

FROM THE EDITOR

IZE members,

Your team of regional editors are proud to deliver to our membership the first journal of the new millennium. We are most pleased at the diversity of articles submitted for this year's issue. The variety and scope is indeed a real testament to the levels of involvement, we as professionals contribute to research, education and conservation worldwide on a daily basis. It is truly a great time to be zoo and aquarium educators.

Our good work is needed now more than ever. Our continual balance between realism and optimism, for the health of the planet, must be expressed in messages of good science, hope, belief and a position statement that emphasizes a "you can make a difference" attitude rather than the doom and gloom forecasting we unfortunately see presented. Hard to get our guests interested, if they believe no hope is possible. The many fine articles presented in this issue strongly indicate that IZE members are "believers" in empowering others to make that difference. Keep up the good work - you do indeed facilitate positive change.

Special thanks to Dennis Jones, Graphics Coordinator at Sea World, Florida for his invaluable assistance in producing this issue.

Please be aware that we will be adding publication and educational products (i.e. props, teaching aides, software) reviews in our upcoming newsletters. If you are aware of any exceptional books or products, please contact your regional editor and submit a brief review to them. We would be happy to consider you reviews for our members' benefit. Please do not forget to include a source contact, in what language it is available and what is the appropriate audience/user group. We hope this is a welcome addition and I encourage you to participate.

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Science Education Is Changing - Were You At The Debate? Attending Education Conferences.

Dr. Sue Dale Tunnicliffe
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It is very important that zoo educators keep in touch with what is happening in the education world of schools and attendance at education, particularly science education, conferences is an excellent and enjoyable (and tiring!) means of doing this. Science education in many countries now focuses on standards - in England there is a national curriculum for all subjects and science is one of the three subjects tested nationally at four stages in a child's career. In the USA there are standards nationally with State Standards and local standards to which teachers have to teach and against which students are tested. Teachers are again teaching for the test and look for assistance in covering the topics required from out-of school institutions such as zoos. This need for assurance and assistance was very evident at the recent National Science Teachers Conventions (NSTA) held in Orlando, Florida at the beginning of April. Many, many sessions were about teaching to standards and assessment. Sessions ranged from using mealworms to larger vertebrates in the classroom. I can not recollect a session run by a zoo or by teachers about using zoos although some years they are presented.

There is a vast exhibition hall with hundreds of stands. They feature the latest textbooks (along with assessment packs and home-school materials, many of the teachers who attend are mandated to buy textbooks for their school or district and this can be big business for the firms). Likewise, equipment manufacturers are in great evidence trying to obtain orders. Even teachers not buying are able to familiarize themselves with developments in texts and equipment, including the latest in computers and software. Some stands are about facilities available for education elsewhere and SeaWorld® and The Bronx Zoo had stands at which teachers could discuss educational programs offered and how these could help the teacher deliver the curriculum requirements.

Science education is changing, there is a paradigm shift in the air. The science education community is increasingly recognizing (and also thus feeling rather threatened in many cases) that the science taught in schools, particularly in secondary or High Schools, is not appropriate for future citizens whom most of us are teaching - we rarely teach pupils who go on to be research scientists. Moreover, for the first time outside of my own writings (e.g. Tunnicliffe 1996 a & b) I heard researchers other than myself discussing the consumer/producer interface and problems of mismatch in expectations and aims between these two groups-the visitors and the management. At AERA (American Education Research Association Conference in New Orleans in late April) this interface was increasingly recognized as well as the understanding that the education obtained

during school years in the school context was but a mere fraction of a person's whole education which encompasses leisure opportunities, after school clubs and community learning for school-aged children as well as the various aspects of life-long learning.

Both AERA and NARST, the National Association in Science Teaching, held immediately after AERA in New Orleans, had many so called "informal" education sessions which were on the issues outlined in this article. AERA have Special Interest Group of SIG to which membership is \$5. The Membership secretary is Doris Ashe of the Exploratorium, San Francisco, USA. E-mail: dash@exploratorium.edu Members of this Informal Education SIG receive a regular newsletter about issues of interest to educators in informal or non-school classroom based settings.

