



Understanding Animals and Protecting Them

About the **World Zoo
and Aquarium Strategy**

**World Association
of Zoos and Aquariums
WAZA**



Global Edition

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Cover:

Mutual trust – sika doe (*Cervus nippon*) and little girl at Goldau Landscape and Animal Park, Switzerland

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Halt the loss of biodiversity



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Why Develop a New Strategy?

'Today more and more of us live in cities and lose any real connection with wild animals and plants.' (David Attenborough, 2004)



The first World Zoo Conservation Strategy published in 1993 was characterised by great hope. It appeared to be a time of fundamental changes – the days of Rio, the beginning of the Convention on Biological Diversity and IUCN's conservation strategy. Sustainable development seemed to be initiated and the idea that zoos merely needed to rescue animals into a better future was regarded as sufficient. This hope has not been fulfilled yet, since the global situation has not improved. Environmental threats still increase and are accompanied by a decline of biological diversity. The last 10 years have been characterized by climatic changes, overexploitation of natural resources, negative impact of invasive species and extensive destruction of the environment.

These problems are based on population explosion. Meeting requirements of an increasing human population leads to limitations in natural resources which ensure the survival of non-human species. But the worldwide discussion is primarily focussed on political and economic

conflicts, droughts, famine and migration rather than on the major origin of our problems – namely overexploitation of natural resources.

The future outlook is not totally negative. National biodiversity strategies and biodiversity action plans have been developed and environmental regulations strengthened. Zoos and Aquariums have also become progressive and support conservation activities successfully.

Many people are uncertain as to whether or not they should support zoos and aquariums. They ask themselves: Why do zoos and aquariums exist? What is their unifying philosophy and purpose? What are the reasons that justify their existence? "Building a Future for Wildlife", the *World Zoo and Aquarium Conservation Strategy* published by WAZA in May 2005 gives answers to these questions.

Zoos and aquariums must focus on conservation. Only these institutions and botanic gardens can operate across the whole spectrum of conservation activities, from *ex situ* breeding of threatened species, research, public

education, training and influencing and advocacy, through to *in situ* support of species, populations and their habitats

Today attempts have been made to concentrate the limited financial resources for conservation on areas of high biodiversity. It is necessary to encourage local communities living in these regions to participate in conservation programs in order to optimize the chance of success. Without sustainable use of our resources, improvement will not be achieved.

Zoos and aquariums must become conservationists, teachers, scientists and form alliances to achieve a change. They must become part of the conservation movement. Zoos and aquariums attract about 600 million visitors per year. This resource can play an important role in raising funds for conservation actions.

The new conservation strategy aims at all zoos and aquariums, and not only the members of the World Association of Zoos and Aquariums,. It is high time for zoos and aquariums to take action!



Long term thinking and planning

Less than 100 years after its discovery by Europeans in the year 1877, the Przewalski's horse – called *takhi* by the local people - became extinct even in its last retreat in the Dsungarian Gobi in south-west Mongolia. Fortunately a small population survived in zoos. This zoo stock goes back to only 13 founder animals imported by the German animal dealer Carl Hagenbeck and the Russian landowner Baron Falz-Fein. Thanks to an International Studbook, kept under the auspices of WAZA by Prague Zoo, the *ex situ* population of the Przewalski's horse has dramatically increased and comprises now some 1500 animals.

In 1990 the Germany-based Christian Oswald Foundation initiated a reintroduction project in the Gobi B Strictly Protected Area of Mongolia. In 1999, the *International Takhi Group* was established to continue and expand on the basis of the original project. From 1992 to 2004, no less than 87 *takhis* bred by 20 different institutions in 8 countries were returned to the Gobi B. In spite of having been bred over several generations in zoos, the *takhis* adapted readily to the conditions in the wild and the population is growing. Currently several research projects are being undertaken and more releases are planned. With a view to promoting the project it received the WAZA brand in 2003. (WAZA Project 03002)





From Menageries to Conservation Centres

Since antiquity exhibition of exotic animals has been undertaken for different reasons. The history of modern zoological institutions began in 1752 when the emperor Franz I. Stephan founded the Menagerie of Schoenbrunn. With the foundation of the Paris Menagerie (1793) and London Zoo (1826) public zoos began to establish in European countries.

One major aspect of early zoos was to satisfy public interest in exotic animal species which were often kept without considering aspects of animal welfare. Scientific information already played a key role, but also the idea of recreation and education was of great importance: Guides and information boards adjacent to the enclosure already existed in Schoenbrunn in 1820. The major motivation for the foundation of Mulhouse Zoo in Al-

sace was the opportunity for workers to enjoy recreation. Most 19th century zoos had restaurants or cafés and offered different events for visitors.

