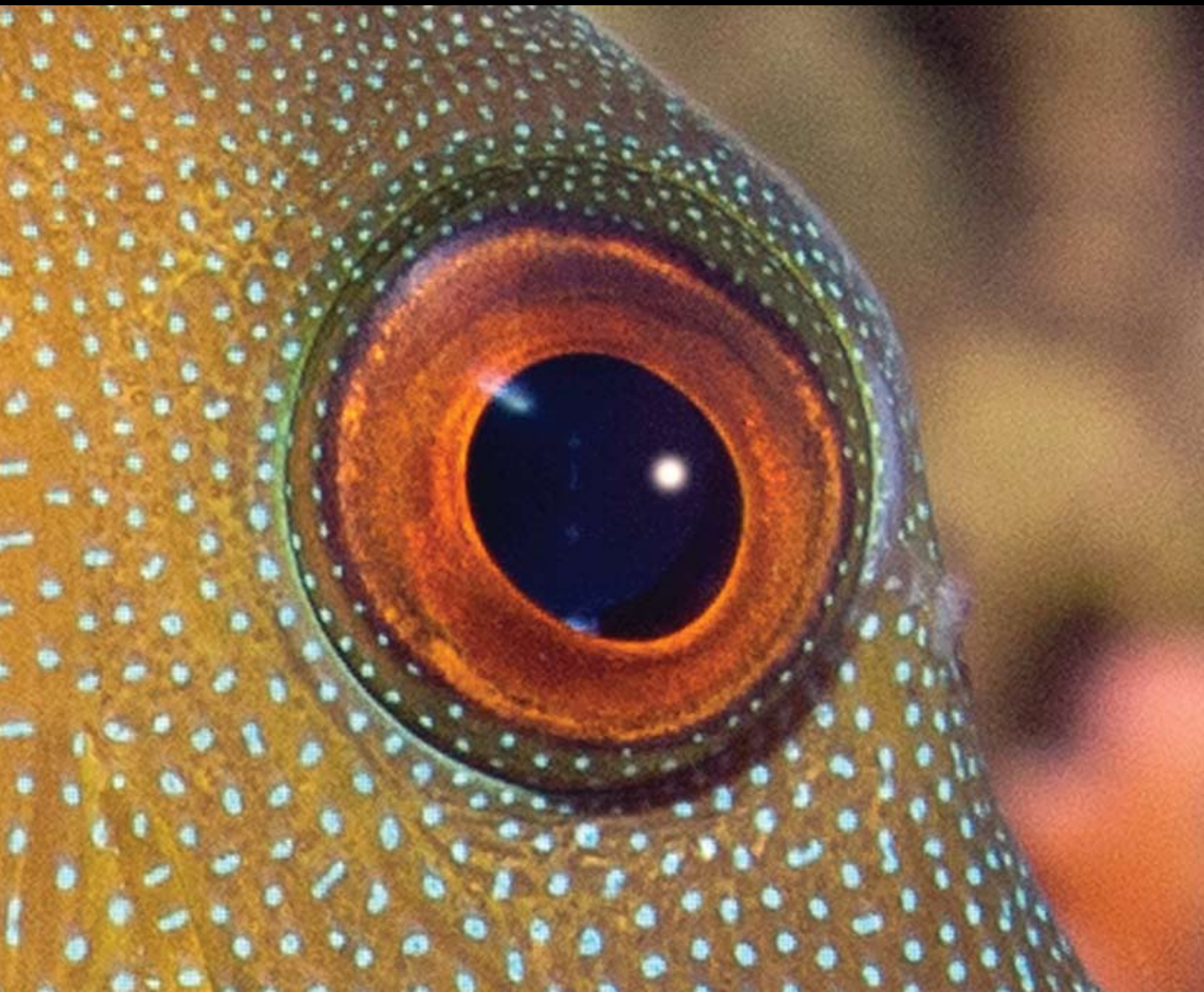
# THE EU ZOO INQUIRY 2011

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

## SLOVENIA

Written for the European coalition ENDCAP by the Born Free Foundation



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Country Report **SLOVENIA**

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Title page photographs taken at Zoo Ljubljana,
Maribor Aquarium-Terrarium and Zoo Park Rožman

## ABBREVIATIONS USED

APA ..... Slovenian Animal Protection Act (Official Gazette No.98/1999, 18/11/1999)
APOS ..... Animal Protection Ordinance of Switzerland, Tierschutzverordnung 2008
CBD ..... Convention on Biodiversity (1992)
D37/2003 ..... Decree on zoos and similar facilities, (Ur. I. RS, No.37/2003)
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
NCA ..... Nature Conservation Act, (06/1999) (Ur. I. RS, No56/1999)
NGO ..... Non-Governmental Organisation
O11/2001 ..... Order on living conditions and care of wild animals in captivity (Official Gazette No.90/2001, 15/11/2001)
OIE ..... World Organisation for Animal Health
SMZP ..... Standards of Modern Zoo Practice, DEFRA, UK, 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 Slovenia.
**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

Three zoos in Slovenia 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 269 species (including subspecies where appropriate) and 335 *species holdings* were observed in 195 enclosures in the three 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 Nature Conservation Act (06/1999) (Ur. I. RS, No56/1999) ('NCA'), the Decree on zoos and similar facilities (Ur. I. RS, No.37/2003) ('D37/2003') and the Order on living conditions and care of wild animals in captivity (Official Gazette No.90/2001, 15/11/2001) ('O11/2001'), taking into consideration the Animal Protection Act (1999). Key findings were:

- **The Directive has been accurately transposed into the Nature Conservation Act (06/1999) ('NCA') and applied through the Decree to zoos and similar facilities ('D37/2003').** The purpose of the NCA is to ensure that the State, local communities and other public entities contribute to the conservation of biodiversity and the protection of the natural environment through various initiatives and public education (Article 1, NCA). Zoological collections are expected to keep their animals in appropriate conditions, compliant with O11/2001.
- **The Ministry of Environment and Spatial Planning is the Competent Authority for the implementation of the Directive, the NCA and the D37/2003**, whilst zoos are licensed by the Environmental Agency of the Republic of Slovenia. At the time of the investigation (2009) there were two zoos and four '*facilities similar to a zoo*', while in 2011 there are now four zoos and seven '*facilities similar to a zoo*' in Slovenia.
- **Zoological collections are categorised and licensed as either '*zoos*' or '*facilities similar to a zoo*'.** Criteria are based upon the number of species kept, rather than the conservation status of the species. **'*Facilities similar to a zoo*' are not required to undertake scientific activities required by Article 4(1)1 of D37/2003 and consistent with Article 3(1) of the Directive.**
- **The keeping of cetaceans in captivity for 'commercial use' is banned.** There are no dolphinariums in Slovenia.
- **The results of this assessment highlight inconsistencies in the interpretation and application of NCA and D37/2003**. In particular, Zoo Park Rožman appears to have been incorrectly categorised as a 'facility similar to a zoo', when based on an analysis of the species on exhibit, it should more correctly be licensed as a 'zoo'.
- **Findings identified significant variability in zoo activities and compliance, with 2 out of 3 zoos not meeting any of the requirements of NCA, D37/2003 and O11/2001.** The EAZA Member zoo complied with the majority of requirements.
- **The findings call into question the quality, regularity, criteria and procedures relating to the zoo inspection.** Many animals remain in substandard conditions, a number of zoo operations fail to meet the legal requirements and penalties for non-compliance (under the NCA and D37/2003) are not being applied.
- **Despite the specific requirement for zoos in Slovenia to contribute to species conservation, through *ex situ* conservation and species reintroduction, in the main, zoos in Slovenia do not appear to be making a significant contribution to species conservation.** The majority of species exhibited by the three selected zoos (93%) are of low conservation priority.

- **Species' information was not available for one third of the exhibited species holdings across the three zoos and, despite a varied public education programme undertaken by the EAZA Member zoo, concerns exist about the value of the sea lion show and animal handling sessions.**
- **All assessed zoos were not taking appropriate measures to prevent the escape of non-indigenous animals into the natural environment, which may pose a threat to both local wildlife and the human population.**
- All of the zoos assessed encourage the public to have direct contact with animals, whilst poor enclosure design allows the public to have unsupervised contact. **Human/animal contact, supervised or unsupervised, could pose a serious risk to the health and welfare of the public and the animals involved.**
- **Poor levels of hygiene were observed in some of the zoos.** This not only poses a risk to the health of the animals due to the potential build-up of harmful pathogens, but also to public health.
- **On average, 77% of the evaluated enclosures failed to meet all the minimum requirements in the Annex I to 011/2003**. The zoos involved appear to have given little consideration to the essential biological, spatial and behavioural needs of the animals.

## RECOMMENDATIONS

***The Ministry of Environment and Spatial Planning should take the necessary measures to:***

1) Review the zoological collection categorisation criteria (Article 2 of D37/2003) and the exemption criteria (Article 1(2) of D37/2003) to ensure that definitions and requirements are accurately interpreted and explained to ensure zoological collections are accurately and correctly categorised.
2) Consider including a default requirement that when a collection includes one or more Annex II (O11/2001) listed species, the collection must automatically be licensed as a zoo and therefore be required to take part in scientific and conservation activities (as specified by Article 4(1)1, D37/2003).
3) Consider increasing the requirements applicable to zoos in relation to their commitments to scientific and conservation activities. This would help ensure that zoos in Slovenia dedicate more effort and resources to species conservation, the objective of the Directive.
4) Ensure, through effective enforcement, that all zoos (*as defined by D37/2003*) abide by the requirements of national zoo law and the minimum standards contained in the Annex to O11/2001, and that all existing available penalties (Article 101, NCA; Articles 11 and 12, D37/2003) are applied to zoos that fail to meet their legal obligations.
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) Ensure that appropriate measures are taken by zoos to stop the escape of animals into the natural environment and that national and regional enforcement personnel understand, and take action to prevent, the impacts that Invasive Alien Species (IAS) may have on the natural environment and any associated risks to public health and safety.
7) Review the species-specific minimum standards relating to the keeping of animals in captivity to ensure that they reflect reliable and scientifically-validated best-practice standards in animal husbandry, including providing guidance and examples of environmental enrichment and environmental complexity, which encourage natural behaviour. The revision of the standards should be undertaken by an independent, scientific body.
8) Ensure that all zoo employees with responsibility for animals have the necessary training and experience in animal care and husbandry.
9) Prohibit all public contact with 'Hazardous Animals' (e.g. SMZP) 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.
10) Ensure zoos keep and conserve predominantly nationally protected and European Threatened species rather than non-European species. All Threatened species, particularly European species kept by zoos, should be included in national and international cooperative Species Management Programmes.
11) Publish guidance, as necessary, to assist zoos, enforcement personnel, veterinarians, NGOs and other stakeholders to effectively and consistently interpret the requirements of NCA, D37/2003 and O11/2001, specifically with regard to their participation in, and their application of, recognised peer-reviewed conservation and education programmes.
12) Encourage all zoos in Slovenia to join EAZA. Through effective enforcement and guidance, assist all zoos in Slovenia to meet their legal obligations and the criteria necessary to become an accredited member of this international zoo association.

# 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
- Review of national zoo legislation

### Status and performance of zoos

Using the definition of a zoo set out in the Directive*, a variety of zoological collections was assessed including: traditional zoos, safari parks, aquaria, dolphinariums, aviaries and terraria. In some EU countries, 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, dependent 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 UK 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.

*'*... 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)

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 focusing on zoo regulation in **Spain** will be published in 2011.

# SLOVENIA

Country Report

## INTRODUCTION

Slovenia became a Member of the European Union (EU) in May 2004. By April 2005, Slovenia, along with 24 other EU Member States, was required to have transposed and implemented the requirements of European Council Directive 1999/22/EC into its national law. The Directive has been transposed into national legislation by means of the Nature Conservation Act (06/1999) (Ur. I. RS, No56/1999) (last amended 22/04/2004) ('NCA'), and specifically, the Decree on zoos and similar facilities (Ur. I. RS, No.37/2003) ('D37/2003') (Ministry of Environment and Spatial Planning, pers. comm., 17/12/2009). According to the European Commission, Slovenia achieved transposition of the Directive by the required deadline in 2004.