The two research conferences-at which there were very few, if any, zoo educators also debated the issue of the term "informal education" which is felt to be a misnomer these days because of the paradigm shift in thinking about locations of learning.

If zoo education is to keep pace with the rest of the educational field it is of paramount importance that zoo educators are active members of the education and educational research communities and are at the forefront of these debates putting forward their point

of view for zoos and aquaria. Zoo education (along with to a lesser extent botanical gardens education) is notorious "out there" for being an introspective field. Come out - we do not want the science centre people in particular to set the agenda which will affect us. Try going to a conference of wider educational coverage than just zoo education! If you don't zoo education will become at the best fossilized and at worst extinct.

References

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Tunncliffe S.D. (1996b) *Talking Science: Talking Zoology-ways to promote this through listening to the children and their accompanying adults and providing talking clues*. In proceedings of 13th International Zoo 'Educators Conference. Copenhagen, 99-105



CECZA A Successful Exercise In Inter-zoo Cooperation

by Bogdan Matei, Bucharest Zoo, Romania

Some background.

Conservation Education Curriculum for Zoos and Aquaria or CECZA for short, started as an IZE initiative to assist in the development of zoo education in Eastern European countries. At the beginning of 1998 Mr. Chris Peters, IZE regional rep for Europe and the Middle East and Mrs Liset van Geldermalsen, course co-ordinator from IPC Dier Barneveld College in the Netherlands, applied for EU ,funding for the course via the Leonardo da Vinci program. The application was successful and the project was granted 80 000 Euros (\$80000 US). With support from EAZA, partners from a number of different zoos and related organizations got together to create a one month pilot course. These included Amsterdam Zoo, Apenheul Primate Park, Burgers Zoo, Rotterdam Zoo, Hardervijk , Dolphinarium, IPC Dier Barneveld and Van Hall Institute in the Netherlands, Budapest Zoo in Hungary, Copenhagen Zoo in Denmark and Antwerp Zoo and Plankendael Wild Animal Park in Belgium.

Thanks to all of the above the 1st of November 1999 marked the beginning of the first course and an experience which we'll never forget.

13 teachers, 10,educators, 8 countries, one language.

The start of the course found us all a little nervous but curious at the same time. Slowly, however, the English language removed all the barriers and we started to get to know one another. Our 10-strong educator team came from six Eastern European countries, each of us bringing personal experience as well as part of our national culture. The course brought together people from Gdansk-Oliwa Zoo and Plock Zoo in Poland; Jihlava Zoo and Brno Zoo in the Czech Republic; Bratislava Zoo in Slovakia; Riga Zoo in Latvia; Szeged Zoo and Budapest Zoo in Hungary; Targu Mures Zoo and Bucharest Zoo in Romania. Everybody was as ready to share knowledge as to pick up something new. The teachers from the Netherlands and Belgium were always on hand to answer our questions, explaining everything we wanted to know.

The course schedule.

Subjects covered during the four week course included marketing, philosophy, management, formal education, informal. education and personal skills. The daily program contained presentations, workshops, creative activities, discussions and analysis of situations and even interactive games designed for use in educational programs. A very important role was played by the lessons on marketing, management and future policies in education. During all this time we learned how to make informative educational

materials such as panels, labels, worksheets, articles and press releases and even a website which proved very useful back home. Zoo visits formed an important part of the course as it gave us a chance to see how our theoretical new knowledge worked in practice. The teachers, most of them zoo educators themselves, explained new philosophies and shared all their resources and information with us.

The visited zoos, ten in total, (8+2 optionally) gave us specific examples of modern concepts relating not only to the educative mission of the zoo but the zoo mission itself. Visits to . Rotterdam Zoo, Plankendael W AP, Apenheul, Harderwijk, Burgers' Zoo, Beekse Bergen Safari Park, Wissel and Amersfoort showed us different ways of getting the same education message across.

After the course -making changes in our own zoos.

Time passed quickly and, all too soon, it was time to go home. A lot of plans, ideas, and projects waited to be put into practice.