The first important steps in the development of modern zoos were the foundation of Hagenbeck's Tierpark in Hamburg (1907) - with first enclosures offering an unlimited panoramic view - as well as the Animal Parks Munich-Hellabrunn (1911) and the new Nuremberg Zoo (1939), both designed as landscape gardens.

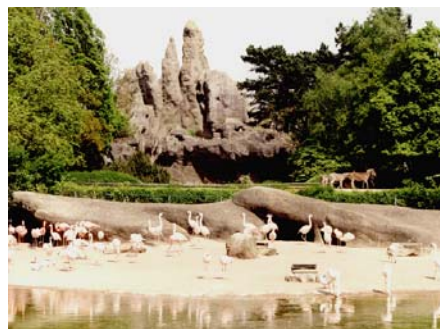
In the middle of the last century Heini HEDIGER - a Swiss Zoo director - established a new scientific field named zoobiology which led to a new concept in animal husbandry. The aim of this concept - guided by the maxim "changing cages into territories" - was to meet the biological and ethological requirements of the exhib-

ited animals". Meeting hygiene standards became important which - on the one hand - resulted in enclosures resembling bathrooms rather than high quality habitats, but on the other hand breeding of animal species commenced.

The recent development in zoological institutions is characterized by fundamental changes: Modern zoos offer enclosures meeting behavioural requirements of animal species. Today enclosure design resembles natural habitats and is integrated into the entire architectural concept of zoological gardens. This offers an optimal platform to inform visitors about wildlife in a comprehensive manner. Zoos focus more and more on research and education, thus they have become valuable centres for nature conservation.



Giraffe house in oriental style, Berlin, 1872



Africa Panorama, Hagenbeck, 1907



Landscape zoo, Nuremberg, 1939



Functional architecture, Basel, 1956



Adventure park elements, Hannover, 2000



Integration, Masoala Hall, Zürich, 2003



The Role of Modern Zoos and Aquariums

Close encounter with Alpine marmots at Argelès Wildlife Park (France)



The major goal of zoos and aquariums is to protect and secure endangered species and ecosystems. To achieve this goal they contribute to nature conservation by being part of global conservation actions and they promote the link between their conservation activities and their work routine to gain public support.

As far back as a century ago a small number of zoos became engaged in conservation. In the 1960's of the last century wildlife conservation became a major task of most zoological institutions. Today most of them show great efforts in this field, but often without public recognition.

Zoos and aquariums - as recreation centres taking care of their animals - inform visitors and others about the origins of threats to endangered species and advertise in order to find support.

They describe their mission to

visitors and associate their zoo internal activities with external conservation programs. Every institution can find meaningful ways to participate in global conservation. This is not necessarily a matter of financial support. Strong engagement is most important for the success of nature conservation programs.

The modern and complex field of nature conservation deals with a variety of subjects and includes a diversity of organisations, all trying to achieve the same goals. In contrast to many other conservation organisations zoos and aquariums attract large numbers of visitors. They have the unique possibility and capability to inform the public about conservational matters.

A majority of zoos and aquariums breed endangered animal species in special programs (EEP, SSP etc.). They are able to:

- conduct field conservation pro-

jects or contribute to such projects, either by technical support, education and training or scientific research.

- work with local institutions, e.g. with local zoos, breeding facilities or sanctuaries.
- conduct or support scientific research in the field or in zoos. Research should contribute to nature conservation.
- stimulate and engage in political debates with one's own government and with others.
- raise funds in order to support conservation programs or projects.

WAZA's main goals

All members apply the principle of integrated nature conservation. They allocate their financial means and staff effectively and collaborate with others.



Zoos and aquariums are recreational areas - providing a well designed environment where urban people can take a time out. Meeting animals in enjoyable surroundings is at the source of people caring for animals and nature and thus becoming conservationists.

Photo: Themed children playground at Taipei Zoo (Taiwan).



Zoos and aquariums are conservation areas - providing natural habitats for native species and building time bridges for species that are threatened in the wild. Zoo animals do not perceive themselves as prisoners but as owners of their enclosures, which territorial species will defend against intruders.

Photo: Wild lorikeets at Currumbin Wildlife Sanctuary (Australia).



Zoos and aquariums are places of education and research - providing formal and informal education opportunities, cooperating with research institutions and developing increasingly into integral **conservation centres** linking their *ex situ* activities to *in situ* conservation projects.

Photo: Children admiring jellyfish at Under-Water World Mooloolaba (Australia).





