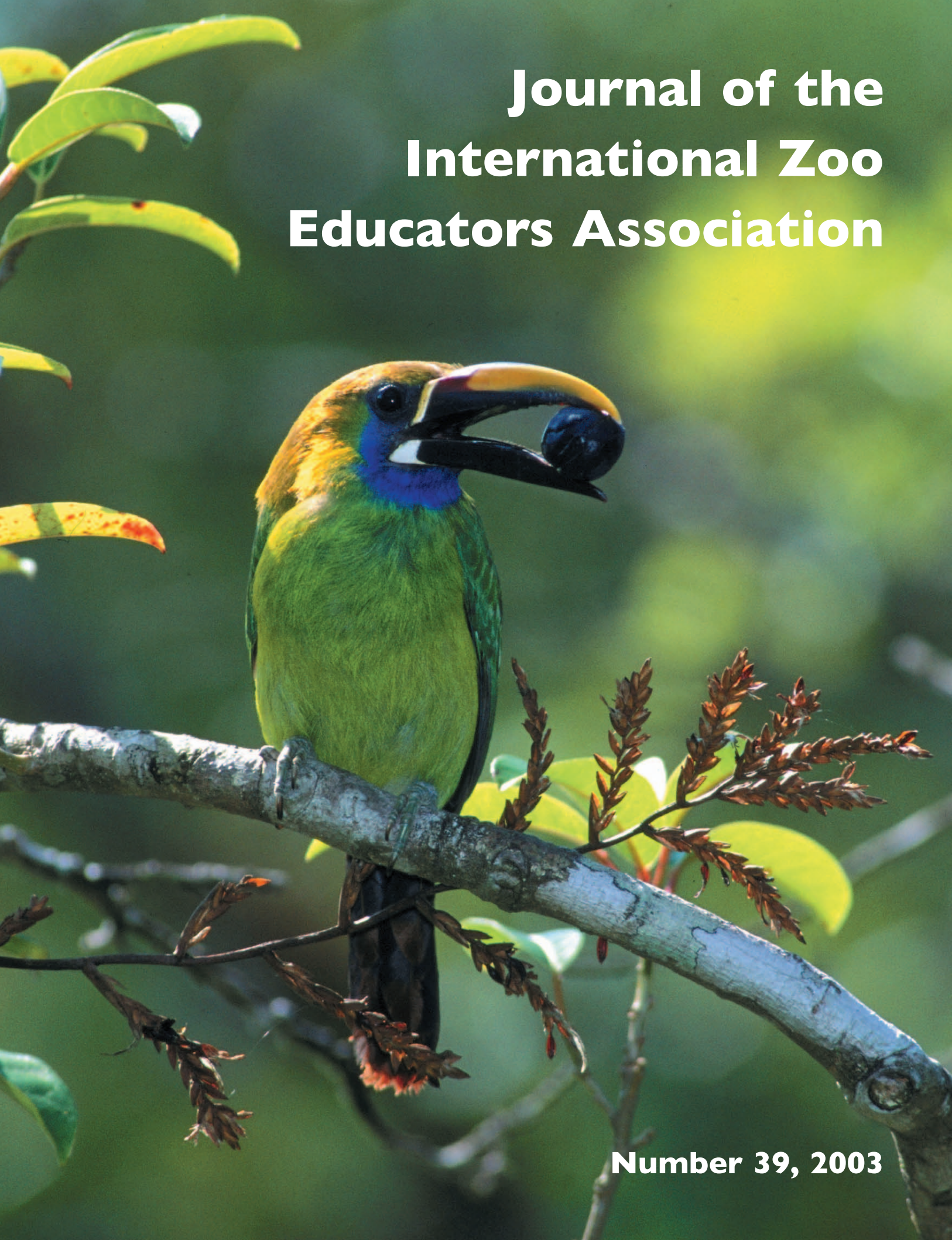


Journal of the International Zoo Educators Association



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From the Editor

Despite the best efforts of my teachers, I never really got to grips with chemistry at school. The periodic table, which we were expected to learn in its entirety, was as unintelligible to me as a wall of Egyptian hieroglyphs. No surprise then, that when I came across the element tantalum recently, it was the first time I'd heard of it.

Sitting inconspicuously at position number 73 in the periodic table, tantalum is notable for its ability to hold high electrical charges, making it a vital component of mobile phones, laptop computers, pagers and lots of other electronic devices. So what's this got to do with conservation? Well, tantalum is refined from an ore called coltan and coltan is found in huge quantities in the forests of the Democratic Republic of the Congo, home to Okapi, Bonobo and a myriad of other species.

With the boom in electronics and mobile phones in particular, demand for coltan has increased exponentially, resulting in a 'gold rush' style invasion of the Congo forests. There is evidence from a United Nations Security Council Report that smuggling of coltan from the Congo is generating tens of millions of dollars' worth of revenue, much of it seemingly invested in arms to sustain the warfare ravaging that country.

Of course, the situation is much more complex, but I offer the above summary as an introduction to Marcel Enckoto's article, 'Conservation in the Face of Armed Conflict', which gives an insight into the sometimes brutal realities facing conservationists and conservation educators in the field.

Bringing people face to face with environmental issues and exploring ways of dealing with them is, of course, what we are all about. In this issue of our Journal, colleagues from all over the world share very different experiences of 'getting the message over'. Whether using state-of-the-art computer technology or drama and storytelling, the common thread running through all of this collective wisdom has to be effective communication with all our audiences. In that respect a comment made by Albert Einstein came to mind while I was reading an unnecessarily complicated information panel in a museum recently - 'If you can't explain something to a six-year-old, you really don't understand it yourself.' I'm not sure how $E=mc^2$ fits into that way of thinking but it makes you pause for thought!

No doubt many of you will be getting ready to attend autumn zoo educator conferences in your region so now is a good time to remind you to start lobbying your directors for funding to attend next year's IZE Conference at Ocean Park, Hong Kong. Suzanne Gendron gives further details on page 28.

Still on the subject of money, Gerda Vest Hansen will be asking for your annual subscriptions early in the new year. We would ask you, if your institution can afford it, to seriously consider taking out institutional membership. The extra revenue this generates is ploughed into assisting educators who would otherwise be unable to afford it, to attend our conferences.

I hope you enjoy this issue of our Journal and find it useful. Please keep articles coming in to our regional editors as we are already planning the next issue!

Stephen McKeown

Conservation in the Face of Armed Conflict - the effects of political instability on the management of the Okapi Wildlife Reserve

Marcel Enckoto, Gilman International Conservation, Democratic Republic of the Congo

A World Heritage Site since 1996, the Okapi Wildlife Reserve (RFO, from the French for 'Okapi Faunal Reserve') is situated in the northeast of the Democratic Republic of the Congo (DRC), encompassing a forest area of 13,700km².



The reserve is part of the larger Ituri Forest, with its rich fauna and flora. This biological wealth includes approximately 5,000 okapis, 4,000 elephants, 2,000 leopards, forest buffalo, water chevrotain, three species of crocodile, 13 different primates plus a wide variety of birds and insects.

The floral diversity is high, comprising swamp, mixed and M'bau forest (the last dominated by *Gilbertiodendron dewevrei*), plus secondary forest where there has been deforestation.

Geographical features include rocky hills and salt licks as well as the large Epulu, Nduye, Nepoko and Ituri Rivers.

Some 30,000 people - pygmies and other forest tribes - inhabit the reserve, living mainly upon agriculture, hunting, fishing and gathering. Throughout the year ceremonies and rites take place, relating to matters such as circumcision, marriage, the birth of twins, the death of a

clan member and other significant cultural or personal events.

Since its creation in 1992, the reserve has had to be managed in the face of three major threats: shifting slash-and-burn agriculture, elephant poaching and gold and colombo-tantalite (coltan) mining. Coltan is a temperature-resistant conductor of high importance to the electronics industry.

The Congo Institute for the Conservation of Nature (ICCN), along with international non-governmental organisations (NGOs) such as Gilman International Conservation (GIC) and the Wildlife Conservation Society (WCS), has put into operation several management practices directed at reducing those threats. Gilman International Conservation has aided the ICCN and supported the overall operation of the reserve. This has included organising patrols, paying bonuses to wardens and guards, providing fuel and maintaining equipment such as communication systems. Further assistance has involved conveying UNESCO funds for law enforcement monitoring, organising military and management training and setting up alternative programmes such as agro-forestry and cane rat domestication.