Responsibility for the implementation of zoo legislation in Slovenia, and zoo regulation, falls to the Ministry of Environment and Spatial Planning. Zoos are licensed through the Environmental Agency of the Republic of Slovenia, upon approval by the Ministry of Environment and Spatial Planning (Article 20, NCA), whilst zoo inspection is undertaken by inspectors from both the Ministry of Environment and Spatial Planning and the Ministry of Agriculture, Forestry and Food (Standard Member State Questionnaire).

As part of this investigation, the Competent Authority was asked to complete a Standard Member State Questionnaire. Information contained within the response received from the Ministry of Environment and Spatial Planning (Standard Member State Questionnaire, pers. comm., 17/12/2009), has been included throughout this report.

The NCA is national legislation which describes measures to conserve biodiversity and protect natural habitats through the issuing of guidelines and permits; monitoring; a national programme for nature protection; and through the establishment of the Nature Protection Institute. Its purpose is to ensure that the State, local communities and other public entities contribute to the conservation of biodiversity and the protection of the natural environment through policies, strategies and plans, whilst educating the public as to the importance of such an objective (Article 1, NCA). Article 19 concerns the keeping of indigenous and non-indigenous animals in captivity, specifically the Order '*on living conditions and care of wild animals in captivity*' applies (Official Gazette No.90/2001, 15/11/2001) ('O11/2001'). Article 20 specifies that a permit should be obtained from the Ministry. Articles 21 and 22 refer to specifications for animal breeding and the animal breeder. Article 24 requires the Government to prescribe Regulation specific to the keeping of animals in captivity.

Requirements applicable to the licensing and operation of zoos and similar facilities are specified by Decree 37/2003. The Decree lays down rules for '*the keeping of animals of wild native and non-native species in captivity for exhibition to the public in a facility designed for that purpose*' and differentiates 'zoos' from 'similar facilities' by the number of specimens and the kind of species kept by the facility. Despite this differentiation, both types of facility require a licence, which has to be obtained through application to the Ministry of Environment and Spatial Planning. A facility requiring a 'zoo' licence must provide details as specified in Article 5(2), points 1 to 10, which include: the number of specimens and the kind of species of animals to be exhibited and a certificate of origin of the animals; details of the competency of the persons taking care of the animals; a plan of the facility, indicating the size of the enclosures; details of the programme for preventative and curative veterinary care and nutrition; the proposed plan for the promotion of public education; credentials of the onsite or contracted veterinarian; and details of the proposed programme in scientific research. A facility requiring a licence for '*the exhibition of animals in a facility similar to a zoo*' must provide the same details (as specified Article 5(2)), excluding the proposed programme in scientific research (Article 7(2), D37/2003). A licence for the exhibition of animals in a '*zoo*' is issued for a period not exceeding ten years, details of which are included on the licence (Articles 3(2) and 8(1), D37/2003), whilst a licence for the exhibition of animals in a 'facility similar to a zoo' is issued for a period not exceeding five years (Article 8(2), D37/2003). Licensed zoos and similar facilities are required to be registered on a database maintained by the Competent Authority (Article 9, D37/2003) (Standard Member State Questionnaire).

Once licensed, annual inspections are reportedly carried out by Government-appointed inspectors from the authorities responsible for nature conservation (Ministry of Environment and Spatial Planning) and the veterinary services (Ministry of Agriculture, Forestry and Food), in accordance with specifications set out in the General Administrative Procedure Act ((APA-OCT1) OG RS, No.22/2005) (Article 10, D37/2003) (Standard Member State Questionnaire). Should the inspected facility not have a valid licence, or should conditions not be in accordance with the terms of an existing licence and D37/2003, the inspector can order the closure of the facility, or parts thereof, or stipulate a time limit (not exceeding two years) for the facility to meet its obligations (Article 11, D37/2003). Should the facility not meet its obligations in the allotted time period, the Ministry of Environment and Spatial Planning shall withdraw the licence (Article 12, D37/2003).

According to the Ministry of Environment and Spatial Planning, at the time of the investigation there were a total of two '*zoos*' and four '*facilities similar to a zoo*' in Slovenia (National Zoo Register, 2009) (Standard Member State Questionnaire). However, numbers have since increased to four '*zoos*' and seven '*facilities similar to a zoo*' (National Zoo Register, 2011) (Ministry of Environment and Spatial Planning, pers. comm., 14/10/2011). At the time of correspondence (Standard Member State Questionnaire, pers. comm., 17/12/2009), all but Ljubljana Zoo were privately-owned.

### Zoo licensing requirements

As indicated above, in Slovenia there are two different types of facility, which would both meet the definition of a zoo under Article 2 of the Directive.

A 'zoo' is defined as an establishment where '*animals are kept for exhibition to the public for at least 7 days a year and include at least the following number of wild animal species (hereinafter referred to as "species")*:

> *1. six species of large mammals or twenty other mammal species,*
> *2. six species of owls or birds of prey or twenty other bird species,*
> *3. ten species of amphibians or reptiles,*
> *4. twenty species of fish, cephalopods or higher crustaceans (Malacostraca),*
> *5. a hundred species of butterflies, or*
> *6. a hundred species of other invertebrates.'*

(Article 2(2), D37/2003)

Whereas a '*facility similar to a zoo*' is an establishment where *'animals are kept for the purpose of exhibiting them to the public or attracting attention and visitors, and where the number of animal species is smaller*' than the above criteria. No time period of display is specified (Article 2(3), D37/2003).

Exemptions to the above definitions, and therefore not considered to be animals kept in captivity for the exhibition to the public, include animals used: '*during public gatherings; for breeding; as room décor, including decorative aquariums and terrariums; or in pet shops*' (Article 1(2), D37/2003). These exemptions largely differ from those of the Directive, with the exception of 'pet shops'. For example, 'circuses' have been omitted (Article 2 of the Directive).

Captive cetaceans (whales and dolphins) are regulated through D37/2003. However, in the Decree '*on the management and protection of trade in fauna and flora*' (Ur. I. RS, No.39/2008), enacted through Article 24 of NCA, it states that it is prohibited to use cetacean species for 'commercial purposes'. This reportedly includes use in commercial dolphinariums and therapeutic programmes (Standard Member State Questionnaire). There are currently no facilities with captive cetaceans in Slovenia.

In addition to the requirements of Articles 4 and 6 of D37/2003, which set out the obligations of licensed '*zoos*' and '*facilities similar to a zoo*' (respectively), both types of zoological collection must also comply with the Order '*on living conditions and care of wild animal species in captivity*' (Official Gazette No.90/2001, 15/11/2001) ('O11/2001'), the Animal Protection Act (Official Gazette No.98/1999, 18/11/1999) ('APA') and the NCA. These include the following requirements:

**Conservation**

The objective of the NCA is to conserve biodiversity through the development and implementation of programmes to protect flora and fauna, promote education about conservation and to preserve natural heritage (Article 1, NCA). A duty is imposed on the State, local communities and public entities to contribute to this objective (Article 7, NCA) and emphasis is placed particularly on the need to conserve threatened species (Article 16, NCA) and ensure that those in captivity are provided proper care (Article 19, NCA).

Specific requirements applicable to 'zoos' (Article 2(2), D37/2003) include:

- *'Participation in scientific research, beneficial to:*
    - *the conservation of at least one species,*
    - *training in relevant nature conservation skills,*
    - *the exchange of information about species conservation, or*
    - *captive breeding intended for the repopulation or reintroduction of species into the wild'*

(Article 4(1)1, D37/2003)

These requirements are **not** applicable to '*facilities similar to a zoo*' (Article 2(3), D37/2003), which have been exempted from the above obligations by D37/2003.

- *'Promotes public education and awareness about the conservation of biodiversity...'*

(Article 4(1)2, D37/2003)

This requirement is applicable to both types of zoological collections (Article 2(3), D37/2003). Therefore, all captive animal facilities which meet the definitions of Article 2 must promote and raise awareness about the conservation of biodiversity.

O11/2001, concerning the provision of minimum standards for the keeping of wild animals in captivity, requires that individuals that wish to keep species listed on Annex II of O11/2001, notify the Environmental Agency of the Republic of Slovenia of their acquisition within 30 days. The list in Annex II of O11/2001 is based upon species listed in Appendix I and II of CITES, Appendix II of the Bern Convention and species protected under national legislation (Ministry of Environment and Spatial Planning, pers. comm., 14/10/2011). This only appears to be for authorisation and monitoring purposes and no further requirements appear to be imposed on the owner.

The Competent Authority does not provide guidance, or examples, as to how the above requirements should be implemented and enforced (Standard Member State Questionnaire), neither does there appear to be a process of evaluation to assess the 'success' of efforts undertaken by zoos to meet the above requirements.

**Education**

In addition to the requirement to promote the conservation of biodiversity, Article 4(1)2, D37/2003 also specifies that both '*zoos*' and '*facilities similar to a zoo*' provide '*information about all exhibited species and their natural habitats*'.

The Competent Authority does not provide guidance to assist in the effective interpretation of the above requirements and how practices in zoos can deliver these largely ambiguous objectives (Standard Member State Questionnaire). Furthermore, there does not appear to be a process of evaluation to assess the 'success' of efforts undertaken by zoos to meet the above requirements.

**Animal welfare provisions**

In Slovenia, the health and welfare of vertebrate animals (and invertebrates recognised as having a developed nervous system), that are kept under the control of, or influenced by, humans are protected through the Animal Protection Act (Official Gazette No.98/1999, 18/11/1999) ('APA'). The APA requires all humans to respect animals. It aims to protect

animals against cruelty and repeated suffering, whilst requiring that animals are provided with their most basic of health and welfare needs, including: food; water; shelter; freedom of movement; and a suitable and hygienic environment at all times and at all stages of growth and development (Articles 1 and 7). These provisions are required regardless of circumstances, including in all zoological collections. Specific to animals in captivity, Article 9 of APA states that the animals need to be inspected by responsible persons at least once a day, and that any defects are rectified as soon as possible, employing a veterinarian if necessary (Article 18, APA). Furthermore, it is a prohibited act to keep animals in an unlicensed zoo as well as to release captive-bred animals into the wild that are not prepared for survival in the natural environment (Article 15, APA). Article 38 instructs the Ministry to establish an Expert Council for the Protection of Animals, whose role it is to monitor animal welfare and proposed actions and provide opinion to state authorities on related matters. Article 40 specifically focuses on the minimum provisions for animals in captivity, which includes animals in zoos, enacting the Order '*on living conditions and care of wild animal species in captivity*' (Official Gazette No.90/2001, 15/11/2001) ('O11/2001'), and Article 43 describes the duties of the veterinarian during on-site inspection of such facilities.

The NCA states:

- *"It is prohibited to keep indigenous and non-native animals in captivity in inadequate living conditions and without proper care.'*

(Article 19, NCA)

The two national laws, NCA (Article 19) and APA (Article 40), both refer to the set of minimum standards relating to the keeping of animals in captivity, annexed to O11/2001, which are implemented collaboratively by the Minister of Environment and the Minister of Agriculture, Forestry and Food. Furthermore, the Regulation for zoos, D37/2003 (Article 4(1)), also refers to minimum standards for the keeping of animals in captivity, specifically requiring both '*zoos*' and '*facilities similar to a zoo*' to:

- *'in accordance with the regulations governing minimum requirements for the keeping of animals in captivity, keep all animals in appropriate conditions which reflect the natural habitat of the species and provide a suitable (safe and agreeable) environment for the species.'*

(Article 4(1)3, D37/2003)

- *'maintain a high standard of animal husbandry with a developed programme of preventative and curative veterinary care and nutrition.'*

(Article 4(1)4, D37/2003)

The O11/2001 consists of species-specific minimum standards for animal housing and care which are deemed '*appropriate to confine indigenous and exotic animals in captivity, regardless of the purpose of containment*' (Articles 1 and 2, O11/2001). The standards include specifications relating to minimum enclosure size, appropriate food, social structure and additional furnishings and apparatus for mammals, birds, reptiles and amphibians (Annex I to O11/2001). The standards were reportedly established by referring to scientifically-validated information and opinion from experts in biology and veterinary science (Standard Member State Questionnaire). No minimum standards have been developed for fish or invertebrates.