Zoos and aquariums focus on optimizing animal husbandry, breeding programs, small population management and wildlife health. They also carry out training programs for professionals and offer financial means for research projects and long term field studies. In addition zoos and aquariums provide a key resource for training wildlife veterinarians. Veterinary professionals can evaluate and treat new pathogens and thus contribute to reintroduction and translocation of animal species.

Zoos and aquariums serve as arks in which carefully managed animal populations are bred and their progeny is reintroduced into the wild. These institutions can provide their knowledge, skills and the necessary animals for breeding. They are also able to establish appropriate social groups which optimize the chance of

successful breeding and rearing and they ensure continued monitoring of released animals which improves the success rate of reintroduction.

Experiences gained in wildlife reintroduction programs can be transferred to translocation programs, since the latter can help reduce conflicts between humans and wildlife. Translocation becomes more and more important, since habitat fragmentation and climate change shift boundaries and the quality of habitats.

If zoos and aquariums want to become a major force in conservation actions, they must pool their financial resources in order to build up nature conservation units. The tasks of field staff vary from short assessment surveys to long term field studies.

Nature conservation programs are often far away from parent institutions, hence staff must collaborate

Back to Nature

with local governments, learn to speak foreign languages and deal with different cultures. It is most important to train staff from wildlife, forestry, national parks, zoos and aquariums from countries with great biological diversity.

WAZA's main goals

All members focus their conservation activities within local, national or regional Biodiversity Action Plans or similar Species Recovery Programs. Zoos and aquariums work together with other institutions and the appropriate government authorities of the host country and - whenever possible - recruit conservation staff for work in the wild. Well managed zoos and aquariums are refuges for endangered resident animal species.



Wildlife at the zoo

Well-designed zoos contain a large number and variety of microhabitats such as log piles, stone heaps, hedges, brush walls, ponds, walls, groves etc., which support local fauna and flora. Most obvious for the visitors is the sometimes amazing number of wild bird species that have chosen a zoo as their habitat, in particular larger species such as painted storks in many zoos of Southern and South-Eastern Asia (top: Khao Kheow Open Zoo, Thailand), or white storks in European zoos (left: Basel Zoo, Switzerland: Providing habitat for white storks - WAZA Project 05009), herons (right: night heron at Zoo Negara, Malaysia), cormorants, pelicans, waterfowl and many others.



Knowledge is Power

Animal collections in zoos and aquariums reveal possibilities for conservation directed research. They also offer a platform for discussion between scientists and visitors.

Results of internal research in zoos and aquariums can further their own aims e. g. animal husbandry, species conservation, visitor preference and zoo educational methods etc.. In addition zoos and aquariums can give external research groups access to material and animals for comparative studies.

Scientific research is vital in helping to solve the conservation crisis. In order to support local conservation, priority must be given to research which has clear implications for the

conservation of populations and habitats. Only long-term studies can successfully reveal problems, help determine those actions which are of highest priority to achieve sound conservation-based solutions and ultimately evaluate the results.

All fields relevant to nature conservation benefit from scientific research. The WAZA network is a valuable tool for universities, zoos and aquariums. Research work in zoos and aquariums needs greater financial support. The major part of costs is contributed by the institutions themselves.

Research results must be made available to zoo staff in a comprehensive manner. Most zoos and aquari-



ums lack expert teams which can evaluate publications dealing with specialized subjects. Therefore popular scientific publications are helpful.

Evaluation is necessary in ensuring that research work remains focused on stated priorities, is financially supported, serves conservation efforts and achieves the required goal.

WAZA's main goals

All members encourage research initiatives, especially those directed towards conservation. They raise funds for research work. New research fields must be monitored for their potential application to conservation.

Research - a prerogative for survival

In 1988, ten years after the last importation of wild waldrapp ibises from Morocco, a European Endangered Species Program, coordinated by the Alpenzoo Innsbruck, was established. The knowledge gained in the framework of this program about how to keep and breed the waldrapp ibis led to high breeding success and low mortality. As a consequence the *ex situ* population managed under the program grew from 333 to about 750 birds. Although the various zoo colonies are all closely related no negative inbreeding effects have been observed to date. It is intended to undertake genetic research however. As every year more birds are hatching than are dying, about 40 to 50 ibises per year are ceded to keepers outside the program. It is obvious that birds could be made available for reintroduction projects, too. However, before this is to happen several research projects need to be completed and favourable conditions must be established in the release areas.