As well as delivering environmental education, local schools have been given teaching materials, health centres provided with support, water sources constructed and tools donated for the maintenance of roads in remote areas.

The WCS has conducted essential research into the area's fauna and flora. With support from the US Fish and Wildlife Service, it has also participated in the construction of the Bukulani patrol post. Moreover, the society is involved in the vital work of including local communities in conservation efforts, particularly through establishing a system of sustainable agriculture.

All these efforts led to improvements in the situation on the ground throughout the reserve between 1999 and 2001. More than 20 guns were confiscated, several poachers were arrested and more than 500 traps were destroyed. Patrols evacuated approximately 3,000 gold and coltan miners. Educators conducted public awareness campaigns and travelled four times to villages in the most

remote areas of the north, in Wamba, organising public meetings, video shows and conferences, in schools and with local administrators.

Unexpected problems rose in July of 2002. Two rebel groups, known as the MLC and the RCD/ML (what these acronyms mean is not really important in our context), transformed the reserve into a battlefield. Accusing each other of responsibility, both parties played their part as the reserve's administration fell apart, security deteriorated and the threats to wildlife multiplied once again.



Talks with rebel groups have helped conservation work at the Okapi Reserve return to 'something like normality'

Looting soldiers harassed the population, taking away all their belongings. Poverty levels have risen as a result. For the first time, more than 3,000 pygmies and 12,000 Bantus fled from the reserve, walking a distance of 200km to the vicinity of Beni. Never before have pygmies left the deep forest.

The reserve administration was greatly affected. All the guards' guns and equipment were confiscated, forcing them to quit their patrol posts and stop surveillance. It has been reported that mining has restarted in the central area around Bandisende, while the bush meat trade (in monkeys) and elephant poaching are on the increase on the eastern side of Nduye.

Previously confiscated items (200kg of ivory, 300kg of coltan) were stolen. The dispensary lost all of its equipment and medicine, worth US\$10,000, while GIC lost both materials donated to the ICCN and its own. The ICCN lost office supplies, rations, bikes, radios and other field equipment estimated at US\$15,000. GIC's losses included household items, mechanical and carpentry tools, office supplies, agro-forestry tools and seeds, to the value of US\$32,000.

Recalling the sad memories of the Congo peacock and 16 cane rats that served Mobutu regime soldiers for dinner in 1996, three chimpanzees and 34 cane rats got eaten. Although the official report on the WCS's losses is not yet available, they are known to include seeds designated for farmers, solar power equipment and the resources of its library.

Major efforts to tackle the situation started in 2002, but fatal consequences accompanied the search for a solution.

UNESCO initially wrote letters to the belligerents, but with very little impact in the field. Gilman International Conservation, together with UNESCO, then requested a meeting between the RCD/ML and the reserve's administration in Beni. Tragically, this ended in the death of conservationists Karl Ruf (GIC), Jean Nlamba (UNESCO) and Kambale Saambili (GIC) in a traffic accident on their way back to Kampala.

In May, 2003, Dr Terese Hart of the WCS led the RFO delegation from Beni to the site. They made a preliminary assessment of the situation and contacted MLC soldiers in Bandisende and Bukulani.

In June, 2003, Gilman International Conservation sponsored a trip to Isiro for a meeting at MLC headquarters, along with other administration officials. Mrs Rosmarie Ruf took part, alongside the reserve's Warden and the Wildlife Conservation Society administrator. The delegation obtained an official statement authorising the RFO staff to resume their work, plus formal permission for the Garamba Frankfurt/Gilman plane to use the Erelu airstrip.

While so far, at least, conservation work at the Okapi Wildlife Reserve has returned to something like normality, the presence of MLC soldiers in central and eastern areas of the forest is causing a lot of skepticism.

There can be little hope of successful conservation in the face of armed conflict. The RFO survives only because of its dedicated staff, supported by Gilman International Conservation and the Wildlife Conservation Society. There is need of intensive awareness campaigns among the military, including the addition of conservation to the curriculum of national military training centres.

The investigative tour made by educators from May 10th to June 15th, 2003, during which the participants travelled widely, making contacts in villages throughout the reserve, should serve as a basis for future conservation activities.

An Important Zoological Discovery

Extracts from The Times, London, 1901

That extraordinary new mammal, the okapi, discovered by Sir Harry Johnston in Central Africa, is now to be seen at the Natural History Museum, on the ground floor. The skin brought home by Sir Harry has been admirably mounted by Mr Rowland Ward, and the public now have the opportunity of forming their own conclusions as to this singular animal which, after remaining hidden from the gaze of naturalists, hunters and the civilised world generally until the beginning of the 20th century, has suddenly been brought to light.



Sir Harry Johnston's painting of the Okapi © Zoological Society of London

Sir Harry Johnston had fallen in with a party of the dwarfs that inhabit the Semiliki forest, who were being taken to be shown at the Paris Exhibition by a German speculator; and, thinking that a visit to Paris would not be specially good for them, had conducted them back to their own district. Travelling with them, he took the opportunity of asking them about the animals of the forest, in particular enquiring about an animal which had been heard about by H M Stanley.

It is beyond all doubt a curious beast, one of the very oddest forms of animal life in a country teeming with strange and singular creatures. To anyone who knows the fauna of Africa, the okapi gives at once the impression of being a blending of three different mammals – antelope,

giraffe and zebra. Yet the okapi is, beyond doubt, a true species and is not a hybrid or a sport of any kind.

Ages ago Pliny remarked that from Africa there is always something new. The Dark Continent continues, to the latest hour of its history, to maintain this pre-eminence. It will be extremely interesting to hear further facts concerning the habits and life-history of this strange mammal. At present we are very much in the dark as to the range and manner of life of the new species. It may be hoped that Sir Harry Johnston, to whom we are all indebted for this new and interesting form of animal life, will shortly be able to procure what the lawyers term 'further and better particulars'.

Upon the whole *Okapia johnstoni*, as the scientists have labelled it, can scarcely be called a handsome contribution to the fauna of Africa. It lacks the magnificent appearance of the eland, the koodoo, the sable and roan antelopes, the gemsbok, and others of the nobler forms of antelope. It lacks too, the unique and stately beauty of the tall giraffe. Its prototype would seem to have been some creature of the long remote past, when the ancestors of the giraffe and antelopes were much more nearly allied than are those animals at the present day. It may, perhaps, like the tapir, be looked upon as a singular and bizarre instance of arrested development.



*The original strips of hide collected in 1900 by Sir Harry Johnston which were identified at the Natural History Museum (London) as a relative of the giraffe and named *Okapia johnstoni* © The Natural History Museum*



Painting by W Smit completed soon after the 'discovery' of the Okapi © Zoological Society of London

ARAZPA Education Policy

Melissa de Britt, Taronga Zoo, Australia

Education is the dual pillar, with conservation, that writes the charter for the work of zoos. Without education there will be no conservation, as people will not understand the need for positive action for the environment.



Every one of us has been on a journey of discovery - a life long learning voyage that has enabled us to grasp the importance of action now for a better future. Many people who visit our zoos have not been on such a journey, indeed they are disconnected from nature, the environment, wildlife, even their own pets - especially as Australia becomes more and more urbanised.

The role of our organisations is to provide the platforms and opportunities for the connection to occur, giving our visitors an opportunity to start the journey and make the contributions we all know are so sorely needed.

We need the people who come through our gates to work with us and eventually have ownership over conservation work in their local areas that will lead to global conservation outcomes. We are well placed to do this. If 10% of the world's population visits zoos every year and if the marketing line that 'one person speaks to another ten', is true then we have 100% of the world's population covered! However we all must embrace the role education plays in our zoos, parks and aquaria, open our minds to learning and encourage magical, meaningful moments between our visitors, us and our animals and plants.

With this in mind the ARAZPA Education Advisory

Group (Australasian Regional Association of Zoological Parks and Aquaria) set about establishing a benchmark policy for the development and delivery of education in our zoos, parks and aquaria.



During an ARAZPA Education Advisory Group workshop hosted by Taronga Zoo in August 2000, a team of educators from across the region raised their hands to become members of the first writing team to develop the ARAZPA Education Policy. Jenny Hoysted (Melbourne Aquarium, now Zoos Victoria), Daniel Hughes (Melbourne Zoo), John Hopgood (Adelaide Zoo), Karen Fifield (Taronga Zoo, now Zoos Victoria) and I were all members of the initial writing team for stage one of the project.