In addition to species-specific minimum standards, O11/2001also specifies that:

- *'An animal keeper is obliged to provide adequate living conditions and proper care.'*

(Article 3, O11/2001)

Chapter II, Article 4, O11/2001, deems adequate living conditions to have been attained when the animal(s) has been given:

- *'enough space, in relation to physiological, ethological and other biological needs, taking into account the animal(s) age, stage of development and social structure, in accordance with professional experience and scientific knowledge;'* and

- *'adequate light, day / night rhythm, temperature, humidity, ventilation, gas concentration (...) and where the intensity of noise and other distractions have been minimised.'*

(Article 4, O11/2001)

Article 4 also refers to the Annex I of O11/2001, which consists of species-specific requirements to ensure adequate living conditions and care for captive animals of wild species. Furthermore, Article 5 (O11/2001) states that animal care is adequate when:

- *'The animal care takes into account the physiological, ethological and other biological needs;*
- *the animal is controlled so that it is impossible to escape; and*
- *the animals are provided good health care, including:*
    - *Daily supervision and care,*
    - *Hygienic food and water,*
    - *Food is stored, prepared and given to animals under hygienic conditions,*
    - *The housing of animals is regularly cleaned, and*
    - *That cleaners and disinfectants used to clean housing are not toxic.'*

Article 6 of O11/2001 states that violation of the Order, which may result in serious injury, or prolonged or repeated suffering of animals, would be considered an act of animal cruelty.

As specified by Article 3(5) of the Directive, there is a requirement for zoos in Slovenia to maintain a stock list of the animals and numbers of species kept and any identifying marks (e.g. tattoos) or procedures (e.g. tags), their origin and date of acquisition and their destination when transferred, details of the feeding programme and a diary recording all veterinary treatments. This information is reportedly kept by the zoological collection (Article 4(2), D37/2003) (Standard Member State Questionnaire).

### The Zoo Investigation

A total of three zoos in Slovenia were selected. Data was collected at the following zoos during September 2009 (Fig. 1):

- Zoo Park Rožman
- Maribor Aquarium-Terrarium
- Zoo Ljubljana

**Figure 1.** Geographical locations of the three zoos visited in Slovenia.

# RESULTS AND INTERPRETATION
## GENERAL ZOO INFORMATION

### Overview

The investigation evaluated three zoos in Slovenia. Zoo Park Rožman and Maribor Aquarium-Terrarium are privately-owned, whilst Zoo Ljubljana is owned by the Municipality of Ljubljana. All three meet the definition of a '*zoo*', as specified by Article 2(2), D37/2003 (and Article 2 of the Directive), despite the Competent Authority categorising Zoo Park Rožman as a '*facility similar to a zoo*'. Entrance fees for one adult ranged from €4 (Zoo Park Rožman and Maribor Aquarium-Terrarium) to €7 (Zoo Ljubljana).

Of the three zoos evaluated, one is a member of a zoo association. Zoo Ljubljana is a member of the *European Association of Zoos and Aquaria* (EAZA). EAZA has a total membership of 264 zoos in the EU (EAZA website), but represents 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 Ljubljana is also a Member of *World Association of Zoos and Aquaria* (WAZA) and the *International Association of Zoo Educators* (IZE) (Zoo Ljubljana website).

A total of 269 species (including subspecies where appropriate) and 335 *species holdings* were identified in 195 enclosures in the three zoos. A total of 12 *species holdings* could not be identified (see online Methodology).

Despite all three zoos being sent the Standard Zoo Questionnaire, which provides an opportunity for each zoo to describe, amongst other things, its 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, EAZA and information contained on zoo websites.

### Prevention of animal escapes

In Slovenia, all zoological collections are required to:

- *'prevent all animals from escaping in order to avoid potential ecological threats to native species and the prevention of the intrusion of outside pests, pathogens and other harmful effects.'*

(Article 4(1)5, D37/2003)

Furthermore, on application for a zoo licence, the responsible individual (Article 5(2)2, D37/2003) must provide details to the Ministry of Environment and Spatial Planning of proposed measures to prevent animal escapes and the intrusion of outside pests (Article 5(2)7, D37/2003). This indicates that the licence is not granted until the authorities are satisfied that the appropriate measures have been taken. Similar requirements are specified in Article 22(3) of NCA and Article 5 of O11/2001.

Slovenia's zoo legislation recognises the threats that an escaped animal from a zoo, or the intrusion of native animals into a zoo, might impose on the ecological balance of the natural environment and the health of the animals, but observations during the zoo assessment indicate that this is not a significant concern to the enforcement authorities or the zoos themselves. Of the three zoos assessed, two did not have perimeter fencing or a zoo boundary that was capable of preventing either the escape of an animal from the zoo or the intrusion of native wildlife. Only animals at the Maribor Aquarium-Terrarium, which exhibited its animals in glass tanks within a brick building, were securely contained. The boundary of Zoo Park Rožman appeared to be of insufficient height and design to prevent an animal from escaping or entering the zoo grounds, whilst the perimeter fence at Zoo Ljubljana was in a state of disrepair, with large holes observed in several sections. Media reports mention a number of recorded animal escapes at Zoo Ljubljana, which include the escape of kangaroos from their enclosure in 2006 and a species of '*antelope*' that escaped and was found in the City of Ljubljana (MMC RTV Slovenija website, 2006).

**Figure 2**
Zoo Ljubljana.
The perimeter fence surrounding this zoo was in a poor state of repair and did not appear to be of a sufficient height and strength to contain the animals within the zoo.

In addition, it was noted during the visit to the Maribor Aquarium-Terrarium that the pond in front of the zoo doors, within the city park, was overcrowded with common sliders (*Trachemys scripta*). This species is not only a DAISIE-listed Invasive Alien Species (IAS), but it is also a recognised human health risk and known carrier of Salmonella, a zoonotic disease (DAISIE website; Abalem de Sá & Solari., 2001; and Nagano *et al.*, 2006). It is not known if these animals were part of the Maribor Aquarium-Terrarium zoo collection, or who is responsible for the care and welfare of these animals but, with no visible barrier to prevent their escape from the pond into the natural environment, their potential to mix with native wildlife or interact with the public, poses a significant risk.

No free-roaming animals were observed in any of the zoos during the assessment. However, faeces, possibly that of deer, were observed in public areas in the zoo. It is not known whether these are indigenous or non-indigenous species of deer, but with Zoo Ljubljana located within a forested area, and recognising the poor condition of the boundary fencing at the zoo, there may well be a degree of interaction between the animals in the zoo and native wildlife.

### Public placed at risk of injury and disease transmission

No measures to protect the public (and zoo employees) in zoos were identified in either the NCA or the D37/2003. Furthermore, other than the specifications to keep animals in adequate living housings and under proper care (APA; O11/2001), there were no specific legal requirements relating to human contact with animals and any measures required to protect the health and safety of the public and the welfare of the animal in such circumstances.

All three of the zoos encourage the public to have direct contact with animals, which is promoted as an educational experience on the zoos' websites. Zoo Ljubljana, in particular, offers their visitors the opportunity to '*caress some animals*' and the website contains photographs of children feeding and stroking a giraffe, an infant touching a tarantula, a sea lion kissing a child and a young girl cleaning an elephant's foot (Zoo Ljubljana website). Other websites about the zoo also display similar photographs of members of the public holding and touching reptiles, amphibians and birds (e.g., Zlata Leta TV website). People can also feed certain animals, which costs €5 per person for '*adequate food and instructions on how to approach an animal and feed it*' (Zoo Ljubljana website). The zoo promotes these activities as necessary for public education, where '*visitors can understand and respect living things*' and can '*learn all about the animal by touching acquainted external morphological features*' (Zoo Ljubljana website). In an abstract for the IZE Conference (2010), the zoo promotes these activities as necessary for suppressing prejudices to animals, stating 'the touch must be long enough for the person to become aware of their prejudices and how it is not really right to have that prejudice' (Furlan, 2010). In 2001 the zoonotic disease, *Yersiniosis*, was isolated in four dead capybaras at the zoo (Gombac *et al.*, 2008).

Maribor Aquarium-Terrarium also offers a 'petting area for children' but although hand-washing facilities were observed adjacent to the reptile section of the zoo, it is not known what animals are used for such activities (The Worlds Aquarium and Zoos website). Zoo Park Rožman claims to '*enable [the public] to have very direct contact with the animals*' (Zoo Park Rožman guidebook).

In addition, poorly designed enclosures and lack of stand-off barriers allowed for direct contact between the exhibited animals and the public. In some cases this placed the public at significant risk. The public could easily come into direct contact with animals in 25 out of the 85 randomly selected enclosures (Section D and E). This included potentially dangerous Category 1 'Greater Risk' Hazardous Animals, as categorised by SMZP, such as common caiman (*Caiman crocodilus*), male red deer (*Cervus elaphus*), collared pecary (*Pecari tajacu*), European bison (*Bison bonasus*), dromedary camel (*Camel dromedarius*) and European brown bear (Ursus arctos). Signage warning the public of the risks of direct contact with potentially dangerous animals was lacking in all the assessed zoos.

**Figure 3**
Zoo Park Rožman.
In some cases, poorly designed enclosures and a lack of stand-off barriers allowed for physical contact between the public and animals, potentially placing both at risk. Wild boar (*Sus scrofa*) (on the left) is a 'Category 1 Hazardous Animal' (SMZP). However Slovenian law does not prohibit animal contact based on its potential to cause harm.

## 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). Zoos in Slovenia are regulated through the NCA, which is also dedicated to the conservation of biodiversity through the development and implementation of programmes to protect species of flora and fauna, to educate and to preserve natural heritage (Article 1, NCA). Particular emphasis is placed upon the conservation of threatened species and the provision of a suitable captive environment (Article 19, NCA). All 'zoos' (as defined in Article 2(2), D37/2003) must comply with at least one of four options described in Article 4(1)1, D37/2003. However, all '*facilities similar to a zoo*' (as defined by Article 2(3), D37/2003) are exempt from participating in scientific and conservation activities while being obliged to promote public education and awareness about the conservation of biodiversity (Article 4(1)2, D37/2003).

All facilities selected for this investigation meet the definition in Article 2(2), D37/2003 and are therefore recognised as '*zoos*' that must participate in at least one listed option specified by Article 4(1)1, D37/2003. The results indicate, however, that these zoos' overall commitment to the conservation of biodiversity, particularly with regard to the protection of Threatened species, is not such a high priority, although some zoos perform better than others.

## Percentage of Threatened Species

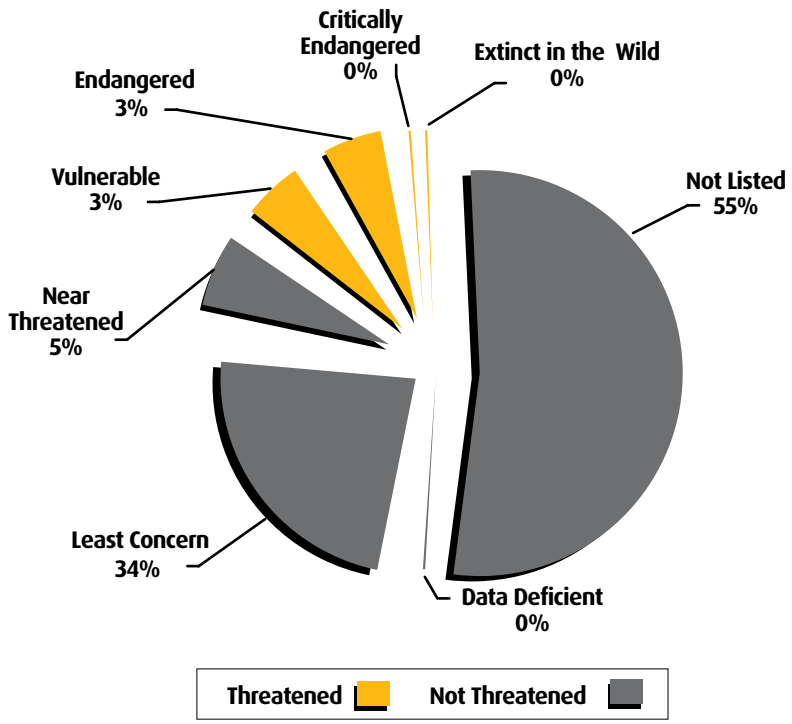


**Figure 4**
Proportion of the 269 species identified (including subspecies where appropriate) in the three Slovenian zoos that are categorised by the IUCN Red List of Threatened Species™ as Threatened and Not Threatened.