A research project (WAZA Project 04003) implemented by the Konrad Lorenz Research Institute in Grünau, Upper Austria has demonstrated that it is possible to establish permanent free flying colonies of waldrapp ibises in Central Europe. The birds are able to avoid predators and to find their food in the wild during the vegetation period. During winter, they have to be kept and fed in an aviary however. The "Scharnstein Project" (WAZA Project Nr. 03001) is based on the recognition that young waldrapp ibises learn the migration route and location of the wintering grounds when migrating for the first time with their parents. Using microlights, groups of hand-reared waldrapp ibises are trained to fly from Upper Austria to a suitable wintering area in southern Tuscany. In the following spring it is hoped that the birds will independently return to Austria. If this project succeeds the knowledge gained could be used for the reintroduction of waldrapp ibises to other parts of their original range. A third project operated by Jerez Zoo in Spain is looking into the effectiveness of different releasing techniques (WAZA Project 04004, title picture). The "Bshar el Kh-ir" Project, finally, aims at creating favourable conditions for a future reintroduction at Ain Tija-Mezguitem in Northern Morocco (WAZA Project 04013).





Lost without Zoos

Ex situ populations must be demographically stable, well maintained and capable of self-sustaining reproduction. They should be distributed among several institutions and of sufficient size to maintain high levels of genetic diversity. Animal collections of some breeding programs are much too small to be of significant value to long-term conservation programs. How can management of animal collections in zoos and aquariums contribute to conservation actions? The answer lies in the cooperation of regional or global breeding programs.

A viable and healthy population requires demographical stability to ensure survival and self sustaining reproduction.

Genetic diversity is most important for the survival of a healthy popu-

lation and for the capability to adapt to environmental changes. A viable *ex situ* population should be of sufficient size to retain 90 % of the founders' genetic diversity for 100 years.

All *ex situ* programs aim at supporting *in situ* conservation. This implies that zoos and aquariums contribute their knowledge of small population management to conservation programs and can also refer to the reintroduction of animal species. Today many wildlife populations face problems similar to those of *ex situ* populations – they are small and of limited gene flow.

Zoos and aquariums in different regions may have different conservation priorities. The following criteria may be used for prioritizing species:

- degree of threat to wild populations, i.e. IUCN categories of threat;
- taxonomic uniqueness;
- species native to a region;
- educational and research value;
- flagship species;
- species with stable and healthy populations and established husbandry protocols.

WAZA's main goals

All breeding programs follow specific program objectives. Data are collected from *ex situ* populations, WAZA guidelines are followed before accepting confiscated animals.



World wide coordination of *ex situ* conservation breeding

The earliest coordinated conservation breeding efforts by the zoo community date one century back and concern the American bison, *Bison bison*, and European wisent, *Bison bonasus*, at North American and European zoos and wildlife parks respectively. In 1923, Central European zoo directors founded the International Society for the Conservation of the Wisent. Exterminated in the wild, 56 individuals of this largest European land mammal had survived in zoos. These animals were inventoried and a studbook was established. Over the years, other studbooks followed, and as of to date no less than 182 International studbooks are kept under the auspices of WAZA. The studbooks provide the basis for the coordinated breeding of the species concerned. WAZA oversees the good functioning of the studbooks through its Committee for Inter-Regional Conservation Coordination, and the London Zoological Society has been mandated by WAZA to act as the global coordinator for the international studbooks.

Conservation breeding programs are usually run at the regional (ARAZPA, AZA, EAZA, PAAZAB) or occasionally national (BIAZA, JAZA, SAZA) level, as transferring animals from one continent to another is always a cumbersome exercise. In addition, regional associations maintain regional studbooks for species which are not in need of global coordination. As an example, the European Association of Zoos and Aquaria (EAZA) manages a total of 314 regional breeding programs or studbooks.

Photos: The Alpine ibex (title), exterminated in Switzerland in the 18th Century, could be reintroduced thanks to successful breeding by Swiss zoos and wildlife parks. As of today, 14'000 ibexes roam the Swiss Alps, and also many colonies in neighbouring countries trace their origins to founder animals bred by Swiss Zoos. The International Studbook for the Sand Cat (above) is kept by The Living Desert at Palm Desert, California, and that for the Great Indian Rhino (right) by Basel Zoo, Switzerland.



Learning for Life



Education and training are major tasks of zoos and aquariums. Every institution should have a defined policy to allow it achieve educational aims - especially conservation of biodiversity and environmental sustainability - and must operate in an eco-friendly manner. Only then will education gain credibility.

Zoo education is an integral discipline which aims at visitors and the public as well as at zoo staff. Zoo education must turn into education for nature conservation. The exchange of ideas is fundamental to the effectiveness of educational work. For this reason educational staff and staff from other fields cooperate in networks (e.g. International Zoo Educators Association).

Progress of nature conservation

depends on the development of understanding in the interaction between species and environment as well as on human attitude and behaviour.

Zoos and aquariums have changed into educational centres for local experts and therefore support local capacities for conservation. Zoo staff becomes qualified by means of adequate education for future engagements.