With each educator on the team living in different states of Australia, communication was quite a challenge. To overcome this, we had two writing workshops hosted by Melbourne Aquarium and Melbourne Zoo.

The writing team ensured that the draft policy underwent consultation with all key stakeholders. Every ARAZPA educator had the opportunity to comment on the policy during its development as did other members of the zoo industry and other selected stakeholders such the Department of Education. After a multitude of drafts, the policy was ratified by the ARAZPA Board in February 2002.

The policy offers leadership in the formulation of principles, guidelines and minimum standards for the many different focus areas of educational delivery in zoos,

parks and aquaria. The mission statement clearly identifies what education in zoos, parks and aquaria is all about and that is, 'To provide exemplary learning opportunities that connect people with nature. These experiences enable the community to better understand and contribute to a future where humans live in balance with the natural world'.

The six principles of education in zoos, parks and aquaria are that it:

- provides unique learning experiences that connect people with the natural world
- involves the whole community
- is lifelong
- is holistic, encompassing all parts of the organisation
- gives people an understanding of their place within the natural world and the need to take individual and collective action for ecological sustainability
- encompasses social, environmental and economic goals



It was always the intent to provide support material for the policy. We wanted this to be a living document that would provide actual examples, contacts and material in a usable form.

A second writing team of ARAZPA educators was brought together to develop stage two of the project. Dale Alp (Perth Zoo), Leigh Wither (Auckland Zoo), Jane Liefman (Zoos Victoria), John Hopgood (Adelaide Zoo), Michelle Lindsay, Paul Maguire and Melissa de Britt (Taronga Zoo) continued the project.

To achieve the stage two outcomes, the project team identified that a regional education audit needed to be undertaken. This information provided a comprehensive understanding of what education experiences were being offered in our region.



It was decided that to be more environmentally-friendly the supporting documents would be best published online on the ARAZPA website – <http://www.arazpa.org.au> - and be launched during the 2003 ARAZPA Conference hosted by Adelaide Zoo.

We would like to thank all the educators who were involved in the design of the ARAZPA Education Policy and Support Documents, in particular both the first and second writing teams, Environment Australia for their financial support, the ARAZPA Board for their philosophical support and all the people who reviewed the policy and its support materials - you all helped the writing teams stay sane! We hope this material is widely used by all of you and that it helps you stay sane as you develop and deliver great educational programmes in zoos, parks and aquaria across our region!

For a hard copy of the ARAZPA Education Policy contact Melissa de Britt at Taronga Zoo Education, email: mdebritt@zoo.nsw.gov.au or explore the ARAZPA website <http://www.arazpa.org.au>

A Brief History of Rhinos

Martin Serafini, Edinburgh Zoo, Scotland

I am no archaeologist. Nor am I an art historian, or even an expert in the field of rhino-ology (rhinology being the study of noses). It just happened that recently I found myself looking into how rhinos – any rhinos...African, Asian, one-horned, three-horned – have been depicted in the course of history, from Lascaux to Longhi. I wanted a somewhat oblique look at rhinos for a new interpretation board and, in the course of researching this, I came across all sorts of material, some of which I'd like to share with you in this photo-article of sorts.

There is no theme here – bar rhinos - or conclusion. It's just a wee look at some big animals.

Poisoned chalice

We probably all know about the use of rhino horn in Traditional Chinese Medicine (TCM), yet there are some fallacies that seem to persist despite lack of evidence and/or constant denial.

One issue is the 'insulting propensity of Westerners to claim that the primary use of rhino horn is as an aphrodisiac', according to a delegate at a TRAFFIC-sponsored symposium on TCM.

Historically, only in Gujarat and a few locations further north in India has rhino horn been used in this way. In response to domestic bans and increasing prices, even this now seems to have ceased.

It may be that as Asiatic horn was making its way to the Roman world via the entrepôts of southern India, traders embellished its properties in order to increase its value. Again according to TRAFFIC, rhino horn (cornu rhinocerotis) has been a revered ingredient in the pharmacopoeia of TCM for many centuries and is listed in the 2,000-year-old Chinese text, 'The Divine Peasant's Herbal'.

Cornu rhinocerotis is used for 'removing heat from the blood, inducing haemostasis, clearing away heart fire to achieve tranquillisation of the mind, *removing toxic substances* (my italics) and relieving feverish rashes or eruptions' (Zhang, 1990). Two forms are recognised: Guangdong, or 'water' horn from Africa and the several times more valuable Siam, or 'fire' horn from Asia.

This connection with toxins is particularly fascinating. There is an age-old belief that vessels made from rhino horn will detect, and even neutralise poisons; also that wine will absorb the 'curative elements' from rhino horn drinking cups. Written records of the antidotal properties

go back to China's 'Spring and Autumn' period (770-476BC); as a detector of toxins an early mention is made in the fifth century BC by Ctesias the Greek, physician to Artaxerxes I of Persia. The famous Taoist Ge Hong noted, 'a white foam will bubble up' when poisons are stirred in a rhino horn cup.

Chemically, horn contains keratin, amino acids, guanidine derivatives, sterols, acidic peptide and sugar- and phosphorus-containing substances. I am no chemist either, but some sort of reaction with the alkaloids present in many toxins seems a possibility.

Flight of fancy?

A curious tale surrounds the use of horn as an antidote to a poison commonly used in Bronze Age China. This poison, made by pouring rice wine over the feathers of the zhen, or 'poison bird', was used only in the south of the country, the only part of China where rhinos were, by then, surviving. Jeannie Thomas Parker and Brad Millen of the Royal Ontario Museum, Canada, have identified the zhen bird as *Spilornis cheela ricketti*, or crested serpent eagle.



The zhen bird, whose song 'is like steel or copper'

One particularly intriguing reference among many is found in the Gewu Zhonglun, which means, 'to explore the properties of the universe': 'The rhinoceros and the zhen bird share the same watering places. If the rhinoceros does not first dip his horn in the water to purify it, the rhino will die when he drinks. This is because the zhen bird, which eats poisonous snakes, poisons the water when it drinks.'

Stories of the wondrous properties of rhino horn echo down the centuries, interweaving with tales of unicorns in myth and legend, until we come much closer to our own

time, with James I on the throne, living in fear of the power of witchcraft and the threat of assassination. Hanseatic traders offered the insecure king rhino horn as protection but, wary as ever, he tested it first on a servant, using arsenous oxide. Apparently the servant died in agony and the merchants were thereafter less than favoured in the royal esteem.

As late as 1789 rhino horn was being used in the French court to test the royal food for the presence of poisons.

The European view

From a Eurocentric viewpoint, notions of a rhinoceros' appearance changed as civilisations waxed and waned and rhino species came and went.

It seems the classical world knew of both two-horned African and one-horned Asiatic species. We have already met Ctesias, who mentioned one-horned rhinos but described them as having purple heads!

Knowledge of Asiatic rhinos – an Indian ruler presented Emperor Augustus with a 'greater, one-horned' rhino in 11 BC – reached Rome via the ports of southern India. Through this route the East, with its spices and silk and strange beliefs, including the Chinese myth of the unicorn and its fabulous powers, became known to the western world.

In the first century BC, Julius Maternus became the first Roman to cross the Sahara to Lake Chad, where he saw white rhinos, and soon expeditions were bringing African rhinos back to the Eternal City. Apparently they were the most aggressive fighters in the arenas, impaling bears on their horns and tossing them over their heads. Martial celebrated the manner rhinos 'threw bears into the starry sky'.

Yet the Roman Empire was not eternal, and with its collapse and the subsequent rise of Islam, Europe became cut off from the Orient, and from tropical Africa. Rhinos passed into legend and the line between the real and the imagined blurred. For nigh on a millennium Europe and the rhinoceros were estranged until, in 1292 AD, renowned Venetian Marco Polo returned home after a seven-year sojourn in Asia.

Oddly, the rhino of which the explorer-trader writes is one unknown to antiquity – it had two horns yet it came from Asia, and Polo believed it was, in fact, a unicorn. On his journey home with a fleet of 14 ships, Polo put in to Sumatra, where he saw, 'lion-horns, which, though they have feet like an elephant, are much smaller than the latter, resemble the buffalo in the distribution of their hair and have two horns on their heads, with which, however, they harm no one.'

(Interestingly, a different translation of Polo reads as follows: 'There are wild elephants in the country (Sumatra), and numerous unicorns, which are nearly as

big. They have hair like that of a buffalo, feet like those of an elephant, and a horn in the middle of the forehead, which is black and very thick...')