## Percentage of Threatened Species and Taxa

| IUCN Red List of Threatened Species™ Categorisation | Taxonomic Group | | | | | | Total No. Species | Proportion of total no. Species (%) |
|---|---|---|---|---|---|---|---|---|
| | Mammals | Birds | Reptiles | Fish | Amphibians | Invertebrates | | |
| Not Listed | 12 | 4 | 31 | 80 | 1 | 17 | 145 | 54% |
| Not Evaluated | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% |
| Data Deficient | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% |
| Least Concern | 24 | 26 | 22 | 16 | 3 | 0 | 91 | 34% |
| Near Threatened | 3 | 4 | 6 | 1 | 0 | 0 | 14 | 5% |
| Vulnerable | 3 | 3 | 1 | 2 | 0 | 0 | 9 | 3% |
| Endangered | 6 | 1 | 1 | 1 | 0 | 0 | 9 | 3% |
| Critically Endangered | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0% |
| Extinct in Wild | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% |
| **Total No. Species** | **48** | **38** | **61** | **101** | **4** | **17** | **269** | **100%** |
| **Proportion of total no. Species (%)** | **18%** | **14%** | **23%** | **38%** | **1%** | **6%** | **100%** | |

**Table 1** Proportion of the 269 species (including subspecies where appropriate) identified in three Slovenian zoos, categorised as Threatened and Not Threatened by the IUCN Red List of Threatened Species™ by taxa.

**The results indicate that 7% of the total number of species (n = 19 species) from the selected zoos can be described as Threatened** (*Vulnerable* (9%), *Endangered* (9%) and *Critically Endangered* (1%)) (Table 1). Of the 19 Threatened species, 47% were mammals, 21% were birds, 21% were fish, 11% were reptiles, and 0% were amphibians and invertebrates. The remaining 93% of the Not Threatened species were either classified as *Least Concern* (34%) or *Near Threatened* (5%) by the IUCN Red List of Threatened Species*TM* categorisation, or *Not Listed* (54%) (Fig. 4). **The majority of species exhibited in the zoos were *Not Listed.*** Of the three zoos, Zoo Ljubljana exhibited the highest proportion of Threatened species (13% of species in the zoo's total observed collection), whilst Maribor Aquarium-Terrarium kept the least (3% of species in the zoo's total observed collection).

**Of the 231 species of mammals, reptiles, amphibians, invertebrates and fish observed at the three zoos, 9% (n=20) are listed on the IUCN European Red List,** which lists species of mammal, reptile, fish, amphibian and invertebrate. This includes the following: 7 mammals (3% of all 269 species), consisting of 6 *Least Concern* and one *Vulnerable* species (*Bison bonasus*); 7 reptiles (3% of all 269 species), consisting of 3 *Least Concern*, 3 *Near Threatened* and 1 *Vulnerable* species (*Testudo graeca*); and 6 fish (2% of 269 species). In addition, a total of 13 birds

(5% of all 269 species) are included on the BirdLife International status assessment for birds in the European Union (BirdLife International, 2004) (recommended for use to assess the conservation status of birds in the EU by IUCN (IUCN, pers comm., 21st July 2011)). Nine of the 13 species are listed as 'Secure' (e.g. *Strix uralensis, Phasianus colchicus*); 1 as 'Depleted', (*Ciconia ciconia*), 2 are 'Rare' (*Ciconia nigra, Pelecanus onocrotalus*); and 1 is 'Declining' (*Tyto alba*).

**Participation in European coordinated captive breeding programmes**

One of the four conservation options available to Slovenian zoos is the participation in captive breeding intended for the repopulation or reintroduction of species into the wild, whilst a further option is to actively conserve at least one species (Article 4(1)1, D37/2003). No further explanation is available to help interpret these largely ambiguous requirements. In addition to identifying the proportion of Threatened species to Non-threatened species exhibited at the zoos, this investigation also recorded the numbers of species listed on the register of the European Endangered Species Breeding Programmes (EEPs) and European Stud Books (ESBs) and confirmed participation of individuals of those species within the recognised European Species Management Programmes. The results indicate a minimal commitment by the selected zoos in *ex situ* conservation.

**Percentage of species in Slovenian zoos that have coordinated captive breeding programmes (EEPs or ESBs)**

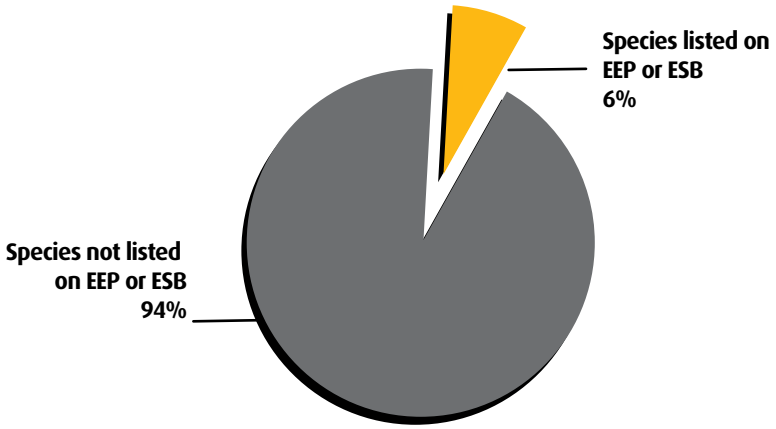


**Figure 5**
The percentage of the 269 species (including subspecies where appropriate) identified in the three Slovenian zoos that are part of an ESB or EEP.

**Only 6% (n = 17) of the 269 species in the zoos are listed on either the register of European Endangered Species Breeding Programmes (EEPs) or European Stud Books** (ESBs) (Fig 5). All three zoos kept at least one species listed on European Species Management Programmes. Zoo Ljubljana kept the highest number of species registered on the EEP/ESB Programmes (15 species), followed by Zoo Park Rožman (2 species), whilst Maribor Aquarium-Terrarium kept only one listed species.

None of the zoos completed and returned the Zoo Questionnaire, which provided each zoo with an opportunity to inform the investigator, amongst other things, about their conservation activities. Instead this information was collected from published materials by the zoos and with reference to the EAZA Yearbook. Zoo Ljubljana, the only EAZA Member zoo of the selected zoos, was confirmed to actively participate in either Species Management Programme. Of the 15 EEP/ESB-listed species (out of a total of 95 species at the zoo), 14 were confirmed to participate in captive breeding programmes during 2007 and 2008 (EAZA Yearbook, 2007-2008). Signage displayed during the zoo visit claims the zoo participates in nine EEPs, including Asian elephant (*Elephas maximus*), and two ESBs. Zoo Ljubljana claims to breed both native and non-native species (Zoo Ljubljana website). It is the European Studbook keeper for the bar-poached wreathed hornbill (*Aceros undulatus*) and Papuan wreathed hornbill *(A. plicatus*) (both species are listed as *Least Concern* by the IUCN Red List) and has recently exchanged cubs of the *Critically Endangered*, Persian leopard (*Panthera pardus ssp. orientalis*) with non-EAZA Member zoo, Zoo Parco Faunistico Valcorba in Italy (MMC RTV Slovenija website, 2011). Neither Zoo Park Rožman, nor Maribor Aquarium-Terrarium were identified as participating in the European Species Management Programmes. However, Maribor Aquarium-Terrarium does claim to breed fish species, but these

appear to be for sale rather than for conservation purposes (School Kamnica, 2010). Furthermore, evidence gathered at Zoo Park Rožman indicates that at least two of the exhibited species, including Indian crested porcupine (*Hystrix indica*) and European bison (*Bison bonasus*), had been acquired from Zoo Ljubljana and Vienna Zoo respectively.

Aside from captive breeding and the exchange of information for conservation purposes, Zoo Ljubljana also undertakes numerous awareness-raising activities and events to raise funds for and promote species conservation. This includes EAZA Campaigns: Amphibian Campaign (2008/2009); Carnivore Campaign (2009/2010); and Ape Campaign (2011) (Zoo Ljubljana website). In 2009, the zoo received a €10,000 grant from EAZA's Amphibian Campaign for a project entitled 'Protection and Conservation of the Slovenian Endemic Cave Salamander, the black olm (*Proteus anguinus parkelj*) and unpigmented subspecies, *P. anguinus parkeli*. The funds were to be spent on a new tented/wooden structure to house a series of breeding tanks and the project partnered with University of Ljubljana Biotechnical Facility and the Slovenian Society of Herpetology (EAZA, 2010). Other research and *in situ* conservation programmes include a project focused on the conservation of white olm (*Proteus anguinus spp*) in France, together with Station d'Ecologie Expérimentale du C.N.R.S. Moulis (EAZA, 2010), the promotion of the installation of bat boxes (Zoo Ljubljana website), and research into an outbreak of Tuberculosis in camels and bison, caused by *Mycobaterium caprae*, at the zoo (Pate *et al.*, 2006).

Of the three selected zoos, only Zoo Ljubljana appears to comply with Article 4(1)1, D37/2003, by participating in activities and scientific research to benefit the conservation of species, which includes both Threatened and non-threatened species (IUCN Red List of Threatened Species™). However, it must be noted that 87% of the total species exhibited at the Zoo Ljubljana are of a low conservation value (non-threatened species), although 23% of the species observed at the zoo are listed on the European Red List. Neither Zoo Park Rožman, nor Maribor Aquarium-Terrarium is complying with any of the required options of Article 4(1)1, D37/2003. **Overall, taking into account the total numbers of species observed at all three selected zoos, commitment to global and regional species conservation appears low. Evidence that some of the zoos are trading their animals, with no obvious benefit to the conservation of the species, is a matter of serious concern.**

## 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). Slovenian law requires all zoological collections ('*zoos*' and '*facilities similar to a zoo*') to educate the public, raise-awareness about the conservation of biodiversity and particularly to provide '*information about all exhibited species and their natural habitats*' (Article 4(1)2, D37/2003). No guidance or examples of how such activities should be addressed are provided by the Competent Authority to help interpret this largely ambiguous requirement.

Of the three zoos, only Zoo Ljubljana appeared to undertake a variety of educational activities. These comprised of a variety of workshops and seminars designed, and compatible with nation curricula, for organised groups of school and pre-school children. Topics focus on both indigenous and non-native animals as well as animal and plant biology and ecology. The zoo also offers tours for schools and other zoo visitors (at an extra charge), a series of workshops and the opportunity to be a '*zookeeper for the day*' which involve handling a variety of the zoo's animals (as described in the section on 'injury and disease transmission') (Zoo Ljubljana website). Neither Zoo Park Rožman, nor Maribor Aquarium-Terrarium appears to undertake such a variety of educational activities, although Zoo Park Rožman does offer the opportunity to have a guided tour '*with extra information about each of the animals*' (Zoo Park Rožman guidebook).

### Animal shows

The use of animals in performances does not appear to be commonplace in Slovenian zoos. However, Zoo Ljubljana does present a sea lion (*Zalophus californianus*) show. The sea lion was observed performing a number of tricks, such as jumping through hoops, balancing a ball on its nose and standing upright on its back flippers: all unnatural behaviours. There was no music, but there was no commentary or educational information provided either.

## Minimal species information

A basic requirement of a zoo is to inform its visitors about the animals exhibited. However, in Slovenia zoos are required to provide information about all the species exhibited, including information about their natural habitats (Article 4(1)2, D37/2003). This is the same requirement as Article 3(2) of the Directive.