We knew that when we got back home, our first priority would be to communicate our ideas to colleagues and superiors so that we could start putting into practice what we'd learned. Our first action will be to get the communication ways to our colleagues and superiors to allow us to put into practice, everything we learned. For most of us it will not be easy but we are determined and so will find a way of doing it.

No one is going to try to do everything at once but the first step has been taken and together we hope to support what we've Created and with the support of IZE and .EAZA offices, things should go well. Another important step will be the implementation of our new knowledge. In some cases this might involve a fundamental change in the zoo's image; in other cases there will be an improvement in existing plans and last but not least we'll enjoy sharing all of this information with other zoo colleagues.

Finally I'd like to say a big thank you to everyone that prepared this course and to the teachers and the zoo staff for their understanding, patience and hospitality.



ZOO EDUCATION - Should The Focus Be Biological Science And Zoo Animals?

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The World Zoo Conservation Strategy considers.. education to be "An Essential Conservation Task" (page 17, sub-chapter 4.1). A further eleven recommendations are made. The discussions about each of the recommendations are little more than observations about zoos and sometimes statements of intent, most of which are not contentious (4.1-4.6 and 4.9-4.12).

However sub-chapter 4.7, "A Variety of Biological Themes Can Be Explained by Zoo Education" appears too narrow an approach for two reasons. In sub-chapter 4.1, there is the recognition of the importance of environmental education, a holistic approach to conservation, which is not reflected in sub-chapter 4.7 and there is no recommendation for social themes (political, economic, religious etc.) to be incorporated into zoo education.

Sub-chapter 4.8, "Conservation Education: A Specially Important Element of Zoo Education", besides reinforcing the focus on biological themes, also focuses attention on zoo animals, particularly the threatened species rather than on biodiversity. This shifts attention away from equally important areas of conservation such as genetic diversity and ecosystems.

Below are listed some principles for effective zoo conservation education which present an alternative, more holistic view to those in the World Zoo Conservation Strategy and which reflect, in my opinion, current environmental education philosophy and practice.

The knowledge content must be about the human and natural environments.

Conservation is a process that involves people, it does not occur in a social vacuum. People make decisions (eg. the IUCN classification system) about species facing extinction. They undertake the necessary action such as, *ex situ* breeding programs. It is most often a landowner who is affected by an *in situ* conservation activity and it is the general public's increased awareness and behavior that zoos and other conservation organizations aim to modify.

Knowledge about the natural environment should focus on the processes that support it, the interrelatedness of these processes and the vulnerability of the natural environment to human impact.

People, before they can act, need to have an understanding of what processes operate in the natural environment. They need to understand that these processes support the diversity of life on Earth, including themselves. They need to understand that their, and

others', actions in one area can have impacts elsewhere. Only then do they have the information to enable them to behave in a responsible manner.

Knowledge about the human environment and how it is maintained at a cost to the natural environment. This cost varies with the level of technological development, history and culture (religion, science, politics etc.) of a society.

Individuals need an understanding of the context within which people, organizations and governments perceive the natural environment and act, to succeed in their efforts to conserve the natural environment. For example, politics impacts on every area of human life and without a knowledge of the past and current political scene, the processes operating in the society and how to influence them, any chance of influencing pressure groups and the government will be very limited. Issues such as consumerism, the media, the divide between rich and poor, religious beliefs, level of education, scientific paradigm, attitude to living things, the impact of and on indigenous peoples, etc. will need to be considered.

The development of practical, technological, social and political skills to enable people to engage in the processes required for the conservation of the natural environment at the individual and community levels.

A person is at a disadvantage in adopting ecologically sustainable practices, in gaining and evaluating information, in participating in discussions and influencing others about conservation issues without these skills. He/She will have a limited understanding of the role of government in setting social and environmental policy, how' government is often the arbitrator in disputes and limited in its response due to pressure groups representing the dominant mode of production of goods or global trends, and so on. It is possible for an individual to be manipulated by others without a conservation ethic.

The development of socially and ecologically constructive behavior and attitudes.

The focus must be on the sustainability of the natural and human environments. However, in addition to scientific, political, technological and social skills, constructive skepticism must be fostered to enable a critical analysis of the political process, social mores, technological innovations, scientific developments, conservation action by others and so forth.