All employees and volunteers should have an overview of the goals and tasks of their organisations and be aware of their common goal.

Conservation campaigns of zoos and aquariums harness public interest and therefore gain political support. Zoological institutions unite environmental matters in everyday life which leads to a better understanding.

The illegal trade with meat of poached African animals – for example – can be compared to the problem of over-fishing in Europe. Therefore visitors of European zoos and aquariums become aware of the omnipresence of environmental problems.

WAZA's main goals

Education is one major task of zoos and aquariums and should be given adequate support. Collaboration between other education institutions, organisations, ministries and participation in the development of formal curricula activities creates a basis for enhancing the effectiveness of conservation education. Educational programs available for the entire staff support common aims.



The Mesoamerican and Caribbean Conservation Action Partnership (AZA/MACCAP) and the Asociación de Mesoamérica y del Caribe de Zoológicos y Acuarios (AMACZOOA) embarked on a collaborative workshop series for zoo staff that has combined two approaches: one focuses on areas of professional development and zoo operation, while the other considers larger issues in conservation.

WAZA supports the collaborative training efforts of its constituency by the CIRCC Training Grant Scheme established in 1996. Every year three to four inter-regional training programmes or events receive financial support.

Photo: Workshop participants from the Dominican Republic receiving computer training.

Living classrooms

Most zoos and aquariums attract groups from a variety of educational institutions. By provide exciting, interactive, structured educational workshops, programmes or classes and resources, tailored to meet the specific needs of these groups, zoos and aquariums can contribute to learning and understanding as part of local and national curricula frameworks. At the same time, zoo educators can raise the profile of environmental and conservation issues and advocate positive attitudes about, and action for, nature from schools, colleges and universities into the community.

Photos: School classes at Ivloina (Madagascar) and Cologne Zoo (Germany).





...and talk about it

Zoos and aquariums are engaged in conservation, education, recreation and research. And visiting the zoo is fun! Nature conservation and fun are not mutually exclusive. If zoos want to point this out, they must improve the communication strategy of their staff. Messages should be simple and clear and involve people with an anti-zoo attitude into the debate.

Many people still have reservations about keeping animals in zoos or aquariums. This discomfort is supported by militant anti-zoo activists and some animal welfare organisations. When zoos and aquariums are forced to defend themselves, valuable resources of time and energy are diverted from conservation activities.

Institutions should take every opportunity to inform people about their achievements and demonstrate how to participate. Effective communication influences people's attitude towards zoological institutions and

our environment. They are encouraged to conserve biodiversity and habitats.

Visiting zoos can lead to a change in opinion and behaviour. Zoos and aquariums must give visitors practical advice and make it easy for people to become active – to whatever extent.

Visiting zoos and aquariums brings benefits to urban populations. Today's urban children are the conservationists of tomorrow. Zoos and aquariums are localities of relative peace and tranquillity. They should emphasize the value of uniting people with nature – in other words reconciling human beings with their natural surrounding.

People will support zoos and aquariums, if it is explained how their money directly supports nature conservation and how it improves the wellbeing of animals in zoological institutions.

Communication must point out

two issues of conservation: **direct conservation**, support of field studies and wildlife programs – and **indirect conservation**, change of attitude and behaviour.

Staff members of zoos and aquariums must choose a simple and direct language and should avoid technical terms, where possible. They should listen to criticism, correct wrong statements and invite those who are against zoos to look at our record in conservation in recent decades. The out-of-date views of such people must be challenged and corrected.

WAZA's main goals

All members apply a communication strategy that considers aims, addressees and key messages, chooses tactics and methods, identifies resources available and develops monitoring and evaluation techniques.



The public at large and even many government authorities and NGOs do not perceive zoos as conservation organisations. With a view of increasing awareness of the zoos' involvement in conservation, WAZA has begun to brand, on application, suitable projects. These projects are publicized on www.waza.org and in WAZA's print publications.

Photos: The tiger (title) was the theme of a large campaign run by EAZA in 2003/04. 129 member institutions participated and raised more than 700,000 EUROS for selected tiger conservation projects. Two of these projects operated by the Zoological Society of London and Fauna and Flora International respectively, and funded through the UK based charity 21st Century Tiger have received the WAZA brand in 2005 (WAZA Projects 05037 and 05038). The hellbender (left) conservation program is one of seven WAZA branded projects operated by the St. Louis Zoo's WildCare Institute (WAZA Project 05001). The Allwetter Zoo of Münster, Germany, has the lead in five WAZA-branded projects jointly operated by consortia of zoos and other stakeholders, including the International Centre for the Conservation of Turtles (WAZA Project 04011). The Mabula Ground Hornbill Project (WAZA Project) is only one of 15 WAZA-branded projects in Southern Africa, in which member institutions, PAAZAB, regional conservation organisations and others participate.