### Proportion of Species Information Signage Present

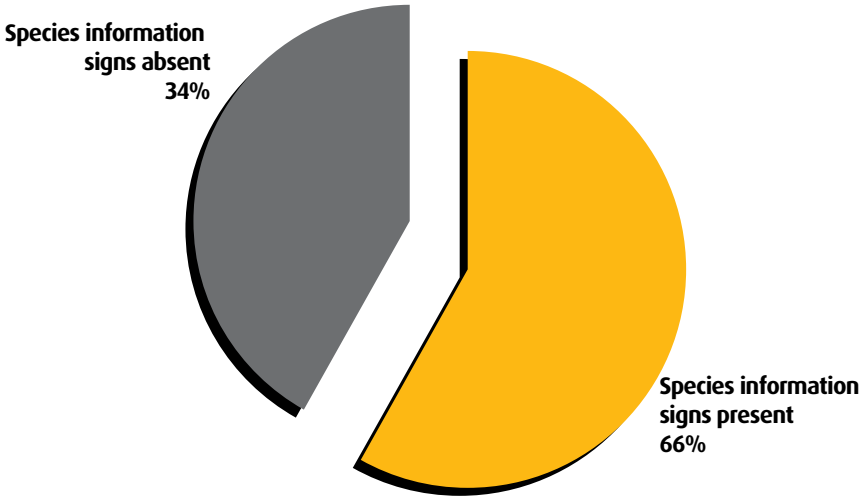


**Figure 6**
The average percentage of species information signage present or absent (for all 335 *species holdings*) in the three Slovenian zoos.

On average, 34% of *species holdings* completely lacked any form of species information signage (Figs. 6 & 8). Species information signage was absent for 68% of all *species holdings* observed in Zoo Park Rožman, 20% in Zoo Ljubljana, and 15% in Maribor Aquarium-Terrarium. Signage for 1% of *species holdings*, over the three zoos, 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 7**
Zoo Ljubljana.
At the three zoos, many of the enclosures lacked information about the species exhibited, despite the requirements of Article 4(1)2 D37/2003 and Article 3(2) of the Directive. This enclosure exhibited orange-winged Amazon parrots (*Amazona amazonica*).

## Quality of Species Information Signs

As mentioned above, Article 4(1)2, D37/2003 requires information about all the *species holdings* to be present, but it sets out no specific criteria, other than information on the species' natural habitat, as to what type of information should be made available to the public. Analysis of the signage in 85 randomly-selected enclosures in the three zoos was conducted using the requirements of the SMZP (as has been the case throughout the EU Zoo Inquiry 2011).

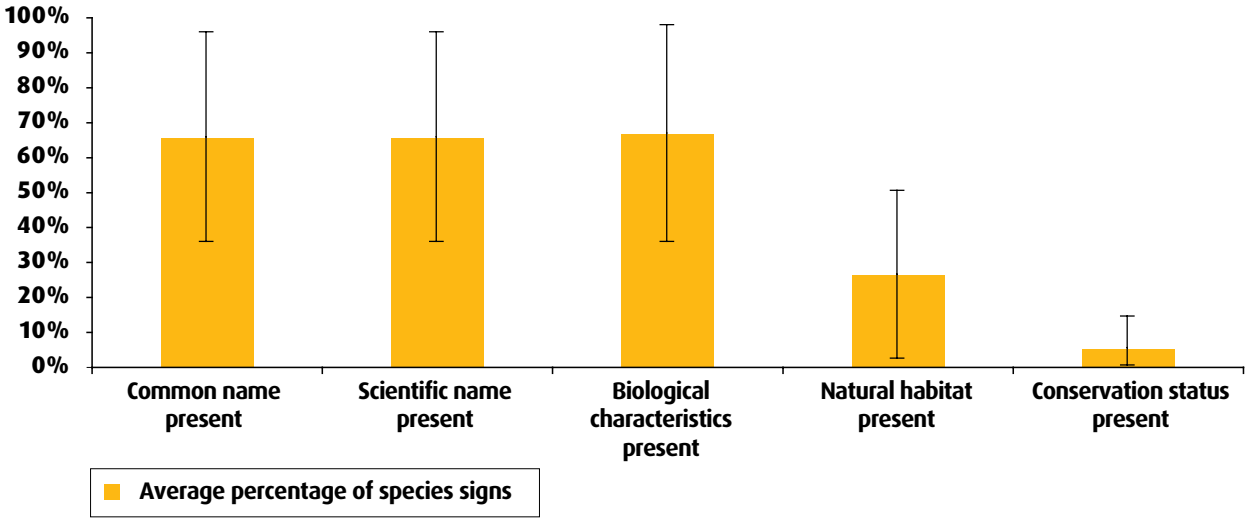


**Figure 8** Content of species information signage within the three Slovenian zoos. Each column represents specific information, as indicated by best practice criteria (SMZP). Each value (e.g. Scientific name present, 66%) represents the average of the 82 species information signs observed in 85 randomly-selected enclosures in the three 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. 8) show that of the signage present in the randomly-selected enclosures, on average 94% **did not** contain all the required information, with 95% not including reference to the species conservation status and 74% not including reference to species natural habitat. However, it is important to note that this varied significantly between the zoos: Maribor Aquarium-Terrarium failed to provide any information on the species' conservation status or natural habitat; whilst Zoo Park Rožman only displayed the species common name, scientific name, biological characteristics and natural habitat for 32% of its *species holdings*.

**Figure 9**
Zoo Ljubljana.
When species information signage was available it frequently included only minimal information or was in a poor condition.

## EVALUATION OF ANIMAL ENCLOSURES

To evaluate the suitability and quality of each of the 85 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 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 reference to, and evaluation using the Slovenian Order '*on living conditions and care of wild animals in captivity*' (Official Gazette No.90/2001, 15/11/2001) ('O11/2001') and particularly, the species-specific minimum requirements of enclosure sizes, furnishings and requirements, as listed in the Annex I to O11/2001. The minimum standards were reportedly developed with reference to published scientific literature and expert opinion (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 2008)

The standard in the quality of drinking water in numerous enclosures at Zoo Park Rožman appeared stagnant and unhygienic. Some animals appeared to be fed inappropriate foods. For example, the European bison (*Bison bonasus*) at Zoo Park Rožman appeared to have a diet consisting predominantly of bread. Furthermore, there are legitimate concerns about the reported encouragement of animal feeding by the public at Zoo Ljubljana, which could have negative repercussions if the animals were fed inappropriate foods. In August 2011 a giraffe at Zoo Ljubljana died of severe digestive problems and cardiac failure and the zoo now warns visitors not to feed the giraffes anything inappropriate such as '*bread, salty snacks, sweets and sandwiches*' (Planet Siol.net website).

### Freedom from Discomfort: *Provision of a Suitable Environment*

*'It is prohibited to keep indigenous and non-native animals in captivity in inadequate living conditions and without proper care.'*

(Article 19, NCA)

Animals should be given '*enough space, in relation to their physiological, ethological and other biological needs, taking into account the animal(s) age, stage in development and social structure, in accordance to professional experience and scientific knowledge;'*

(Article 4, O11/2001)

For many animals conditions were often cramped and did not adequately take into account the needs of the species in accordance with O11/2001. This was particularly apparent in enclosures housing wide-ranging species, many of which did not appear to have sufficient space to exercise and to express of all their natural behaviours. On the other hand, some of the forested enclosures at Zoo Ljubljana, (e.g. the lynx enclosure), provided the animals with near-natural captive environments and had the potential to encourage natural behaviour, but this was not the case for all species at this zoo. Some enclosures within the three selected zoos were devoid of furniture, suitable substrate and apparatus to provide opportunities for the animals to seek shelter, privacy from the public and cage companions and to exhibit natural behaviour. In some cases, vegetation had been painted on concrete enclosure walls. Many of the tanks

at Maribor Aquarium-Terrarium were too small for the animals contained and many of the fish tanks, in particular, appeared overcrowded. A number of the Terrariums offered limited opportunity for their inhabitants to seek shelter and privacy from the close proximity of the public. Previous investigations at Maribor Aquarium-Terrarium have identified similar problems, concluding that the facilities and equipment are not only at the limits of safe operation, but also that many of the exhibits were overcrowded (MMC RTV Slovenja website, 2010).

**Figure 10**
Maribor Aquarium-Terrarium.
Many of the enclosures for the reptiles and fish at this zoo were small and cramped for the animal(s) contained and in many cases lacked sufficient ventilation and appropriate living conditions.

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

*'Maintain a high standard of animal husbandry with a developed programme of preventative and curative veterinary care and nutrition.'*

(Article 4(1)4, D37/2003)

*'The animals should be provided good health care, including: daily supervision and care; hygienic food and water; food is stored, prepared and given to animals under hygienic conditions; the housing of animals is regularly cleaned...'*

(Article 5, O11/2001)

Poor levels of hygiene: including an unacceptable build-up of faeces and, in the aquariums, a build-up of faeces and algae were observed in enclosures in each of the selected zoos. Of particular note were the enclosures at Maribor Aquarium-Terrarium, which looked as through they were rarely cleaned and potentially harmful paint was peeling off the walls in a number of the terrariums. The poorly maintained fencing at Zoo Park Rožman could cause the animals contained an injury. The often poor enclosure fencing at Zoo Park Rožman and Zoo Ljubljana also permitted a prevalence of native animals to freely move between enclosures and interact with the non-indigenous animals. This could perpetuate the transmission of diseases.

**Figure 11**
Maribor Aquarium-Terrarium.
Poor levels of hygiene were observed in the majority of aquaria and terrariums assessed at this zoo. The build-up of faeces, algae and detritus in the tanks could pose a significant health risk.

Some animals observed appeared to be suffering from illness, stress or debilitating conditions (for example, indications of possible overgrooming by the chimpanzees at Zoo Ljubljana, loss of feathers in some of the birds species, open wounds, obesity, stereotypic behaviour, etc.).

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

*'In accordance with the regulations governing minimum requirements for the keeping of animals in captivity, all animals must be kept in appropriate conditions which reflect the natural habitat of the species and provides a suitable (safe and agreeable) environment for the species.'*

(Article 4(1)3, D37/2003)

Many enclosures lacked the appropriate facilities, furnishings and environmental enrichment that would permit and encourage the animals to rest, seek shelter or privacy, exercise and carry out natural behaviours. Species requiring adequate features to climb, bathe, dive, fly or a suitable substrate to dig or burrow in, were often housed in conditions where such natural behaviours were compromised or prevented, conditions that contravene the specific minimum requirements of O11/2001.

Some enclosures at Maribor Aquarium-Terrarium were noticeably overcrowded and, in the terrariums, species that require suitable bathing opportunities were often provided with inadequate-sized pools

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

*'An animal keeper is obliged to provide adequate living conditions and proper care,'*

(Article 3, O11/2001)

Results indicated that, in numerous instances, animal enclosures were poorly located. For example, predators were housed in close proximity to prey species, or highly territorial species placed alongside each other. There were also instances where enclosures were next to busy thoroughfares, or in overly-close proximity to people. Furthermore, concerns exist concerning the probable stress caused to animals as a result of direct public contact, where poorly-designed or maintained enclosures allowed for potential contact between the public and animals. This is in addition to the direct or close contact between humans and wild animals apparently encouraged by some zoos, especially Zoo Ljubljana, that can cause unnecessary distress to the animals concerned. This is possibly further exacerbated by the fact that frequently the animals could not seek shelter or privacy from view or interaction with cage companions.

Numerous observations were recorded where the animals exhibited appeared agitated, or displayed abnormal, repetitive behaviour associated with stress and poor welfare. In particular this included Californian sea lion (*Zalophus californianus*), red-cheeked gibbon (*Nomascus gabriellae*), grey wolf (*Canis lupus*), clouded monitor lizard (*Varanus nebulosus*) and green peafowl (*Pavo muticus*).