A sense of optimism for the future.

The many problems that the natural environment faces and the seriousness of some can be overwhelming. It is therefore important that a rational and optimistic approach be employed.

Done in partnership with people.

It is important to avoid creating certainty for a given course of action because our lack of comprehensive knowledge of the natural environment and the vagaries of human behavior mitigate against it. It is possible though to consider a range of feasible alternatives and invite people to participate in them.

Conservation of the natural environment is best done *in situ*.

This is not to say that zoos, botanic gardens and aquaria do not have a role to play in conservation. Rather it must be seen that they are part of a bigger picture. Habitat protection (the best means of conservation) and the maintenance of ecological processes (not the substitution of science and technology) must be seen as the prime objectives.

So how are these principles to be applied in a practical way? Let me first state very clearly that the public conservation education programs and activities that a zoo conducts, are not a study of these principles. They have been formulated for the professional educator or the non-professional with an interest in providing coherent, balanced and comprehensive conservation education for a zoo's staff, volunteers or visitors.

Let me also state very clearly that such programs need to be interesting, enjoyable and appropriate for the learner in terms of their knowledge and skill level. Research tells us that people also learn best when they are challenged by something and when they are able to participate in the learning process.

However, it is not only important to get the mechanics right' for conservation education, it is equally important to dissect the content, philosophy, policies, bias, etc inherent in what is being provided. For example, to exclude the human element from a discussion about conserving an endangered species reflects a lack of a comprehensive approach or perhaps, cultural bias. If the human element is included, are all those who hunt such animals painted as criminals? Has there been a consideration of their culture? Do some hunt out of a cultural belief or a necessity to feed a family as they have always done? What message is conveyed about other cultures (our culture?) if broad, unsubstantiated comments about their part in threatening species are being made?

Is there any mention of environmental processes or is the natural environment viewed as benign? If processes are included, are they portrayed accurately? For example, extinction is often viewed as the 'bogey' in zoo conservation education. However, extinction *per se* is a natural process. Accelerated extinction due to human action is not and this is vital information for a scientifically accurate conservation education program.

Do we need to include ethics as part of conservation? Is it right for a small proportion of the world's population (the rich nations) to consume the bulk of its resources? Do we allow manipulation of genetic material in species without prior research about the likely impacts on the natural environment? Is there a way of , encouraging a relationship with nature... utilitarian, value for intrinsic worth, does it have rights to further a zoo's conservation objective?

Without people having an understanding of why the world around them is the way it is and then trying to move them to a pro-conservation position, without giving them the knowledge of how to legitimately get to that desired position, are we not setting the scene for discontent? By assuring them that *ex situ* conservation is doing the job of saving threatened species, what will be the impact when as time progresses, more habitat is lost and therefore even the charismatic megafauna do increasingly become extinct?

Are we in our effort to get people "onside" using the 'doom and gloom' tactic? Is conservation reduced to a problem that can be scientifically managed and perhaps even be solved by the application of ever more technology? Are we forgetting people in the equation?

These concluding comments, some of which have been garnered from other authors, will I hope, stimulate discussion amongst conservation educators. I also hope that they will be encouraged to critically review what is being done by them in the name of conservation education for the betterment of our home, and that of future generations, Earth. Lastly, I would greatly appreciate feedback from colleagues about the suggestions that I have presented above.

"Vegetarian Lions and a Smoking Chimpanzee"

Dr Katinka de Balogh

Faculty of Veterinary Medicine Utrecht Netherlands The Maputo Zoo

Mozambique, a country of great beauty in Southern Africa, has a long history of armed , struggle. The war for independence from Portugal ended in 1975, but was followed by a cruel civil war which finally terminated in 1992 with the signing of a peace agreement between the government Frelimo and the rebel Renamo forces.

By then most of the country-side had been devastated and more than a million landmines remained buried all over the country. Maputo, the capital of Mozambique, was mostly spared from the fighting, providing refuge for a large number of people from the countryside. During those years the city, built at the beginning of the 20th century in a Portuguese style, had not been maintained. Beautiful residential and government buildings reflecting the architectural traditions of the 30s and 40s were gradually decaying.