The next rhino recorded in European history was the subject of Durer's famous 1515 AD woodcut. The Asiatic armoured species gradually became familiar throughout the continent, and it was not until 1868 that African specimens reappeared when London Zoo purchased a black rhino for \$5,000. Sclater, the famous zoologist, studied it and believed it the first of its kind to arrive alive in Europe since the days of the Roman Empire.



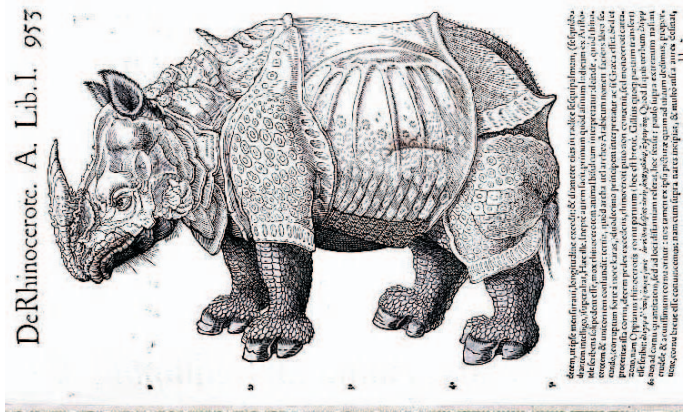
Many, many thanks to Alain Compost for this extremely rare photo of *Rhinoceros sondaicus annamiticus*

Prior to this, of course, skins and other body parts had been studied. Although Arab drawing of African rhinos has existed since the 13th century, zoologists were at first unwilling to believe they had a smooth skin lacking any folds. One museum curator ironed folds into the skin of a specimen he had received to make it 'authentic', believing it had suffered in transit. For a while this specimen, not surprisingly, caused confusion among taxonomists.

Of course, the most recent rhino to come to Europe's – and, indeed, the world's – attention, is *Rhinoceros sondaicus annamiticus*, mainland Javan rhino subspecies whose presence in Vietnam was confirmed in 1991 and which was photographed for the first time only four years ago. There aren't enough of them to make a football team.

And now I find myself running out of space without, believe it or not, having more than mentioned in passing what I had intended to be the main focus of my article – rhinos, the origins of the unicorn myth and the mythical Chinese beast Zhi. Rhinos in heraldry was another thing. And multi-horned rhinos, I never got round to them either. Oh well, here are a couple of web sites to keep you going:

<http://www.rom.on.ca/pub/unicorn>



One of the best-known rhino images is a 16th century woodcut by Albrecht Durer, who supposedly never actually saw the beast, drawing it from a description in a letter. (If true, he did a damned fine job.) It was the first image of a rhino to appear in Europe since the classical period. The animal itself was a present from King Muzaffar of Gambia, in India, to King Manuel the Great of Lisbon, sent in 1513 after the Portuguese conquest of Goa. During its confinement in the ship's hold it developed horny excrescences on its body – these were taken as natural rhino features for the next 200 years.

Note the tiny spiral horn on the shoulders, interesting in the light of the links between rhinos and unicorns (and, a little tortuously, barbers' poles).

Sadly, this Renaissance rhino died in a storm off Genoa while being shipped to the Vatican as a (King-to-Pope hand-me-down) present for Leo X. All hands were lost but the carcass, drifting ashore, was recovered, stuffed and sent on to Rome anyway. Does it lurk there still, in some obscure vault hidden deep beneath St Peter's?

Our illustration is of Gesner's 1551 copy of Durer's work.



Exhibition of a Rhinoceros at Venice (1751) by Pietro Longhi © The National Gallery

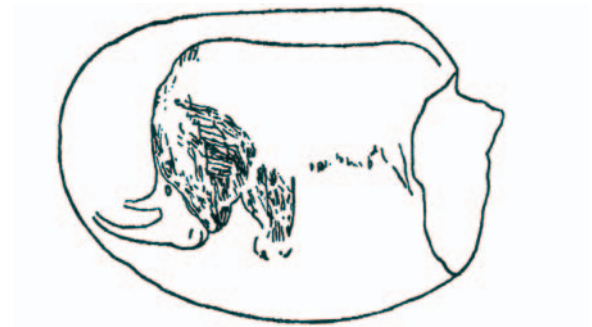
A number of Asiatic rhinos reached Europe over the next couple of centuries, inspiring poets and painters, amazing rulers and ruled alike. Longhi's picture shows a small audience of 18th century Venetians dressed for the city's annual carnival, when evenings might be spent dancing, gambling or making amorous liaisons and the days passed watching acrobatic displays or visiting wild beast shows, such as the one depicted in the painting.

The 'wild beast' is Clara, the fifth member of her species to be imported from India to Europe since the fall of the Roman Empire. Acquired by a Dutch sea captain in 1741, she toured the cities of Europe for 16 years and was 'tame as a lambe.....(running) round the tables of Gentlemen and Ladies like a lap-dog'.

Her triumphant arrival in Paris sparked an outbreak of rhinomania, and modish ladies wore their hair à la rhinocéros.

Behind, Clara's keeper brandishes her horn, not cut off but rather rubbed off against the side of her cage by the rhino herself.

Notice how Longhi has bracketed the animal with a mound of hay at its front end and a pile of faeces at the other.



The engraved pebble, also from France, shows a woolly rhinoceros and is described as Cro-Magnon, a race of people who appeared first around 40,000BP.



Photos courtesy of the Bradshaw Foundation

Mankind has, of course, been depicting animals from the dawn of history, and these images from southern France have been dated 31-32,000BP (Before Present). Power exudes from the sparring rivals (or is it courtship?) while the multiple head images capture the speed of movement of a gesturing rhino.

What kind of rhinos are they? Herbert Wendt, in 'Out of Noah's Ark', writes, 'The woolly rhinoceros (*Tichorinus antiquitatis*) was hunted by the Ice Age nomads in the tundras of Europe and Siberia, its cousin the forest rhinoceros (*Coelodonta merckii*) by the men of the warm interglacial periods, and the square-mouthed African rhinoceros (*Ceratotherium simum*) by the aboriginal peoples of the Sahara.' Presumably, these are forest rhinos.

This confidently engraved rhino can be seen at Wadi Mathendous in Libya, one of the most important rock art localities in the Sahara. It is known for numerous engravings of large African fauna and expert consensus puts its date at 6-8,000BP.

'It is interesting to note', writes András Zboray, to whom we are grateful for the use of the image, 'that there are no paintings of rhinos (or elephants) anywhere in the Sahara to my knowledge, only engravings. This implies that by the time the first Saharan paintings appeared (assumed 2-3,000 years after the earliest engravings) these animals were already extinct in the region – on paintings one can only recognise giraffe, ostrich and various antelopes/gazelle.'

Kapitein Klip's Amazing Stories

Ardaan Gerritsen, Rotterdam Zoo, Netherlands

In the summer of 2000, Rotterdam Zoo opened its Oceanium, 'a journey through the seas of the world, under water and above, along the coasts of continents and to oceanic islands'. The zoo's Education Department having long had the desire to create something special for the early years of Primary, now seemed the right time to do it. So, the team sat down together and began throwing ideas around...

The lesson had to be in the new Klipklas, the custom-built classroom in the Oceanium. 'Klip' means 'cliff' and 'klas' means what you think it means. Since children from four to seven years of age freely mix 'reality' and imagination, it was agreed the lesson should take the form of a journey – Kapitein Klip's Fantastic Voyage.



"Pieces of eight!....pieces of eight!"

With this model, there is the opportunity to fill each voyage, or lesson, with different adventures. With several teachers delivering the stories, and responding to different pupils each time, no two voyages are going to be the same.

Our next wish was to 'activate' the children's perceptions and respond to their natural curiosity, so we built a stimulating environment – the inside of an old sailing ship. Many mementos and keepsakes from Kapitein Klip's voyages on distant oceans are stored in the hold of his ship. Every object has its own story, and if a pupil asks what this or that thing is, the teacher recounts the thrilling tale of how it came to be in the hold of Kapitein Klip's ship.

Here are a few of the items: the jaws of a shark, a bottle with an octopus inside, a stuffed puffin, the eggs of a

razorbill, the log (journal) of a voyage, a captured treasure map, several turtle carapaces (shells), various stuffed fish, pieces of coral, a 'rain stick' made from a cactus plant, a diving helmet, a ship's horn; there are many more.