Networking

Zoos and aquariums cannot take over all tasks to preserve biological diversity. They must associate with other institutions. In cooperation with others even small zoos can make an important contribution in conservation, e.g. animal breeding, educational work or field projects.

Field projects offer opportunities to create networks between zoos of different continents. Local zoos – on the one hand – are familiar with local customs and thus have the ability to convince local communities to support field conservation projects. On the other hand cooperation with well resourced zoos helps local institutions become acquainted with the standards and professional ethics of the international zoo association and learn about animal welfare.

A network for the bearded vulture

In 1913 the bearded vulture was exterminated in the Alps. 74 years later, the first bearded vulture fledglings bred by zoo birds were reintroduced to the Rauris Valley of Austria. This was the start of an international project, in which about 30 zoos, Vienna University, the Zoological Society of Frankfurt, WWF, national park administrations and other stakeholders participated. In 1997 project birds reproduced for the first time in the wild, and as of today more than 100 of these majestic birds populate the Alps of France, Italy, Switzerland and Austria.

The Goldau Landscape and Animal Park is the Swiss breeding centre of the project. They have built a large exhibit, behind-the-scenes breeding aviaries and an information centre. To date the zoo has invested more than 2 million Swiss Francs into the project. (WAZA Project 04023)

Photos: Young bearded vulture up to be released (left), adult breeding bird at Goldau Landscape and Animal Park (right).



The joint IUCN/Wetlands International Freshwater Fish Specialist Group is chaired by the Director of Chester Zoo

Professional associations are effective instruments in achieving improvements in zoos and aquariums. Zoo associations must develop a consciousness for conservation that unites the activities of its members within an ethical and technical framework.

WAZA furthers the collaboration between zoos and aquariums worldwide and like-minded professional organisations. WAZA improves relationships with governments, government-organisations and major non-government organisations (NGOs). WAZA coordinates the activities of zoo associations and of single zoos and aquariums at international meetings e.g. conferences of parties to international agreements. IUCN offers a variety of opportunities for cooperation. Zoos worldwide have close relation-

ships to the Species Survival Commission (SSC), together with its numerous specialist groups for certain animal species, animal health, conservation breeding (CBSG), or reintroductions.

WAZA's main goals

Zoos and aquariums establish strong partnerships at every level. They participate in the work of national and / or regional zoo associations. Zoo associations advise their local governments on the improvement of zoo legislation and put their members under the obligation to represent a conscience for conservation in compatibility with their culture.





Give Children a Chance

Separation of waste for recycling at Johannesburg Zoo (South Africa)

Zoos and aquariums are mandated to participate in conservation of biodiversity and must not undermine this aim in any way that leads to the depletion of natural resources. They work increasingly sustainably, use natural resources without exploiting them and show their visitors how to adopt sustainable life styles. If zoos and aquariums become models of sustainability, they can take a leading position in environmental conservation, propose beneficial ecological methods and encourage studies to solve regional problems.

The following principles help to maintain the inevitable influence on environment on a small level.

- Apply the three “Rs”: reduce, reuse, recycle.
- Separate waste at source in order to support reuse and recycling.
- Maximize energy efficiency in all fields, reduce energy consumption during travelling, transportation

and try to use energy produced from renewable resources.

- Use products that embody the most efficient and least environmental damaging use of natural resources (this applies to all products from major construction materials to daily consumables).
- Ensure that animal acquisitions and dispositions are not only sustainable environmentally but also ethically and culturally.
- Avoid environmental pollution.
- Maximize the proportion of goods and services that come from local providers.
- A reduction in differences of living conditions across the world is essential for sustainable development. Therefore contribute to an equitable development by supporting conservation projects and adjusting purchasing policies and practices to help.

- Use the educational resources of zoos to explain people the necessity of changing attitudes and behaviour and to give advice as to how to participate.
- Set an example for other businesses in the use of ecologically beneficial operations.

One frequently asked question: What will sustainability cost? The answer is simple: Sustainability is profitable to all of us!

WAZA's main goals

All institutions practice environmental sustainability. They maintain natural resources and show how to achieve sustainability. Institutions demonstrate how social attitudes and behaviour can be changed.