The Zoological Gardens of Maputo, located in the outskirts of the city, had been conceived in this same style. An open area was reserved for the keeping of groups of antelopes and many other animals like giraffes, rhinos, lions together with a large selection of reptiles, birds and other mammals could be admired in their enclosures. The animal housing facilities were surrounded by large and beautiful tropical trees such as Jacarandas and Flamboyants just to name a few. Prior to independence, a large number of Portuguese left Mozambique and the Zoological Gardens succumbed to neglect and decay. Around 90% of the animals were wiped out by hunger, illness or theft.

During the 80s the supply of food all over Mozambique became a big problem and basic commodities were rationed. In the country-side most domestic animals were slaughtered and consumed or escaped into the bush, turning wild. Wildlife in the parks and management areas were also shot or killed by landmines.

Maputo Zoo also felt the effects of the war. The rations for the animals were minimal and, if fed at all, they often did not receive adequate amounts. The story goes, that the five lions in the zoo survived on a diet consisting mainly of cabbage, turning them into possibly the only vegetarian lions in the world.

I remember visiting the Zoo when I had just started with my contract as a lecturer at the Veterinary Faculty at the Eduardo Mondlane University in 1993, shortly after the ending of the civil war. During my first visit it was sad to see the decay of the buildings and the conditions of the animals. The lions at the sight of a visitor licked their lips. The association 'Friends of the Maputo Zoo' had been brought into being and this small group of motivated people tried to save the Maputo Zoo and improve its deplorable conditions. An 'animal adoption' program was started, enabling individuals and companies to sponsor the rehabilitation of the facilities and assuring the adequate feeding of the animals. Better times started for the "survivors" such as the chimpanzee "Joao", who likes to smoke cigarettes, dance and exhibit his genitals to the visitors. Also the big hippopotamus "Abre

boca" (open your mouth), showing his impressive teeth in expectation of some food, and the long nailed bear, who is so old that no one is willing to risk anaesthetizing him to cut his 15cm long nails, have survived the dark periods of Mozambican history. The time had come to improve the conditions and avoid incidents such as the escape of adult crocodiles from their simple enclosures into the inhabited neighborhoods of the zoo and causing mass panic.

Since I had worked as a veterinarian in Blijdorp Zoo (Rotterdam) in the Netherlands almost 10 years ago, I had kept up my special interest in Zoos. Therefore, twice a year, I gave my lecture to the veterinary students in the Maputo Zoo. We noted that although several improvements had been made, there were still no signs providing information on the species exhibited. Two Mozambican students, Ilidio Hele and Josue Rosas, volunteered to make an inventory of the animals in the zoo and gathered information on each of the species. Blijdorp Zoo was approached and they were enthusiastic about cooperating on the design and production of the signs for the Maputo Zoo.

By coincidence, one of the Mozambican students came to the Netherlands for a three months course at the Veterinary Faculty in Utrecht. During this course two other participants, the Dutch students Gjalt van Hes and Ben Hesseling, teamed up with Ilidio Hele to look for appropriate illustrations and to design the signs for the animals at the Maputo Zoo.

Several discussions were held with Chris Peters, Chief Zoo educator at Blijdorp Zoo. What material would be best to withstand fluctuations in temperature? What colors would remain bright after exposure to extreme sunlight and heavy rain? What would be the best way to mount the signs and withstand any form of vandalism? What size and type of letters should be used? These were only a few of the questions put forward. Clearly under different conditions, different kinds of materials have to be used. The discussions were extremely fruitful, resulting in a product adapting the vast educational experience of Blijdorp to completely different conditions prevailing in a tropical country. A Foundation initiated by Prof. Van Knapen kindly sponsored the manufacturing of the signs and in October of 1999 the signs were handed over to the "Friends of Maputo Zoo". Although, many improvements still have to be made, the zoo can accomplish its important educational role by providing information on the different, mainly African species, of animals that most African children have never had the opportunity to see before.