## Environmental Quality of Enclosures

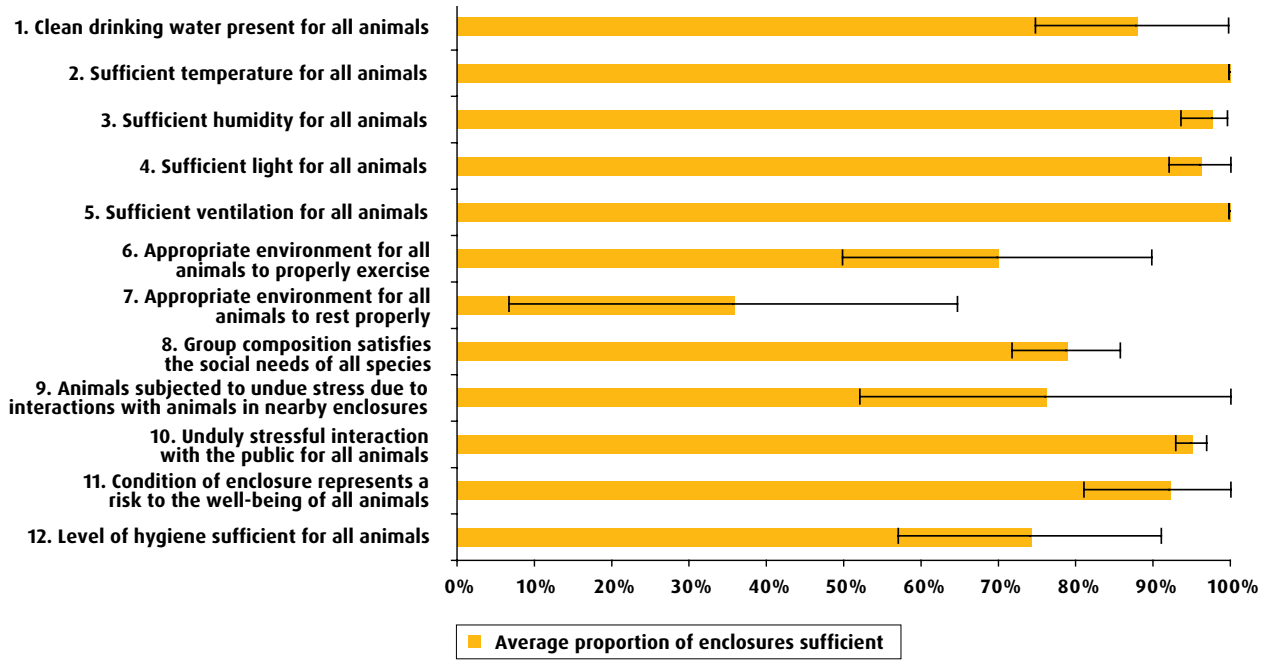


**Figure 12** *Environmental quality* Environmental quality of the 85 randomly-selected enclosures from three Slovenian zoos. Each column represents a criterion used to assess the suitability of the enclosures to meet the needs of the animals contained. Error bars are a visual representation of the standard deviation from the mean value, demonstrating the variation in performance amongst selected zoos (e.g. the ability for the animals to rest in the 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 adequate temperature, light and humidity at the time of assessment, lower values were recorded for: the availability of suitable facilities to allow the animal(s) to rest (on average, 64% of the randomly-selected enclosures failed to provide appropriate structures or facilities to allow the animals to rest properly); an opportunity for the animal(s) to exercise and express their natural locomotive behaviour (on average, 30% of the randomly-selected enclosures were of an inadequate size and complexity); the general cleanliness of the enclosures (on average, 26% of enclosures were unhygienic); interactions with animals in nearby enclosures (on average, 24% of enclosures subjected the animals to possible undue stress due to proximity of the enclosures to other exhibited species); and a group composition that satisfies the social needs of the species (on average, 21% of the selected enclosures did not provide the species with the appropriate social structure).

**Figure 13**
Zoo Park Rožman.
There were numerous enclosures in all the zoos that were too small for the animal(s) exhibited. Cramped, captive conditions can compromise both their physical and mental health of animals (Silvino Cubas, 1996; Carlstead & Shepherdson, 2000; Clubb & Mason, 2003).

**Figure 14**
Zoo Ljubljana.
Despite having access to an indoor area, the lone Asian elephant (*Elephas maximus*) did not have sufficient space and appropriate conditions for the species. The Slovenian minimum standards stipulate that for each elephant there should be a minimum 500 m² for the outdoor enclosure and 30 m² of indoor space. Furthermore, the enclosure should have natural substrate and sufficient water for bathing (O11/2001).

## 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 assessed enclosures 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%)

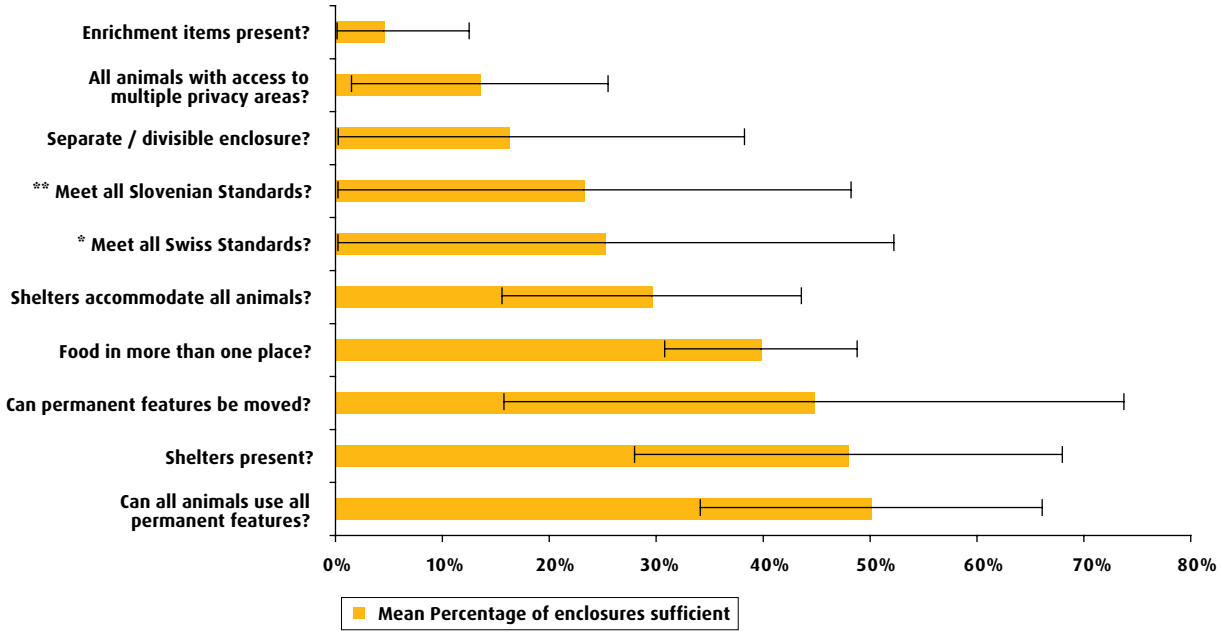


**Figure 15** Issues requiring immediate attention following assessment of 85 randomly-selected enclosures from the three Slovenian zoos. Error bars are a visual representation of the standard deviation from the mean value, demonstrating the variation in performance (e.g. the level of compliance of the enclosures with the **Slovenian minimum standards (O11/2001) 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 85 randomly-selected enclosures in the three zoos (Fig. 15). Findings identified that the majority of the enclosures did not adequately provide for the species-specific needs of the animals exhibited. Specifically enclosures lacked species-specific environmental enrichment, a requirement of Article 3(3)

of the Directive, which would encourage natural behaviour. On average, 95% of the enclosures did not include any behavioural or occupational enrichment items or techniques such as toys or feeding devices; 86% of the enclosures failed to provide all the individual animals exhibited with access to multiple privacy areas; 84% of the enclosures did not provide the opportunity to divide or separate the animals; 70% of enclosures did not provide shelters sufficient to accommodate all animals at the same time; 60% of enclosures did not provide the food in more than one place; 55% of enclosures did not contain permanent species-specific furnishings that could be moved around the enclosure, commonly recognised as a method to provide a stimulating captive environment; 52% of enclosures did not contain shelters for the animals; and 50% of enclosures did not contain permanent species-specific furnishings that all animals could use at the same time.

**Widely Represented Issues of Concern** (where the percentage of enclosures failing to comply is between 49% and 30%)

- On average, 45% of enclosures did not take measures to mitigate climate extremes
- On average, 42% of enclosures did not contain a varied substrate
- On average, 39% of enclosures were not environmentally-varied
- On average, 36% of enclosures did not provide the individual animals with enough room to get distance from their cage companions, if necessary
- On average, 32% of enclosures were not considered large enough for the species exhibited
- On average, 30% of enclosures did not provide enough distance to the back of the enclosure to allow the animal to retreat from the public

**Less Widely Represented Issues of Concern** (where the percentages of enclosures failing to comply is less than 30%)

- On average, 21% of enclosures did not contain permanent species-specific furnishings
- On average, 17% of enclosures contained a noticeable build-up of excrement
- On average, 13% of enclosures appeared to be overcrowded, housing too many animals for the size of the enclosure
- On average, 12% of enclosures did not provide food and water in a hygienic manner

Using the Annex I to O11/2001, which provides species-specific minimum requirements for enclosure sizes and furnishings for all animals in captivity, **the results indicated that on average 77% of the assessed enclosures failed to meet the Slovenian minimum standards.**

**Figure 16**
Zoo Park Rožman.
The enclosure for the European brown bear (*Ursus arctos*) at this zoo failed to provide this species with appropriate living conditions. Slovenian minimum standards stipulate that there should be an outdoor space of at least 200 $m^2$, with an additional 50 $m^2$ for each additional bear and include a bathing pool, natural substrate, climbing structures and sufficient hiding places. There should be access to an indoor enclosure of a minimum 6 $m^2$.

In addition, 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 standards and environmental enrichment 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, 75% of enclosures that exhibited species listed on APOS <u>did not</u> meet these minimum requirements.**

# CONCLUSION

This investigation assessed three of then six existing zoological collections in Slovenia (National Zoo Register, 2009). Two are licensed correctly as 'zoos' (Article 2(2), D37/2003), whilst it is believed that Zoo Park Rožman, due to the species and numbers exhibited, has been incorrectly licensed as a '*facility similar to a zoo*' (Article 2(3), D37/2003). Criteria established to make the differentiation between the two types of zoological collection is dependent upon the size and numbers of species, as opposed to which species are exhibited, their conservation status, or 'hazard' rating, as established in other EU Member States. There is no further explanation to assist in the accurate interpretation of the specified criteria. The Directive has been effectively transposed into the NPA and the D37/2003, which require zoos to conserve biodiversity, educate the public and provide their animals with adequate living conditions and proper care. Findings have indicated that there is a wide range in the performance between zoos, with the zoo affiliated to EAZA maintaining higher standards. However, despite this, overall zoos in Slovenia are not making a significant contribution to the keeping and breeding of Threatened species. Additionally, the promotion of species conservation, measures to protect the visiting public from risk of injury or illness from zoonoses are limited and, notwithstanding legal requirements to maintain high standards in animal care, the majority of animal housing was substandard. Two out of three enclosures failed to meet the minimum standards required by Slovenian Order '*on living conditions and care of wild animals in captivity*' (Official Gazette No.90/2001, 15/11/2001) ('O11/2001'). Zoos are not meeting their obligations to provide proper care for their animals.

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

## 1. Implementation of the Directive

In Slovenia, '*zoos*' and '*facilities similar to a zoo*' are licensed and regulated through the Nature Conservation Act ('NCA') (06/1999) (Ur. I. RS, No56/1999), which enacts the Decree on zoos and similar facilities (Ur. I. RS, No.37/2003) ('D37/2003'). In addition, zoological collections, like any other facility that keeps or exhibits animals, must also comply with the minimum standards required by the Order on living conditions and care of wild animals in captivity (Official Gazette No.90/2001, 15/11/2001), as well as to ascribe to the principles of the Animal Protection Act (1999). Zoo regulation is the responsibility of the Ministry of Environment and Spatial Planning, in consultation with the Environmental Agency of the Republic of Slovenia, the relevant provincial authority and the Ministry of Agriculture, Forestry and Food, in relation to the veterinary inspections.