Sustainable heating system at Zurich Zoo's Masoala Rain Forest

The climatic characteristics in the huge greenhouse hosting Zurich Zoo's *Masoala Rainforest* are the same as those on Madagascar's Masoala peninsula. That means temperature oscillates between 17 and 35 °C and air humidity is above 65%. The greenhouse has been constructed in a way to permit maximum penetration of sunlight. On sunny days, the greenhouse is heated by the sun only. If the air temperature rises above a defined threshold, a 30 m chimney sucks out the warm air, which is then cooled by water and forced back into the hall. The surplus heat is stored in a 250 m³ large reservoir for being used for heating on cooler days, or for producing warm water for the restaurant. During extended periods of cold, heating is provided by an environmentally-friendly, CO₂-neutral, wet woodchip heating system.



Ethics and Animal Welfare in Conservation



Siberian tiger at Bronx Zoo (USA) busy with a cattle bone

Zoos and aquariums follow ethical principles and maintain highest standards in wildlife management and breeding which usually exceed legislation standards. The Code of Ethics adopted by the members of WAZA is the common ground on which nature conservation activities are based. Breeding actions should not affect animal welfare.

Animal welfare is understood as human behaviour towards individual animals. If conflicts of interest exist between welfare of individual animals and the conservation of species or populations, zoos and aquariums must decide on the setting of priorities. Zoological institutions do not only pursue goals of conservation, but also attempt to meet the requirements of the individuals they are responsible for.

Zoos and aquariums should maintain animals without risk of injury or disease to visitors.

Animals should only be removed from their natural environment, if it is essential for the survival of an *ex situ*

population. Acquiring individuals of endangered species from wild populations is acceptable only, if this action contributes to the long – term survival of threatened populations and legal obligations are fulfilled.

Zoos and aquariums participating in breeding programs are responsible for the regulation of their animal collections. Absence of predators and food shortage as well as continued medical care may result in a surplus of individuals in successful breeding programs. Surplus individuals can be transferred to other institutions or semi-reserves or they may be reintroduced within the framework of a conservation project. Temporarily these individuals can also be excluded from breeding. If none of these possibilities are feasible without causing suffering, adversely affecting group behaviour or without hazarding the maintenance of *ex situ* populations, euthanasia might be considered.

Design and structure of animal enclosures should mirror the species' native environment, meeting physio-

logical requirements and considering stimuli needed to encourage species-specific behaviour. These enrichment activities trigger a variety of behavioural reactions and give individuals the opportunity to gain experience as expected in the wild. Zoo and aquarium staff must always focus on animal welfare which will influence enclosure design.

In addition to all of the above, it should be remembered that invasive exotic animal and plant species are a potential threat to the indigenous fauna and flora, therefore steps must be taken to prevent escape of exotic animals and plants.

WAZA's main goals

All institutions permanently strive after an improvement of methods and professional techniques. If the killing of surplus animals is not justifiable and reproduction cannot be prevented without causing health problems, then institutions should not have these animals in their collection.



Balancing animal welfare versus conservation

Breeding animals is necessary to maintain viable *ex situ* populations and allows the animals to express their normal reproductive behaviour – from courtship to the dispersal of the offspring. On the other hand, it is almost impossible to breed without producing surplus animals. Prevention of reproduction, however, has negative effects not only on the continued existence of the *ex situ* population and on the behaviour of the individuals or groups, it often has also a negative impact on body functions. Sexual cycles that do not lead to pregnancy have a pathological effect and can lead to premature infertility by irreversibly damaging the genital tract. The use of contraceptives suppresses cycle activity and, if used over the long term, may lead to dramatic changes in the female reproductive organs. Thus, reproductive management has both population/genetic and animal welfare implications.

Photo: Male lion at Sedgwick County Zoo (USA)





About WAZA

WAZA is the acronym of the **World Association of Zoos and Aquariums**, which was founded in 1946 as the International Union of Directors of Zoological Gardens (IUDZG). WAZA unites, at a global level, zoological gardens, aquariums, national and regional associations, like-minded organisations and individuals willing to abide by its bylaws and all other rules and regulations set by the Association, including its Code of Ethics and animal Welfare.

The objectives of the Association are:

- to promote cooperation between zoological gardens and aquariums with regard to the conservation, management and breeding of animals in captivity;
- to promote and coordinate cooperation between national and regional associations and their constituents;
- to assist in representing zoological gardens and aquariums in other international organisations or assemblies;
- to promote environmental education, wildlife conservation and environmental research.

WAZA unites more than 220 zoos and aquariums, 24 regional or national zoo associations and a small number of affiliate members who also support the Vision and Mission of the Association. The result of this is that WAZA has, either directly or indirectly, influence over more than



1300 zoos and aquariums worldwide. These institutions have more than 100.000 employees and are hosts to more than 600 million visitors each year, approximately 10% of the world's population. This gives the WAZA access to larger number of visiting public, more than any other group of public, conservation-oriented institutions.