Multi-thematic: A Brand New Zoo Concept Monique Staal Amersfoort Zoo

Amersfoort Zoo Decides On A Multi -thematic Presentation: All Tastes Are Catered For.

A short Introduction

The way animals in a zoo are shown has increasingly attracted interest recently. At the present time zoos all over the world are trying to replace the old cages with accommodation that is more true to life and audience family/animal friendly as well. The choices in park layout and exhibition design reflect different concepts; continental or taxonomic. Sometimes complete eco-displays are designed and set up. In this way each zoo has chosen a guiding principle to distinguish itself from others.

Amersfoort Zoo goes multi-thematic

Amersfoort Zoo has a 50-year history and over those years has grown and expanded to its present size of approximately 14 hectares. In Amersfoort Zoo we have given a more precise layout long and hard thought; a layout closer to our audience's perception of the world as it is, Amersfoort Zoo has decided on a unique concept - multi-thematic. This concept means that new and surprising layouts can and are made. Each visitor will find something new and appealing to him or her. And because everybody digests information and learns new things their own way, we have been and are creating a broader basis for education and perception, for that is the focal point in Amersfoort Zoo. As our visitors are not biologist, we are trying, in our own special way, to bring about appreciation of and admiration for (knowledge about) animals. We think our exhibits work because of their chemistry between man and animal, their light-heartedness, humor and fun, The light-hearted information is constantly winking at our visitors, the information. invariably based on respect for the animal. The multi-thematic concept is implemented in the layout of the Zoo, and as time goes by is crystallizing. In Amersfoort Zoo this crystallization can be seen in (large and small) thematic areas.

A few examples:

The "non-flying bird" theme compares flying with non-flying ones and shows how the latter category has adapted itself to land (ostriches) or water (penguins). The "tail" theme elaborates on tail adaptation, and it is here that the tail function in the "stink-fights" of the ring-tailed lemur and the balancing function of the wallaby's tail, for example stand out.

The "black and white" theme demonstrates the relationship between zebra, ring-tailed lemur and Asiatic black bear and dwells on the function of colors in the animal kingdom.

The "savanna" theme is a continental one, with its various species.

The "felines" theme is a taxonomy-based, in which different sorts of felines have their home and can be compared with one another.

By the use of various media forms this subject matter is expressed as follows:

Zoo guide

Our guide is also thematically organized, i.e. each theme dwells on four species, somehow or other interrelated. One of these themes compares the adaptations of animals with such titles as "odd extremities and protrusions": Why these animals have adapted the way they have and what functions these adaptations serve is explained, as are other subjects. The animals covered by this theme are the North African crested porcupine with its sharp quills, the elephant and its trunk, the wallaby with its pouch and the camel's humps.

Glass cases

The various glass cases in the park classify animals in a particular theme. We have a glass case talking about fur called "Will my hair-do do?", one about camouflage, "Playing hide and seek" and one about "crap" and the various properties and explanations of droppings.

The educational pictograms

These pictograms also deal with the theme of the particular area, but are always an integral part of a larger whole; the thematic areas.

By using these various and different themes we are trying to identify ourselves with our critical visitors. Our novel and refreshing approach tries to inform our guests on the theme. It is for this reason that a new thematic area has been added to the other ones; the Ancient City.

The Ancient City-a unique project



The construction of this very special thematic area was started some time ago and in the meantime the first stage has opened up its gates (literally and figuratively) to the public. The story that is narrated in the Ancient City is a novelty. Often the relationship between man and animal is the central point. No civilization has survived without entering into some kind of relationship or other with animals. Even today all civilizations are animal-oriented one way or another: To explain this we must go back in time...

Of course one can exaggerate in this respect; therefore, we have imposed restraints on ourselves. The Ancient City mainly focuses on the pre-Christian cultures of the Middle East. In the Ancient City there are magnificent buildings from Greek, Egyptians, Persian, Sumerian and Assyrian cultures. As a matter of course, animals are much more important than an accurate representation of history. The animals are the protagonists in an historical setting.

There are four kinds of relationships between humans and animals in the Ancient City.