All EU Member States (25) were required to have transposed and implemented the requirements of the Directive (1999/22/EC) by April 2005. 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. The NCA has accurately adopted the Directive and its objectives through the establishment of D37/2003 and has, by using the optional exemption criteria contained within Article 2 of the Directive, separated zoological collections into two different categories based upon the taxa and numbers of species housed. Collections exhibiting 6 or more large mammal species, or above the stipulated thresholds (Article 2(2) of D37/2003) of other taxa, are licensed as '*zoos*', whilst collections of less numbers than the stipulated thresholds are licensed as '*facilities similar to a zoo*'. Although the criteria differentiating the two types of facility are quite specific, it is still open to a degree of interpretation and would require regular inspection of '*facilities similar to a zoo*' to ensure they haven't acquired more species that would warrant their reclassification and licensing as a '*zoo*'.

Unlike other EC Directives, Directive 1999/22/EC includes no guidance or explanatory notes and, therefore, effective application relies on the interpretation of, and any guidance provided by, the EU Member State Competent Authority. However, few Member State Competent Authorities provide additional explanation or guidance of the requirements of their national law. This has led to inconsistencies in application as accurate interpretation is dependent upon individual interpretation of requirements, definitions and licensing and inspection procedures. Slovenia is no exception.

The lack of additional guidance to ensure the effective interpretation of the requirements of NCA and D37/2003 could well result in the inaccurate categorisation of a zoological collection. For instance, no explanation or guidance is given to ensure the accurate interpretation of a 'large' mammal: one of the criterions in differentiating a 'zoo' from a '*facility similar to a zoo*'. This could well be the reason for the inaccurate licensing of Zoo Park Rožman as a '*facility similar to a zoo*', which, due to the species exhibited, is in fact a 'zoo'. Zoo Park Rožman has therefore never been expected to participate in 'scientific activities', as described in Article 4(1)1 of D37/2003, whereas if licensed correctly it would be required to contribute to species conservation. Misinterpretation of these criteria could well be undermining the objectives of the Directive.

Equally the categorisation system itself may be flawed. Whereas this criteria ensures larger zoological collections are participating in at least one activity to benefit species conservation, as required by Article 4(1)1 of D37/2003, it does not take into account the species conservation status, or their 'hazardous' rating (if the species is recognised as a dangerous animal). For example, should a collection house the endangered Asian elephant within a small animal collection, with numbers below the designated threshold, the establishment would be licensed as '*facility similar to a zoo*' and would not be expected to contribute to species conservation. Again, this designation could be interpreted as undermining the objectives of the Directive.

Exemptions to D37/2003 also lack further explanation (Article 1(2), D37/2003). It is likely, therefore, that there will be further inconsistent interpretation of what constitutes an animal used '*during public gatherings*'; '*for breeding*'; '*for room décor, including decorative aquariums and terrariums*'; or '*in pet shops*' as opposed to animals exhibited to the public and their regulation under D37/2003. This may lead other facilities to be wrongly exempted from zoo regulation and for there to be confusion amongst the authorities as to which establishment should be licensed. Additionally, circuses with animals, exempt from the Directive (Article 2 of the Directive), were not even mentioned in Article 1(2), D37/2003. Without clear definitions, enforcement of D37/2003 is problematic.

Since the Zoo Inquiry assessment of zoos (2009), the Competent Authorities have confirmed the establishment of two more zoos and three more '*facilities similar to a zoo*' (National Zoo Register, 2011) (Ministry of Environment and Spatial Planning, pers. comm., 14/10/2011). **It would be advisable for the Ministry of Environment and Spatial Planning not only to publish additional guidance to ensure effective interpretation of the criteria used, but further to consider revising the selection criteria to take into account the conservation status of the species in the collection, as well as the number of species.** Failure to do so may mean facilities additional to Zoo Park Rožman being exempt from taking part in 'scientific activities', thus resulting in inconsistent application of the Directive.

**Effective categorisation of the zoological collections on Slovenia is not only dependent upon accurate interpretation of the criteria but also regular and effective inspections.**

## 2. Ineffective enforcement

All zoos in Slovenia were required to comply with the requirements of NCA and specifically, D37/2003, by May 2004 (Articles 13 and 14, D37/2003), and thus meet the requirements of the Directive, by the deadline, April 2005. After April 2005, any zoo found not licensed in accordance to the Directive should face closure (Article 4.5 of the Directive). Chapter III, Articles 11 and 12 of D37/2003, states that the Ministry of Environment and Spatial Planning may revoke, or impose conditions on a license if a zoo fails to comply with the requirements applicable to zoos (Articles 4 and 6 of D37/2003). However, to date, no zoo has reportedly been closed due to non-compliance (Standard Member State Questionnaire).

The findings of this report have identified that both Maribor Aquarium-Terrarium and Zoo Park Rožman appeared not to comply with their obligations, as specified by Articles 4 and 6 of D37/2003, whilst Zoo Ljubljana actually complied with

more than one of the required 'scientific activities' specified in Article 4(1)1 of D37/2003. These findings indicate that either there is inconsistent enforcement of the law between the different regions of the Republic of Slovenia, or there is limited effective inspection of all the zoos. It seems likely that Zoo Ljubljana's performance is more influenced by the specific Standards required as part of its EAZA Membership than as a result of Slovenian zoo regulations.

According to the Competent Authority, zoos are licensed for a period not exceeding ten years and '*facilities similar to a zoo*', for a period not exceeding five years. Zoo inspections reportedly happen every year and are undertaken by inspectors from both the Ministry of Environment and Spatial Planning and the veterinarians from the Ministry of Agriculture, Forestry and Food, not only to ensure zoos meet their obligations under D37/2003, but also to meet the minimum standards of Annex I to O11/2001. Inspectors are required to report to the Ministry of Environment and Spatial Planning.

Overall, of the 85 randomly-sampled enclosures across the three assessed zoos, two out of three failed to meet the minimum standards required by Slovenian Order '*on living conditions and care of wild animals in captivity*' (Official Gazette No.90/2001, 15/11/2001). These findings call into question the regularity and quality of the zoo inspection because, if the requirements of law were being effectively enforced, the zoos would either have had the time (not exceeding two years) to comply with their obligations, or face closure.

**Findings indicate that, despite an apparently efficient inspection regime in the Republic of Slovenia, enforcement is poor and the application of existing penalties negligible, with zoos seemingly left to their own devices.**

The situation at Maribor Aquarium-Terrarium is a good example. This investigation has confirmed that this zoo is not meeting its obligations to partake in scientific and educational activities, and housing conditions for many of their animals have been recognised as poor in this report. Plans announced in 2010 claimed that the zoo was to move location and increase the exhibition area at a cost of €7.5 million, thus ensuring the new facility would provide more appropriate housing conditions '*in line with European standards*' (MMC RTV Slovenija website, 2010). However, two years later, the zoo remains in the same location and no improvements have seemingly been made. Maribor Aquarium-Terrarium remains operational.

The Ministry of Environment and Spatial Planning claims to have a protocol for the closure of zoos (Standard Members State Questionnaire), in accordance with Articles 11 and 12 of D37/2003, which specifies that animals will be confiscated from facilities that fail to meet requirements. Whilst no zoo has been ordered to close, apparently the chimpanzee and wolf enclosures at Zoo Ljubljana have previously been closed for improvements. However, the Competent Authority admits that these requirements are difficult to implement and that it is hard to adequately provide for the animals (Standard Members State Questionnaire).

Despite assurances from the Competent Authority that there is a sufficient knowledge base (Standard Member State Questionnaire) and the zoo inspectorate is competent in the enforcement of the D37/2003 and O11/2001, concerns over regularity, quality and practice mean that the process of inspection warrants further investigation.

## 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.

The threat that an escaped non-indigenous animal might pose to the natural environment, or to native species, is recognised by NCA, D37/2003 and O11/2001, which are consistent with the requirements of Article 3(4) of the Directive.

Despite these legal requirements, measures to prevent animal escapes were minimal. Two of the three zoos did not have a perimeter fence that would likely prevent an animal from escaping into the natural environment. In particular, at Zoo Ljubljana, large holes were observed in parts of the perimeter fence. Despite numerous recorded escapes of non-indigenous animals from the zoo into the natural environment (MMC RTV Slovenija website, 2006), the fencing would not appear to be regularly checked, nor any holes repaired. It was also evident that there were indigenous animals in Zoo Ljubljana, which may be able to enter and leave the zoo grounds unhindered. This could pose a risk concerning the transmission of infectious diseases or parasites between the indigenous animals and those in the zoo.

Concerns must also be raised about the common sliders (*Trachemys scripta*) observed in the pond located in front of Maribor Aquarium-Terrarium. No barriers were observed to prevent their escape. It is not known if these animals are part of the zoo collection, but this a species that is not indigenous to Slovenia, a DAISIE-listed Invasive Alien Species (IAS) and, therefore, a recognised threat to the local natural environment.

Zoos are known to pose a significant risk in presenting pathways for the introduction of IAS (Fábregas *et al*., 2010), particularly, concerning the prevalence of DAISIE-listed species kept by zoos. This is seemingly not recognised by the Competent Authorities in Republic of Slovenia. 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).

**Competent Authorities in Slovenia do not appear to be enforcing the requirements of the law in relation to ensuring sufficient measures are in place to prevent animal escapes, as well as to investigate those reported escapes.** This is further evidence that zoo inspection lacks the regularity and quality to ensure effective enforcement of the law. Furthermore, the zoos are clearly not making regular checks to ensure enclosures and boundaries are sufficiently secure.

## 4. Public placed at risk of injury and illness

According to the Ministry of Environment and Spatial Planning, there are no measures to protect the public (and zoo employees) in zoos and neither the NCA nor the D37/2003 has specific requirements safeguarding public security or regulations related to human/animal contact.

All three of the zoos encourage the public to have direct contact with animals, which largely appears to be promoted as an educational experience. For example, the majority of public 'educational' activities at Zoo Ljubljana involve hands-on animal contact. According to various publications and displayed photographs, these include a variety of species of reptiles, amphibians and birds as well as mammals such as giraffe and elephants. Emphasis is placed on the dubious benefit of such activities helping the public overcome their fears and prejudices, but there appears to be no regulation to guarantee the welfare of the animals. Nor are there regulations or measures to ensure the health and safety of the public. Some of the animals used during these handling sessions are recognised 'hazardous' animals (SMZP), whilst others are known to harbour zoonotic diseases.

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; Mermin *et al.*, 2004). The risk of infection for people who hold or stroke these animals is therefore highly probable (Warwick *et al.*, 2009). Common slider (*Trachemys scripta*), the species of freshwater turtle identified in the pond in front of Maribor Aquarium-Terrarium, is known to harbour *salmonella* and there have been numerous instances where children in particular have been infected following contact with this species (Abalem de Sá & Solari, 2001; Nagano *et al.*, 2006; Readel, 2009). The risk of disease transmission, particularly zoonoses, is often overlooked in zoos. Although hand-washing facilities were observed in Maribor Aquarium-Terrarium, the Slovenian zoos did not appear to warn the public about the potential risks relating to direct animal contact. Allowing a child to clean an elephant's foot, for example, might be seen by some as a completely irresponsible activity.

In addition, of 85 randomly-selected enclosures across the three zoos, the public could have possible direct and unsupervised contact with animals in 25 enclosures which, in some cases, placed the public at risk. This included 10 instances where poor enclosure design, the lack of the required stand-off barriers and the lack of zoo staff allowed the public to have contact with Category 1 Hazardous-listed species (SMZP). The zoos did not sufficiently warn the public about potentially dangerous animals.

