures were smaller than the minimum requirement of 300m^2. Both individuals displayed stereotypic behaviour including head-bobbing and swaying. Abnormal behaviour often arises as a consequence of an impoverished environment.

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) and without it animals are likely to develop abnormal repetitive behaviours, recognised as indicators of poor animal welfare (Mason and 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 15
Tiergarten & Reiterhoff Walding.
Both Asian elephants (*Elephas maximus*) were observed displaying neurotic, repetitive behaviour. Stereotypic behaviour is commonly observed in elephants in zoos but has not been documented in the wild. In a study of 77 elephants in UK zoos, 42 (54%) showed stereotypies during the day-time (Harris *et al.* 2008).

The assessment of the five zoos identified limited environmental enrichment in enclosures. Enrichment usually involves apparatus, furniture and 'toys' that are incorporated into the enclosure to encourage and provide opportunity for the animal(s) to exhibit natural behaviour. For social species, effective enrichment is often provided by keeping the animals in a group of similar composition to those found in the wild. This was not the case for the Asian elephants (*Elephas maximus*) at Tiergarten & Reiterhoff Walding, as well as the coati (*Nasua nasua*), Magellanic penguin (*Spheniscus magellanicus*) and capybara (*Hydrochoerus hydrochaeris*) at Wild & Erlebnispark Enghagen. All of these species were observed as being exhibited alone and not in pairs or groups as specified by Livestock Regulation No.2 (486/2004).

Environment enrichment within an enclosure also provides opportunities for the animal(s) to rest, seek refuge from aggressive cage companions, or privacy from public view. Failure to fully provide each of these basic husbandry requirements were identified during this assessment, all of which are possible causes of compromised animal welfare.

As a matter for immediate attention, Competent Authorities throughout Austria must seek to ensure all zoos in their Province meet the required principals of animal welfare through the regular inspection of zoos by competent officials and veterinarians. Compliance with these requirements should never be the sole responsibility of the zoo. While larger, well-resourced zoos might be well-placed to achieve the higher standards in animal care, this is clearly not the case for all zoos in Austria. Regular training of enforcement personnel and the Provincial Animal Welfare Ombudsman is necessary in order to ensure consistency in application of standards and improved compliance.

Overall, the selected Austrian zoos are failing to provide all their animals with suitable living environments that provide the animal with their biological needs, including the opportunity to express natural behaviours. The need to provide further training of the Competent Authorities to identify substandard living conditions and poor welfare, and furthermore, provide knowledge and guidance to ensure improvements is evident and vital.

In summary

The assessed Austrian zoos appear to be:

- **failing to participate in or make a significant contribution to the conservation of biodiversity**
- **failing to make a significant contribution to *ex situ* conservation**
- **failing to deliver any activity or information of significant educational value to the general public**
- **failing to take preventative measures to sufficiently protect the public from potential injury and the transmission of disease**
- **failing to provide all their animals with a suitable environment.**
- **failing to meet all requirements as specified by the Animal Protection Act TSchG.**

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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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