Sacred animals are associated with Egyptian culture in an early stage; ibises, mandrills and scarab beetles find accommodation in the Ancient City.

Wild animals roaming around the city include lions and cheetahs and monitor lizards-the precursor of dragons in later fairy tales.

Diurnal animals such as rock hyraxes, golden jackals and some vultures, animals that seem to seek out the company of man themselves.

The visitor can also see domesticated pets such as donkeys, sheep breeds, poultry and camels as well.

All animals in the Ancient City have their own stories to tell.

Education in the Ancient City

By means of landscape immersion we are constantly trying to create the effect discussed earlier-eye to eye with the animals, unhindered by wide moat or high fences. Our educational program also wants to get rid of the unwritten rule that visitors must be told about the habitat of the animal, what it eats, how long its gestation is and how many young it brings into the world. We think that each animal has its own story to tell them, the pattern being variable.

This educational policy is of course also implemented in the Ancient City. In the City we go into relationships people have entered into with some animals and why with this particular animal.

The following media are used in telling these stories to visitors.

Educational pictograms

The educational pictograms have been aimed at the level of 8-12 year olds. The language that is used guarantees that the content is easily accessible for them and can be

understood by everybody (both parent and child), both as to subject and perception. The educational pictograms harmonize with this thematic area. Besides, no print letters are used, but "written letters", typography not being invented at the time. Colorful pictures are interactive elements have been used on the educational pictograms; this makes the pictograms all the more appealing. This appeal is a stimulus for further reading and makes the message easier to digest.

Plaques

For the interested visitor eager to know more about the cultures and buildings, plaques have been put up. These, however, differ strongly from the pictograms. There are no pictures and they look a bit dull, which has been done on purpose for we want the animals to be the center of interest. These brass plaques give information about the building, the companion culture and its place in history.



Replicas with audio-visual presentation

The replicas broadly visualizes the theme for our visitors. This replica of the Ancient City takes shape by means of an audio-visual presentation. The pictures of the animal species on the screen can be seen simultaneously with an illumination in the replica, together with the animal's habitat. The story is easily accessible for everybody and tells what can be seen and what sort of relationship there used to be with the animals. A good source of information for both adult and child and a real treat for the little ones.

Information booklet

A booklet about the building of this project and its stories is underway.. The unique qualities of this city are shown in a number of different ways. The information can easily be digested through the familiar pictures and the "did you know this?" items. The interested or stimulated reader will find more information and explanation in the elaborated texts.

Teaching packages

A teaching package especially for schools is being developed. The information is presented in a number of different ways, so that each group within the school will follow a lesson at their own level.

Stories from the Ancient City

After the discussion about the format, it is time for some examples of the stories we are telling in the Ancient City.

There used to be a refuse dump just outside the city; precisely as we know them today. The organic refuse was left there and the jackals and vultures roaming the city took the edge off their appetites there. By devouring the carcasses and other refuse, they prevented many illnesses and infections. They may, therefore, be compared with our current refuse collection. By dialing, children can follow the story, i.e. in which stage and by which animals the refuse was removed.



To complete the story and to bring about an interaction among the animal species, carcasses are introduced into the animals' accommodation on a regular basis. A little further on, in the Greek temple, a book will be found. By leafing through the book the children can make their own fancy animal from Greek mythological animals. They can do this because the pictures in the book have been divided into halves, so that the pages with lower and upper body can be turned independently.

The cheetah story tells that cheetahs used to be for the hunt, just as we use hounds for that purpose today. By turning three different blocks around, the children are told why: these animals were so useful. The first block tells - in four parts - that the cheetahs have a very flexible spine; which is why they are so extremely nimble and fast. The second block deals with the cheetah's grip during the sprint, with a picture of a football boot. The third block shows how the cheetah uses these adaptations during the hunt.



The great flexibility of the camel made it into an ideal beast of burden for desert peoples. The camel's head has adaptations to withstand heat and sand storms; this is explained to the children. They can also creep through a shahad saddle and feel its weight.