The Kapitein's memorabilia

The teachers are just as flexible as these objects. Some are male, appearing dressed as a ship's captain. While some play the part of Kapitein Klip himself, others choose to take on the role of his grandson. One teacher is female. Wearing rubber trousers, she dresses as one of the Oceanium's animal keepers. 'Secretly' smuggling the children into the hold of the ship via a side door, she has her own take on Kapitein Klip and his travels.

What happens in practice with a class is that, on arrival, the class teacher is given a key to the side entrance to the Oceanium. Teacher and class make their own way up to the Klipklas, where an old ship's bell hangs next to the door. One of the children is allowed to ring this bell, summoning Kapitein Klip, his grandson or whichever character is 'on stage'.

Many weave their tales around the first voyage of our hero, in the time when he was still a cabin boy... 'about the age you are now...'. The young Klip brought many strange and amazing souvenirs back from his early years at sea... 'which you can see here today, in this very ship's hold...'.

When the lesson time is up, the teacher is given a 'treasure map' of the Oceanium, while each pupil gets a set of pictures of all the animals that have featured in the day's stories. These can be ticked off as each species is visited on a walk through the Oceanium itself.



More reminders of distant shores

'Kapitein Klip' has proven an unusually popular lesson, with the pupils learning much *and* having a wonderful time. Sometimes, months later, children coming back for a different lesson are very surprised to discover 'their' Kapitein Klip is just an ordinary zoo teacher. 'Don't be confused,' they are told, 'you must have met my brother, the good kapitein...'

Animals and Culture - raising interest in animals by highlighting their cultural significance

Leopold Slotta-Bachmayr, Salzburg Zoo, Austria

Man is an important and integral part of the environment, and human activity can influence whole ecosystems in different ways and directions. This relationship, and any conservation problems that result from it, differ from region to region depending on history, culture and religion. It is important, therefore, that zoos not only exhibit animals and provide information about their biology, status in the wild and suchlike, they must also highlight the different cultural influences on people and how this affects the way they relate to the animals around them. Through this a better understanding may be achieved about the particular ways in which local people deal with their native fauna, and why there may be special conservation problems in one area, perhaps none in another.

The collection at Austria's Salzburg Zoo is organised into four continental regions (Eurasia, the Americas, Africa and Australia) and we exhibit sets of species from typical habitats found in each. However, we also illustrate and interpret some of the cultural aspects of the continents, raising awareness of the particular problems faced in each region, and how they might be dealt with.

Snow leopards and Buddhism

In front of our snow leopard exhibit, for example, we have arranged an area together with Ecohimal, a development and aid organisation. The idea is to display some artefacts



Overlooking the research station in the Mongolian Ger

associated with Buddhism, such as colourful prayer flags, Mani stones and prayer wheels. Buddhism, of course, is

the main religion over much of the snow leopard's range. The colourful ambience of the exhibit makes it very attractive to the visitor. Interpretation explains the different meanings of the flag colours and how a prayer wheel should be used.

We provide the visitors with information about Ecohimal projects: flocks of sheep for school children, a small power station to avoid deforestation, various community projects along different trekking routes. Such projects show where the problems in the region are and what might be done to overcome them.



The Nepal Exhibit during the opening ceremony

We try to make clear the threats facing species such as the snow leopard. Poaching for the valuable fur, shooting, poisoning and trapping to protect livestock and changes in the habitat as a result of tourism and deforestation – these are the greatest dangers to this endangered 'Big Cat'.

It is easier to appreciate these problems – how they arise and how they might be tackled – when visitors learn more about the background of the people of Nepal and the surrounding region.

Nomads, Przewalski's horses and satellites

To give visitors to Salzburg Zoo a genuine feeling of the reality of the Przewalski horse, or takhi, reintroduction project in Mongolia, we have set up an original Mongolian tent – a 'ger' – at our Przewalski horse enclosure. This 'Takhin-Tal' (or 'Meadow of the Takhis', the place where the last wild horses were seen in 1968) exhibit describes

the life and work of the researchers and the takhis in Mongolia. It also provides an impression of the surrounding habitat, including the takhis, Bactrian camels and Dzungarian hamsters.

In the ger we avoid signage as much as possible: an immersion exhibit such as this should enable the visitor to step not only into the ger, but also into the researcher's home in the far Gobi.

Everyday items allow the public to discover for themselves about life in a traditional Mongolian home. A bed with a sleeping bag ready to crawl into, original Mongolian food and drink such as traditional noodles (the same instant soup we have, but with Cyrillic letters!) and a brick of tea, photos of the people attached to the project – these are just a few of the everyday items to be seen around the ger.

Visitors can also study the posters that are distributed locally explaining the value of National Parks and the takhi conservation effort, while a computer screen shows pictures of the horses' journey to Mongolia and a map for orientation. Some e-mails introduce the project itself and provide information on recent developments concerning the takhi population in the wild. On a working desk in this mock-up of an *in situ* research station are displayed some Dzungarian hamsters.

In the ger we also keep a large box containing a lot of material from Mongolia: local clothing such as coats and hats, sweets, some working tools plus a cooker for brewing original salted tea with milk. These items are used in a special programme in which children role-play Mongolians discussing the pros and cons of the return of the takhi, how it might affect traditional herding practices and so forth. Scientists meanwhile explain why the species became extinct in the wild and what needs to be done to bring it back as an integral part of the ecosystem.

African village

In the zoo's African region we have built, in cooperation with an architect from Sudan, some original African huts made out of loam. Together with a local school class it took us one week to erect these houses in the traditional way. During this time the children had the opportunity to think about living in Africa. They were able to ask the architect about his lifestyle, why loam was used as a traditional building material and so on.

For the general public this small 'village' gives a rough impression of life in Africa. Very important is the central campfire – people like it to sit down in the shade, watch the cheetahs and look at the ornaments on the walls of the huts. During our zoocamp, an educational programme in which children spend two days and a night in the zoo,



The African village, with two adobe huts and the central campfire

we gather here in the evening, telling the children how people live in other parts of the world, and how they interact with nature.

These three examples show how it is possible to bring beliefs, tradition and religion into the zoo setting. The idea is to confront the zoo visitor with the realities of life for people from other parts of the world, thereby raising awareness and understanding of conservation as it affects other cultures.

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Going the Distance with Zoo Education

Erin Fitzgerald, Bronx Zoo, USA

Imagine you're a child living just outside Mexico City in Naucalpan. School begins at 8:30am and your teacher explains that at 8:45am your class will visit the Bronx Zoo, located in New York City, without ever setting foot outside the classroom. You will see animals living at the zoo and speak with a zoo educator who will guide you through activities designed to help you learn about the animals you're seeing. Is it possible?

Since September 2001, the Wildlife Conservation Society's Bronx Zoo has been offering interactive educational programs to students across the United States and throughout the world using two-way videoconferencing technology. Developed with major funding from the United States Department of Education, the programs, entitled Distance Learning Expeditions, are 45- to 60-minute presentations accompanied by extensive pre- and post-materials for both students and teachers. Videoconference programs are broadcast live into classrooms via Integrated Services Digital Network (ISDN) or Internet Protocol (IP). The Bronx Zoo has delivered 430 programs to more than 11,000 students located in 25 states and three countries over the past two school years.

Distance Learning Expeditions include several live animal "guests," and are based on time-tested, teacher-endorsed curricula developed at the Bronx Zoo. They are designed to involve students through questioning, reasoning and the use of higher order thinking skills. The programs also incorporate the use of live video feeds from video cameras installed in zoo exhibits. With complete pan, tilt and zoom capability, the video cameras provide high quality video of animal behavior.



'Hands up if you know the answer!' Maine students take part in an 'Awesome Adaptations' conference © Jill Bell

Currently teachers may choose from six video conferences available for students from Kindergarten through 12th grade. The "Gorillas, Gentle Giants in Crisis" videoconference was offered for the first time to 7-12th grade students in 2003. This program utilizes video cameras strategically placed in the Bronx Zoo's Congo Gorilla Forest exhibit. Students whose closest zoos are sometimes a six-hour or more drive from their home, can now observe live gorillas. Bronx Zoo gorillas like Pattycake and her offspring Nyasha help spark heated discussions among students who participate in role-play activities to develop conservation strategies that not only protect gorillas, but also involve local African people.