Delegates at an Annual Conference of WAZA





WAZA closely cooperates with the Secretariats of international Conventions (CITES, CMS) and participates in their Conferences of the Parties. WAZA is a member of IUCN and maintains also close working relationships with a number of conservation NGOs and national governments. Picture: Addaxes and scimitar-horned oryxes reintroduced at Bou Hedma NP, Tunisia (WAZA Project 05039).



About half of the world's amphibians are threatened or endangered. In many cases the only solution is to conserve them *ex situ* with the hope that the species can be reintroduced to the wild at a later stage. WAZA has therefore called upon its constituency to undertake a massive coordinated effort in addressing the global amphibian extinction crisis. Photo: Crested toad (WAZA Project 06002).



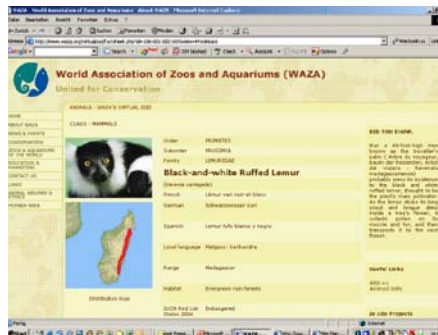
WAZA produces several series of publications: News, Directories, Magazines, Facts, Conference Proceedings, Technical Meetings Proceedings, as well as Strategy and Policy Documents. While some of these are primarily intended for members, others are widely distributed, e.g. to International Governmental Organisations, CITES Authorities world wide, and major NGOs.



In situ, or combined *ex situ-in situ*, projects implemented or supported by members of the WAZA Network may receive the WAZA brand. Applications are accepted either from WAZA members or from project organisations. WAZA promotes the branded projects by publicizing them on the web site and in paper publications. Picture: Golden tree kangaroo (WAZA Project 04016).



"Zoo" is not a registered trade mark, and all kind of establishments call themselves zoos, even if they have nothing in common with WAZA institutions, except that they also keep wild animals. WAZA regards substandard "zoos" as a major problem and has established a working group to look into ways and means of dealing with such institutions. Photo: Roadside zoo, VietNam



WAZA's website- www.waza.org – is an important resource for all those interested in zoos and aquariums and in conservation. It contains amongst other things major sections on "Zoos and Aquariums of the World", Conservation, including strategies, *ex situ* breeding and WAZA-branded projects, Welfare and Ethics, an Events Calendar and "WAZA's Virtual Zoo".

WAZA's Association Members

ACOPAZOOA – Asociación Colombiana de Parques Zoológicos y Acuarios (Colombian Association of Zoos and Aquariums)

AIZA - Asociación Ibérica de Zoos y Acuarios (Iberian Association of Zoos and Aquaria)

ALPZA - Asociación Latinoamericana de de Parques Zoológicos y Acuarios (Latin American Zoo & Aquarium Association)

AMACAZOOA - Asociación de Mesoamérica y del Caribe de Zoológicos y Acuarios (Mesoamerican & Caribbean Zoos & Aquaria Association)

ANPZ - Association Nationale Française des Parcs Zoologiques (French Zoo Association)

ARAZPA - Australian Regional Association of Zoological Parks and Aquaria

AZA - American Zoo & Aquarium Association

AZCARM - Asociación de Zoológicos, Criaderos y Acuarios de Mexico

BIAZA – British & Irish Association of Zoos & Aquariums

DAZA - Danish Association of Zoological Gardens

DWV – Deutscher Wildgehege-Verband e.V.

EARAZA - Eurasian Regional Association of Zoos and Aquariums

EAZA - European Association of Zoos and Aquaria

FUNPZA - National Foundation of Zoological Parks and Aquaria, Venezuela

JAZA - Japanese Association of Zoological Gardens and Aquariums

PAAZAB - African Association of Zoological Gardens and Aquaria

SAZARC - South Asian Zoo Association for Regional Cooperation

SEAZA – South-East Asian Zoo Association

SNDPZ - Syndicat National des Directeurs de Parcs Zoologiques (French Zoo Directors' Federation)

SAZA (SDF) - Swedish Association of Zoological Parks and Aquaria

SZB - Sociedade de Zoológicos do Brazil
UCSZ - Union of Czech and Slovak Zoological Gardens

UIZA - Italian Union of Zoos and Aquaria

VDZ - Verband Deutscher Zoodirektoren e.V. (German Zoo Directors' Federation)

including:

OZO – Österreichische Zoo Organisation

zooschweiz – Swiss Association of Scientific Zoos





WORLD ASSOCIATION
OF ZOOS AND AQUARIUMS

- UNITED FOR CONSERVATION -