**The Competent Authority should investigate the apparently regular use of animals in direct contact sessions with the public in zoos.** Slovenian law requires animals to be kept under conditions that ensure their wellbeing. However, no regulations could be found that would sufficiently protect animals used in contact sessions, provide guidance as to the duration and frequency of the contact-session, or the duration and frequency of the rest periods. **The Competent Authorities should discourage direct contact between the public and animals, and prohibit contact with dangerous animals and those known to harbour zoonoses. Zoos should be required to take far greater responsibility for the safety of the visiting public and, indeed, 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). This requirement is fulfilled by the NCA, which requires zoos and similar facilities to promote awareness on the conservation of biodiversity (Article 4(1)2, D37/2003), and specifically for zoos to comply with at least one of four options described in Article 4(1)1, D37/2003.

Although Zoo Park Rožman appears to have been incorrectly categorised by the authorities as a '*facility similar to a zoo*' (and is in fact a zoo), this investigation assessed all selected facilities for their contribution to species conservation as required by Article 4(1)1, D37/2003. D37/2003 specifies that all zoos undertake at least one of four options. These include: the conservation of at least one species; the training in relevant nature conservation skills; the exchange of information on species conservation; or captive breeding intended for the repopulation or reintroduction of species into the wild. Most of these are largely ambiguous requirements, but the analysis below provides an overview of the report's findings as they relate to conservation requirements.

### *Ex situ* conservation of species

Findings from this investigation have revealed that whilst some zoos contribute more than others, overall zoos in Slovenia **are not making a significant contribution to the conservation of Threatened species.** The majority of species kept by the three zoos are of low conservation importance, with only 7% of observed species (n=19) listed as Threatened by the IUCN Red List of Threatened Species™. Mammals, birds and fish predominate, with Threatened amphibians in a minority (0%), despite the fact that there are more Threatened amphibians than Threatened mammals (IUCN Red List of Threatened Species™). Of the three zoos, Zoo Ljubljana exhibited the highest proportion of Threatened species within its collection (13% of the total observed species), whilst Maribor Aquarium-Terrarium had the least (3% of the total observed species).

Of the 231 species of mammals, reptiles, amphibians, invertebrates and fish observed within the three zoos, 20 species (9%) are listed on the IUCN European Red List and 4 birds are listed as *Rare*, Depleted, or *Declining* on the BirdLife International status assessment for birds in the European Union (BirdLife International, 2004) (collectively 11% of the total number of bird species observed).

Overall, the **Slovenian zoos included in this assessment are only making a minimal contribution to the conservation of global and European species threatened by extinction.** Only a minimal proportion of the species exhibited in each of the three zoos are Threatened, which indicates a minimum commitment to the conservation of biodiversity.

### *In situ* conservation of species

Only Zoo Ljubljana was identified as contributing to *in situ* conservation of endemic and international species, through collaboration with local and international scientific institutions. The zoo also encourages the public to conserve native species of bat.

**The exchange of information on species conservation**

Zoo Ljubljana participates in the EAZA species conservation awareness-raising campaigns, which each year focus on specific taxa or groups of species and aim to raise funds for and promote species conservation. In 2009, the zoo received a €10,000 grant from the EAZA campaign that focused on amphibians, for an *ex situ* project at the zoo.

**Captive breeding and the reintroduction of species into the wild**

Of the 269 species observed in the three zoos, only 6% were registered on European Endangered Species Breeding Programmes (EEPs) or European Stud Books (ESBs). Despite all three zoos keeping at least one species listed on European Species Management Programmes, Zoo Ljubljana kept the highest number of registered species. Maribor Aquarium-Terrarium kept only one listed species. Only Zoo Ljubljana, however, appears to participate in the Species Management Programme, with 14 of the 15 EEP/ESB-listed species (out of a total of 95 species at the zoo) confirmed as participating in captive breeding programmes during 2007 and 2008 (EAZA Yearbook, 2007-2008). No evidence, however, could be found that confirmed any of these species have been reintroduced into the wild.

In Slovenia, any person or entity wanting to keep a species listed on Annex II of O11/2001 (conservation-sensitive species) must first acquire authorisation from the Minister of Environment and Planning. All the zoos had at least one species listed on Annex II and would therefore require authorisation. Zoo Park Rožman reportedly acquired animals from EAZA Member zoos (Zoo Ljubljana and Vienna Zoo) of which the European bison (*Bison bonasus*) is on Annex II. It is not known if authorisation was duly given. Equally, EAZA Member zoos appear to trade (or transfer) animals of Threatened species with non-affiliated zoos, such as Zoo Park Rožman and Parco Faunistico Valcorba in Italy. Furthermore, Maribor Aquarium-Terrarium reportedly breeds fish species for sale rather than conservation. **The Competent Authorities and EAZA should investigate these claims about trade in animals and whether any of these identified cases breach existing policy.**

**Of the three selected zoos, only Zoo Ljubljana appears to be meeting its obligations under Article 4(1)1, D37/2003, whereas neither Maribor Aquarium-Terrarium nor Zoo Park Rožman are meeting these obligations. Overall, Slovenian zoos do not appear to be significantly contributing to the conservation of biodiversity.**

## 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 about the conservation of biodiversity, particularly by providing information about the species exhibited and their natural habitats (Article 3(2) of the Directive). Slovenian law requires all zoological collections ('*zoos*' and '*facilities similar to a zoo*') to educate the public, raise-awareness about the conservation of biodiversity and, particularly, to provide '*information about all exhibited species and their natural habitats*' (Article 4(1)2, D37/2003).

Of the three zoos, only Zoo Ljubljana appeared to undertake a variety of educational activities. These included workshops and classes for students, pre-organised guided tours, the opportunity to be a '*zookeeper for the day*' and a variety of animal handling sessions with a number of the zoo's animals (promoted as an opportunity for people to end prejudices and respect animals). None of these activities were observed during the zoo assessment, therefore, no analysis of the quality of these activities was possible. However, despite an apparent diverse number of topics and talks presented to a variety of age groups at Zoo Ljubljana, some of the activities within the zoo's educational programme need to be assessed for their educational content and quality. For example, whether the animal handling sessions actually provide knowledge and promote respect for animals, and further whether the sea lion show, consisting of circus-style tricks as opposed to informative commentary, can be justified within the educational programme.

To date, few Competent Authorities have undertaken an independent quality assurance assessment of educational activities in zoos to determine whether they can effectively deliver quality education and justify their role as educators.

Whilst all the zoos provided some information about their exhibited species, species information signage was often lacking. Of the 335 *species holdings* recorded at the three zoos, on average, 34% lacked information about the species, with species information signage absent for 68% of all *species holdings* observed in Zoo Park Rožman. Of the species information signage observed, on average, 94% did not contain all the required information, with 95% not including reference to species conservation status and 74% not including reference to natural habitat. Maribor Aquarium-Terrarium failed to provide any information on the species' conservation status or natural habitat; whilst Zoo Park Rožman only displayed the species common name, scientific name, biological characteristics and natural habitat for 32% of their *species holdings*.

**Overall, Slovenian zoos should improve the quality of public education about the natural attributes of animals and in a way that does not compromise any animal's welfare. Additional detailed guidance is required and would encourage best practice, which should, as a basic requirement, stipulate that all *species holdings* are properly labelled, as required by the Directive.**

## 7. Unsuitable living conditions for animals

The assessment of zoo enclosures in Slovenia identified a wide range of conditions in the three assessed zoos. The zoo affiliated with EAZA generally provided its animals with more appropriate housing conditions, as compared to the two non-affiliated zoos. Overall, the *environmental quality* of the assessed enclosures often failed to provide the species with a suitable environment, where natural behaviour was compromised or prevented and animals were exposed to potential dangers and stress. Of particular concern:

- Many far-ranging species were kept in small enclosures that did not attempt to meet their spatial needs;
- Species requiring adequate features to climb, bathe, dive, fly, or a suitable substrate to dig or burrow in were often housed in conditions where such natural behaviours were compromised or prevented;
- In one zoo in particular, poor levels of hygiene were observed, which could cause a potential build-up of harmful pathogens;
- Some enclosures and enclosure fencing were run down and in a poor state of repair;
- Many enclosures were devoid of furniture, apparatus and materials to allow the species to exercise, express normal behaviour, rest and seek privacy.

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.

The protection of the health and welfare of sentient animals, through the Animal Protection Act (APA), is an obligation imposed on all keepers of animals in the Republic of Slovenia, and together with the Order '*on living conditions and care of wild animals in captivity*' ('011/2001'), wild animals in captivity must be kept in conditions which meet their basic of health and welfare needs. The obligation of a 'duty of care' has also been adopted by both NCA (Article 19) and D37/2003 (Article 4(1)1) and zoological collections are expected to house their animals in conditions that reflect the natural habitat of the species, whilst maintaining a high standard of animal husbandry.

Findings from this investigation have identified that overall, the Slovenian zoos are not meeting these obligations and a majority of the randomly-assessed enclosures did not meet the minimum standards on the keeping of wild animals in captivity, as specified by Annex I of 011/2001. **On average, 77% of the assessed enclosures failed to meet the Slovenian minimum standards.** The EAZA Member, Zoo Ljubljana, had more naturalistic and appropriate enclosures than those non-affiliated with the zoo association. In particular, enclosures within the area dedicated to endemic and regional wildlife had been developed taking into account the physical and behavioural needs of the exhibited species. However, enclosures exhibiting exotic species, for instance chimpanzees, in Zoo Ljubljana and the majority of enclosures

in Zoo Park Rožman and Maribor Aquarium-Terrarium were often small, overcrowded and devoid of appropriate furniture and environmental enrichment needed to encourage natural behaviours. A recent Slovenian publication has also acknowledged that whilst some animals at Zoo Ljubljana are housed in enclosures similar to their natural habitat, other animals are kept in barren enclosures (Soban, 2007).

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).

During the zoo visits a number of animals were observed displaying abnormal behaviours that are often associated with a poor captive environment. Furthermore, numerous individual animals appeared to be suffering from illness, stress or debilitating conditions, which may also result from inappropriate housing conditions or poor management.

These overall findings once again call into question the regularity and quality of the zoo inspections, which are supposed to occur on an annual basis, as well as the competency and knowledge of the zoo veterinarians, keepers and management; recognising their obligation to provide adequate conditions and appropriate animal care. **It is recommended that the Expert Council for the Protection of Animals, established by the Ministry to safeguard animal welfare, review the standards in animal husbandry in all Slovenia's zoos and to provide additional training and guidance wherever required.**

Of particular concern, although these activities were not observed, is the apparent use of a variety of animals in handling sessions at Zoo Ljubljana. Although there is no evidence to suggest improper use of animals, there are seemingly no regulations (other than the APA) or restrictions to ensure individuals are not subjected to high stress levels, or are overly exploited to such a degree that their welfare is compromised. Following the death of the giraffe at Zoo Ljubljana there is a need to ensure the animals are properly protected and to review the animal handling and feeding activities at the zoo. **It is recommended that the Expert Council for the Protection of Animals (Article 38, APA) to review such activities and propose guidelines to the Ministry of Environment and Spatial Planning as to whether it is appropriate use of individual animals in these kinds of activities and if so under what circumstances.**

**Figure 17**
Zoo Ljubljana.
A jaguar (*Pantera onca*) paces repetitively, back and forth, along the wall of its small, barren enclosure. Defined tracks (often the result of such pacing) within enclosures are commonly seen in zoos, particularly in enclosures containing wide-ranging species (Mallapur *et al.*, 2002; Mason & Rushden, 2006; Zoocheck Canada, 2006).

The basic principles set out in APA, NCA, D37/2003 and O11/2001, concerning the provision of an animal's basic health and welfare needs, are generally not being met and, without the effective enforcement of the law in Slovenian zoos,

any attempt to keep animals in a suitable environment is severely compromised. The findings from this investigation have identified that the health and welfare of many animals within the three zoos may well be compromised. More must be done by the national and regional Competent Authorities to ensure effective enforcement of the D37/2003 and O11/2001, to adopt the recommendations contained in this report, to make the necessary improvements and to implement relevant penalties (Article 161 of NCA; Articles 11 and 12 of D37/2003), including zoo closure where necessary. **A code of best practice specific to zoos, including species-specific guidance, which includes fish, and is in keeping with international standards and examples of environmental enrichment, would provide support for and ensure effective implementation of the provisions contained within the Annex I to O11/2001.**

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**Born Free Foundation**

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.
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**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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