Erin and kindergarten students from Michigan talk about the Bronx Zoo's gorillas, D DeMello © WCS

Jill Bell, a fifth-grade science and language arts teacher at Cape Elizabeth Middle School in Maine, says that with the aid of WCS's Distance Learning Program, her students, "are accessing a primary source," despite the fact that the school is hundreds of miles from any zoo. Maine Governor Angus King, a strong proponent of technology as a teaching tool, participated in a teleconference with Mrs. Bell's students. "I never realized it was so easy to visit the Bronx [Zoo] from Maine," said King. He predicts that within five years, distance learning will be commonplace in his state.

The 2003-2004 school year marks the third year of the Distance Learning Program through which the Bronx Zoo will continue to deliver positive conservation messages to as many students across the United States and throughout the world as possible. For more information, visit <http://wcs.org/distancelearning> or contact Erin Fitzgerald at efitzgerald@wcs.org or (718) 220-5131.

Town Children Need Adventures in Nature

Ulla Didriksen, Copenhagen Zoo, Denmark

One of the main problems in children's education of nature and the environment is that nature has become something you just visit. It is not a visible part of everyday life. This is why they lack balance in their knowledge of and attitudes to the natural world – decisive for their understanding later in life.

The other day Sophie (Year 5) was participating in a "working day" in the Children's Zoo. The day started at 7.30 in the morning and, when the cow had been milked, Sophie pointed out that this time she didn't want to be in the "cow team". She would prefer the goat or horse team. When asked why, she answered that she had been on a working day once before, with her old kindergarten school. Then she described in detail her day with the cows and chickens and about having baked waffles. She spoke as if it was only yesterday, although it was, in fact, five years ago.

Such incidents give an educator goose bumps. It is fantastic to realise a child can remember events so many years later. Through work with animals, Sophie had been affected in her heart. She had seen and sensed with her entire body. Children can thus be given insights which, hopefully, will lead to an attitude to animal husbandry from which they will benefit later in life. But only, of course, if such experiences are not just isolated events.

Unfortunately, isolated trips to the local woodland school with a guide (or a day at the zoo, a farm visit or maybe a week camping in the Danish countryside) are often the only excursions many children experience throughout their entire schooling. The countryside and nature have become institutionalised.

Natural science has a low priority

Today, more than 80% of Danes live in cities or surrounding areas – the natural world is a far-away place. Most children get their nature and animal experiences in front of the television. Only a very few places – Copenhagen Zoo is one – offer children the opportunity of direct contact with living animals.

The subject of biology holds a low priority in schools at almost all levels. Even student teachers do not need to have much knowledge of the natural and technical sciences. Biology tends to be an interdisciplinary subject, often becoming invisible as a result.

Children often spend their entire day in an institution and the younger they are, the longer they spend there. Most children are now driven around – only a few ride a bicycle or walk. A recent police investigation indicated more than 25% of Danish parents don't want their children to take a school cycling test. A symposium amongst students at Copenhagen Zoo has shown that today most children have a computer and a television in their room.

At youth centres computer games often have a higher priority than outdoor activities. Paradoxically, the range of nature books in children's libraries is overwhelming and they are borrowed and avidly read!

Every small child can pronounce animal sounds almost before they can speak. Yet, in the zoo, we see many children from early Primary who have never touched an animal. Enormous frontiers must be crossed when you hold a rabbit for the first time.

Most children answer "cheese" when asked what a mouse eats. When children on a zoo visit participate in slaughtering a chicken, they do not recognise it as the meat which they bar-b-q until the feathers are plucked.

The young are curious

Children are curious, observant and thoughtful if you just allow them the opportunity to experience nature.



Animals especially can be a fantastic pedagogical tool that will attract their full attention. They have the ability to touch our feelings. We find them sweet, exciting, disgusting or interesting. At the same time our intellect is engaged. We want to know more and can't stop asking questions. How does a snake register its surroundings? Where is the cloaca? Has a snake got teeth? Is it



poisonous? Will I come across one in the countryside? Why are reptiles under threat?...and so on. All by themselves children will start asking questions and they will listen carefully to the answers. It is as though experiences like these maximise the learning potential. This is exactly what happened to Sophie with her cows – a learning event that has remained strong and clear in her mind.

From experience to education

It is very important that environmental education is delivered according to the children's age, their understanding of the outside world and their cognitive learning level.

From two to five children must have positive experiences with the natural environment. They must be allowed to use all their senses and their bodies. They frequently personify the animals and often give them names.

Children from six to eleven often feel a kind of responsibility towards the subject. They are motivated to learn about nature, but only if they are in the company of engaged adults. Children of this age are not able to take care of the animals on their own. However, they love to experiment. They find it exciting to cut open a fish or a bird and to find the heart, lungs and brain.

Children older than eleven years need work concerning their attitude towards nature and the environment. At this age they can work with abstract subjects. They can now think in an ecological way and build up a global understanding of how the world functions. It is important to have discussions, which put the environment into perspective.

Effective management of children at this stage can be vital – some do not listen, believing they are self-sufficient. It is important to catch their interest so that discussions become relevant and real for them. If not, you will “lose” them, with detrimental results later on.

Stuck in kindergarten

These sequences cover the natural growth of a child's acknowledgement of the natural world. If they are not allowed to experience nature at all levels during childhood and adolescence, children will, later on in life, have difficulties engaging with the topic, both locally and globally. Many children do not develop any meaningful understanding of nature, remaining at the kindergarten level (two to five years of age), where everything about the world is personified.



If deprived of real contact with nature, children build up anthropomorphic attitudes with little insight into “how life works”, often disliking all natural things. They become divorced from their natural surroundings and their view of the relationships between people and the world at large (i.e. the proper role of mankind within the global ecosystem) becomes distorted. Science in general becomes uninteresting and is seen to have little relevance to the meaning of life.

It is important therefore, to work in and with nature. We know how important it is that, when children go to “school” at Copenhagen Zoo for a whole week, they

focus on animals and their habitats. For example, the children learn that toads, geckos and pygmy quails are only introduced to the tropical house as biological controls. They learn to manage outdoors, in tents, to cook over a fire; they get used to the dark, to looking at stars and experiencing the rhythm of the day.

It is important that young people, while working on their school projects, be offered trainee periods with companies and organisations that work with the

environment. All environmental educators have a responsibility to clearly deliver their message in order that children can understand.

We need to encourage the young to build up attitudes to nature that engender respect for living things. At the same time we must give them the tools to mature into people with an understanding of the interdependence of all nature, including themselves.

Girls for Planet Earth - giving teens an opportunity for local conservation action

Jeanine Silversmith, Bronx Zoo, USA

From July 27 to August 2, 2003, a group of 40 teenage girls from across the country participated in the first Girls for Planet Earth Summit at the Bronx Zoo in New York. Girls for Planet Earth is a national program developed by the Wildlife Conservation Society with funding from the National Science Foundation's Gender Equity Program.

Teams of young women aged 14-17 applied to the program last winter through one of several partner organizations: Boys & Girls Clubs of America; The Children's Aid Society; Girl Scouts of the USA; Girls Incorporated of New York City; and National 4-H Council. The teams, each with three or four members, came from diverse communities in Oregon, Colorado, Florida, Maryland, Washington DC, Connecticut and New York.



Diane Shapiro © WCS



© WCS

While attending the Earth Summit, the participants explored the worlds of ecology and wildlife biology through various hands-on activities. They learned



© WCS

methods to study wildlife and monitor environmental changes from several women scientists and conservation professionals. The participants also traveled to the New York Aquarium for salt marsh exploration and behind-the-scenes tours.

Most importantly, the young women gained valuable science and organizational skills that will help them carry out environmentally based service-learning projects in their home communities. These projects have the potential to significantly impact local environments and communities.

For example, one team will use recycled materials to provide nesting sites for native owls in a local park. They will then create information packets for visitors, conduct presentations and set up a monitoring station. Another team will determine the level of community awareness

about the natural lands of their county by creating and carrying out a paper and web-based survey. This information will then be presented to the environmental



© WCS

organization that manages these areas. Yet another team will use GPS to identify historic trees in their town and work to save them from being cut down.

Each team will work with a local adult mentor to help plan and implement the project. In addition, the Wildlife Conservation Society will provide ongoing support through its full-time coordinator dedicated exclusively to this project. The NSF grant provides financial support for the projects as well.