Open to the public

The first stage of the Ancient City was opened in spring 1999 and has been visited by thousands of enthusiastic people. The construction of the second stage is to begin shortly; it will be finished in the spring 2000. The Ancient City covers about one and a half hectares and accommodates well over 26 animal species. After the opening ceremonies we will continue our development and are already planning the next, challenging thematic area.

Evolution of Education Through Recreation in Uganda

Thomas Otim, Education Officer

Uganda Wildlife Education Centre

The Uganda Wildlife Centre (UWEC), formerly Entebbe Zoo, started life as an animal orphanage in 1952 and was administered by the then Game Department. During the 1960s the public interest increased and it became a popular recreational resource for many people. More attractions were subsequently added to the orphanage in the form of exotic animals and so the orphanage became a zoo.

When the zoo was created, the enclosures remained little more than prison cells for their occupants. Mortality rates were unacceptably high with low birth rates failing to compensate. No development was taking place and no real effort was made to turn Entebbe into a modern zoo.

Due to poor management and political instability in Uganda, almost all the animals died and the zoo slowly descended into ruin.

It wasn't until 1994 that an autonomous body, the Uganda Wildlife Education Centre Trust, was formed to save the zoo from total collapse. The primary function of the Trust is to transform Entebbe Zoo into an education centre with the aim of educating the public about the need to conserve the environment and the planet's dwindling resources.

The mission statement of the Trust is, "To create awareness and appreciation of wildlife through conservation of Uganda's biodiversity, among the public, especially targeting the younger generation through UWEC's facility at Entebbe."

UWEC sees it as an important task to involve its visitors in the protection of nature as much as possible.

Now, four years later, more has changed than was ever hoped for. The Master Plan has been completed and is expected to change the appearance of UWEC drastically. With a grant from the United States Agency for International Development (USAID), efforts to modernize UWEC began with the construction of a perimeter fence and expansion of the enclosures into semi-natural habitats. The enclosure and exhibits will be grouped according to the major ecosystem types in Uganda: savanna, wetlands and forest.

All the enclosures and exhibits will have an inbuilt education component. The point here is the belief that the best form of education is via recreation. People visit zoos not to be educated, but for pleasure and they learn completely imperceptibly.

Another important task for the Trust is to build a classroom and a dormitory for students coming from distant places. The Trust has also been charged with the responsibility of setting up a Trust Fund. Although classrooms have not yet been built due to financial constraints, efforts are being made to develop an education program for UWEC. The

program will be developed in line with the Ministry of Education's School Curriculum and is intended in parts to be as interactive as possible.

The education officer with his two education assistants gives lectures and guided tours to school groups around the centre. However, some school groups and the public are given self-guiding leaflets with interactive information about different animals and exhibits at the centre. The education sector is now in the process of making resources materials such as environmental games and activities, booklets for primary school teachers, brochures and posters for people to take back home with them.

Major events, like World Environment Day and International Tourism Day, provide opportunities for other educational activities. Special programs we based on the theme of the day are prepared with the aim of acquainting visitors with wildlife and the environment generally.

Although zoo education has started at UWEC, there are still several obstacles to progress. Not all the education staff are skilled educators in this field and facilities like classrooms, furniture etc. for these activities are lacking. There are few reference materials and financial resources are insufficient to carry out some of the programs.

In addition, international zoo educators' courses offered at different institutions throughout the world are very expensive to attend.

During my recent tour of some zoos in the Netherlands, I found out that zoo education is being made as interactive and fun as possible. Different zoos have different methods and approaches to convey messages about animals and wildlife generally. In all the zoos I have visited Rotterdam Zoo, Burger's Zoo, Safari Beekes Bergen, Noorder Dierenpark and Apenheul - interpretation is entertaining. Signs, tables, guided tours and other educational presentations like Zoofoon in Rotterdam are all interactive and fun. Learning here is not entirely formal and school-like; instead it is characterized by learning through discovery, learning by doing and learning by participation.

When compared with most zoos in Europe, African educators still have a long way to go. This is a great challenge to us. Despite financial constraints, UWEC is trying on its part to use simple materials within its reach, and it is our wish and hope that we shall also make education as fun and interactive as possible. Most of all to educate the visitors through recreation.