Two websites have been developed through the grant, www.girlsforplanetearth.net and www.teensforplanetearth.net

These include useful information on careers in conservation, current environmental issues, an interactive guide to help teens design and implement a service-learning project, and much more. In addition, the Girls for Planet Earth website houses a bulletin board where participants showcase their service-learning projects on team web pages, and brainstorm solutions to any difficulties they encounter.

For more information, visit the websites above or contact Jeanine Silversmith at (800) 496-6033 or at jsilversmith@wcs.org. We especially welcome colleagues from zoos around the world to use the websites with their teen audiences.

Sniff, Swing and Swipe

Sue Barker, Education Officer, Auckland Zoo, New Zealand

Sniff, Swing and Swipe was an interactive, e-learning technology project offered to Primary and Secondary schools in 2001 and 2002. It received the Distance Education Association (DEANZ) premier award for 2002 for excellence in distance, open, flexible and e-learning.

Auckland Zoo Education Service is continually enhancing programmes and projects being offered, to keep at the cutting edge of holistic learning. In 2001 the Education Service took the opportunity to extend the zoo's vision, to provide exciting experiences and inform people to care for wildlife, to non-visiting students.

The Behavioural Enrichment Team of keepers at Auckland Zoo is continually looking for new ways to encourage natural behaviours, to mentally stimulate and to promote activity amongst the animals in their care. Here was a great opportunity for a project where students would be solving real technological problems in a real context. Thus the project Sniff, Swing and Swipe was developed by Megabright, the Auckland Zoo Education Service and the NZ Learning Net. Using an online environment it was possible to offer the project to schools throughout New Zealand and one participating school from Brunei.

Sniff, Swing and Swipe was a ten-week interactive online programme designed to be user-friendly with easy hyper-links to make moving around the site quick and simple. A nominated keeper was our expert for each of the species and a zoo educator facilitated keeper feedback on the prototypes and the final products. The species chosen were Grant's zebra, slender-tailed meerkat, ring-tailed lemur and kea, providing students with a choice of animals whose behavioural patterns are quite varied.

A timeline page on the site took students through the design production and process from registration and sharing backgrounds to researching, designing and making model prototypes. Digital images and descriptions of the prototypes were submitted by email. Participants then modified their designs in the light of keeper feedback and submitted a digital image and description of their final prototype design. Designs selected by the keepers were produced as final products for use with each species. All participants received an online certificate of participation.

Sniff, Swing and Swipe encouraged students to work in groups drawing on strengths of individuals. The nominated

keeping staff contributed information for web pages on successful behavioural enrichment already used at Auckland Zoo plus details of each of the four species' behavioural patterns. Hyper-links to other relevant web sites were also provided. A specifications web page outlined what the enrichment must have and what it might have in terms of materials used, food rewards, economy of production, safety and durability.

Individually and in teams students submitted 73 designs. A particular favourite of the keepers was a trampoline for the meerkat, designed so the meerkat could leap high and better perform sentry duty. A group of eleven-year-olds designed a solar-powered eagle to fly over the meerkat enclosure with the aim of encouraging natural behaviour and a nine-year-old home schooler, who had never seen a zebra, designed a barrel that gave food rewards through holes when rolled. To trial her prototype she used her pet horse. Another useful enrichment was an eight-year-old's kea food dispenser consisting of a bucket of water with some floating food suspended over the stream in the kea enclosure. The intention was that when the kea landed on the bucket, it would tip, sending water and food into the stream below.

Selected final products were trialled by the keepers. These were the zebra's carrot dispensing ball, a mealworm filled papier-mâché log buried in the meerkat enclosure and a papier-mâché balloon-shaped fruit dispenser for the lemur's night enclosure. All items were met with some degree of interest by the animals. The meerkats happily destroyed their 'log', consuming the mealworms as they went. The lemurs were a little overwhelmed by their enrichment, tentatively touching and sniffing the fruit balls on their first encounter. The zebra basketball showed a high degree of success with interest, tentative nuzzling and an extended longevity of usefulness.

Sniff, Swing and Swipe was a unique project providing learning opportunities to local and distanced students. The project definitely raised participants' knowledge of the specific species and their concern for those animals' welfare.

<http://education.otago.ac.nz/NZLNet/candoatazkoo/home.html>

Dare to Discover – Backyard to Bush

Nikki Bodel, Education Officer, Taronga Zoo, Australia

'Backyard to Bush', the latest precinct launched at Taronga Zoo, is an environmental wonderland where visitors travel from the familiar world of the urban home through an adventure packed Australian farmyard and then into the mysterious bush with a gigantic wombat burrow.



This brand new two hectare exhibit is designed with an educational focus and a theatrical theme – a first of its kind in Australia. Visitor presentations, school workshops, animal encounters and exhibit interpretation are all in keeping with the unique theatre of the exhibit, which is based around a very interesting family called the Keens.

The Keens live in the house and their grandparents live on the farm at Backyard to Bush. They never seem to be home but their presence is all around. You are invited to snoop around and explore their home, where you'll discover the kids' native pets and projects on animal care, Mrs Keen's recipe for getting rid of the cockroaches in her kitchen cupboard and the mice Mr Keen discovered when he bashed a hole in the wall to see what was making the noise.

You may also notice that the Keens aren't environmentally perfect but they certainly try their best. They have a lizard lounge, a frog pond and they attract native birds and possums with all of the native plants they have in their garden. The Keens also do their best to recycle, be waterwise and compost their scraps for their organic vegetable garden. Their grandparents are doing their best too, by trying out more sustainable farming methods. They farm yabbies in the creek, make native bee honey, their pigs help tractor the soil for the fruit orchard and they have chosen goats over cows as they have less impact on the soil.

The strong theatrical theme brings Backyard to Bush to life. As children run around exploring and discovering, parents will be inspired as they notice very handy environmental tips and realise how easy it is to adopt sustainable and environmental ways of living.

There are many themes throughout the exhibit. One very important message is that native animals are our closest neighbours and it is our responsibility to care for them and their environment.

Formal educational workshops at Backyard to Bush have taken an alternative approach. Students are met by an educator costumed as a magical garden pixie, an 'eggspert' vet, a nosy neighbour or various other 'friends' of the Keens. All education workshops are interactive and extremely hands-on. Students are encouraged to dress up and get dirty as they learn environmental ways of living.

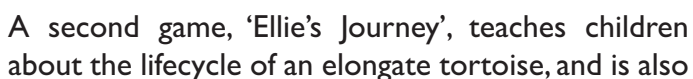
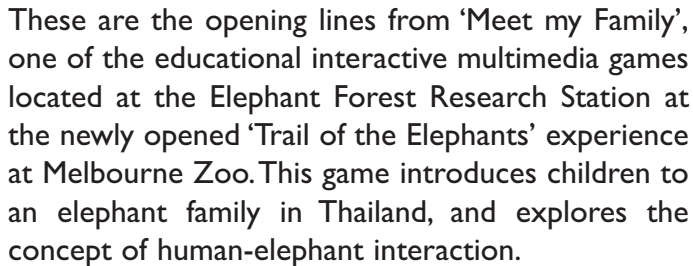
Public presentations are just as dramatic. At the farm visitors may be invited by a farmer to help collect eggs from the chicken coop and watch goats being milked. A family friend may ask you to help look after the Keen's pets in the backyard. If you choose to watch the presentation in the bush area you may find yourself about to join an eco tour trek, with a rookie ranger who needs help to remove a giant scary reptile that has gone inside the tent down at the campsite!



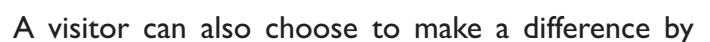
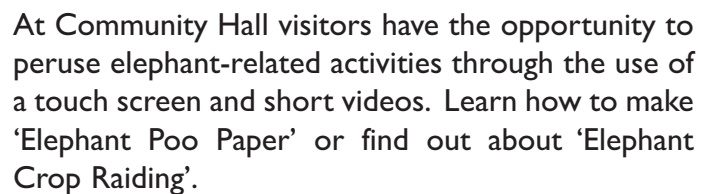
It's the theatrical magic that makes Taronga Zoo's 'Backyard to Bush' one of Australia's most exciting and innovative educational exhibits. The experience visitors have is unlike any other in the Zoo, inspiring them to make a difference.

Jen Aughterson, Melbourne Zoo, Australia

My name is Susa and this is my friend, Chetsu. He is an Asian elephant. We live in Thailand.... Chetsu and I will show you where we live. Come and meet our families!



Two additional games are designed to catch the attention of older children and teenagers: 'Field Mission' and 'Turtle Investigation'.



learning about Zoos Victoria's *in situ* conservation activities around the world at the touch screen located at the 'Make a Difference' shelter. To date we have received over 500 email entries from individuals who want to learn more about how they can act to make a difference in world conservation.

This incentive to promote the use of learning technologies on-site is new and innovative for Zoos Victoria, and an exciting advance towards the

direction of the modern zoos' policy to engage and inform the visitor on a number of levels. The multimedia has been interpretively developed by Jenny Hoysted, and received expert input from Chris Banks and Laurie Pond.

In addition to engaging on-site visitors, an exciting retail opportunity exists as we further develop this into a product for children and their families to enjoy at home.

Education and Collection Planning

Carmen T. Linares, *Africam Safari, Mexico*

The World Zoo and Aquarium Conservation Strategy (WZACS) states as a principal goal that modern zoos and aquariums should support the conservation of species, natural habitats and ecosystems. It does not try to compete with other conservation initiatives but rather attempts to complement them through integration of effort.

For a modern zoo to achieve its conservation goals, it must develop a 'Master Plan' wherein its practices, policies, targets and so forth are laid out. A vital component of any Master Plan is the Collection Plan, which sets out the logical processes by which taxa are selected for inclusion.

Flexibility and the future

A Collection Plan (CP) should be the result of an analysis of a zoo's current and future collection as well as relating to its mission, targets, vision and overall Master Plan. Justification for each species in the plan should be given, together with breeding targets, information on accommodation plus acquisition and disposal plans for species and specimens.

While focusing initially on the short term, a CP should also provide a vision for the future. It must be considered a flexible document, allowing a zoo to react to changes in the availability of animals, the development of new programmes and changes in the approach or needs of existing ones.

A CP is necessary to:

- ensure the most efficient use of limited space, financial resources and personnel
- ensure the collection reflects the targets and mission of the zoo
- provide continuity, thereby improving management, welfare standards and quality of interpretation/display
- establish a clear strategy for all species and individuals in the collection
- avoid animal surpluses

A good Collection Plan must help fulfil the following goals:

- development of short and long-term methods of using captive animals to support the conservation of in situ populations and their habitats
- motivation of visitors to act positively towards wildlife
- development and implementation of innovative

conservation education programmes

Educational parameters

Since 1995, Africam Safari has been employing evaluation tools for the selection of CP species, quantifying their contribution to the four parameters of research, recreation, conservation and education.

While the results of applying the evaluation process will vary with the region or country concerned, it nevertheless can be viewed as a starting point for the development of more effective programmes. The four aspects are as follows:

Myths, Legends and Customs (MLCs)

Transmitted from generation to generation in verbal or written form, MLCs can determine a locality's traditions and behaviour for long periods. They do not need to be based in reality, and can influence either positively or negatively how an animal is perceived.

Regrettably, in Mexico, many MLCs have led to decreases in animal populations – a reflection of many species' 'down side', real or fictitious. Such species need to be identified so that these effects can be redressed.

An example: 'When the Tecolote sings, the Indian dies'. 'Tecolote' refers to the white Tyto owl. As harbingers of bad luck these birds are often victims of aggression, resulting in serious injury and death. In this case, the positive that can be used to counteract the dark image is the owl's role as a controller of rodent populations.

Co-operation potential

Zoos are at their most effective when they work in co-operation with others, be it at institutional, local, national or international level. United efforts reduce costs, make the most of the expertise and experience available, raise the public profile and maximise the possibilities of financial, technical and moral support for the development of educational programmes.

Biodiversity hotspots

Certain species are considered 'keystone' species in the ecosystem they inhabit. Loss of such a species affects many others in a habitat's plant and animal community and, conversely, protection of keystone species can ensure the survival of many others.

It is also the case that certain ecosystems are wellsprings of biodiversity and their survival is of particular concern

to conservationists.

The educational potential of species falling into these constituencies is high, and so this is the third aspect to be evaluated.

Trafficked?

Currently many Mexican species are victims of the black market trade. They might be sold via the illegal pet trade, used in the manufacture of traditional remedies or simply hunted for sport. They may be killed for their meat ('bushmeat'), for their skins or as sources of other ornamental materials.

It is of enormous importance that local populations realise the value of the species around them as a sustainable resource, and thus the importance of protecting them. Education can be used to great effect in achieving this goal, in shaping attitudes and sensitising the community to the problems certain animals face.

We can evaluate this parameter simply by asking if the species is the victim of illegal trafficking, either as live specimens or as body parts/products.

As we answer these four key questions, a species being considered for a Collection Plan can be awarded a maximum of four points, a minimum of zero:

Is the species the principal protagonist of a myth, legend or custom that portrays it in a negative way to the community? (Yes = 1 point, No = 0 points)

Do conservation plans or educational programmes exist for the species, or for its native ecosystem, at institutional, local, national or international level? (Yes = 1 point, No = 0 points)

Is the habitat where the species lives under threat? (Yes = 1 point, No = 0 points)

Is the species subject to illegal trafficking? (Yes = 1 point, no = 0 points)

Conclusions

Education is a fundamental parameter to be considered in the making of any Collection Plan. Of course, other departments too must have their input, in order that the CP reflects the needs of the entire zoo, and to ensure a concerted conservation effort is made.

By using appropriate evaluation tools, objective decisions can be made so that resources are used in an efficient way and directed to where the need is greatest.

The 17th Conference of the International Zoo Educators Association

4th – 9th September 2004



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- Our Closing Party will take place at **Ocean Park** with the Chinese Mid-Autumn Festival as the theme. Colourful paper lanterns, lion dancers and traditional moon-cake will enlighten the night!

Call for papers:

Deadline: 31st May 2004 Abstracts should:

1. include the author's name, address, email address and name of the organisation
2. not exceed 200 words
3. be typed in Arial font 10 pt., single-spaced, with one inch margins

Presenters should attach a brief biography (maximum 50 words)

Please send via email or on disk in Microsoft

Word format to: IZE c/o Joyce Kwok, Ocean Park Corporation, Aberdeen, Hong Kong SAR CHINA

Draft Schedule (subject to change)

Saturday, September 4 - Registration

- Ice-breaker (7:00pm – 9:00pm) Sunday, September 5

- Opening ceremony

- Presentation & exhibit sessions (8:45am – 5:00pm) - Victoria Harbour cruise with dinner (optional) Monday, September 6

- Tai Chi (traditional Chinese exercise) in the morning - Workshop and tour at Ocean Park (9:30am –

5:00pm) - Dinner on Victoria Peak (optional) Tuesday, September 7

- Presentation & exhibit sessions (8:45am – 5:00pm) - Closing dinner for SEAZA (optional for IZE) Wednesday, September 8

- Presentation & exhibit sessions (8:45am – 12:00noon) - Pun-Choi lunch in the New Territories

- Visit to Kadoorie Farm and Botanical Garden
- Peking duck dinner (optional)

Thursday, September 9 - Visit to Mai Po Marshes or Hoi Ha Marine Park - Closing ceremony

For further information and updates, please visit the IZE website – www.izea.net

Conference Organising Committee: Suzanne Gendron IZE2004@oceanpark.com.hk Joyce Kwok IZE2004@oceanpark.com.hk Shirley Wong IZE2004@oceanpark.com.hk

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Book Review

Finding good, relevant reading material on interpretation can be difficult. We asked reviewers in India and Colombia to give us their views on two popular books. Here's what they thought.

Environmental Interpretation - A Practical Guide for People with Big Ideas and Small Budgets.

by Sam H. Ham

American Press/Fulcrum

456 pp

ISBN 1-55591-902-2

All my praise for the author. The chapters have been written in simple English and are self explanatory. The case studies cited have made the book more enriching. To put it in other words, the author takes his readers on a trail explaining the nuances of environmental interpretation.

A very well written book and sure to serve as a lighthouse for every manager, zoo educator and all those people engaged in the business of operating national parks, sanctuaries, museums and zoos worldwide and, of course, people who advocate a non-formal system of environmental education.

Bipul Chakrabarty, Scientific Officer, Indian Central Zoo Authority

When you carefully review Ham's extensive and diverse compilation, you're tempted to agree with what it says on the back of the book - that the ideas presented by the author really work. However, this natural impulse should be carefully postponed.

Ham's publication certainly adds knowledge and expertise to environmental education and interpretation programmes. This is especially true in the Latin American context where environmental initiatives are still in early development.

Ham's guide, with its pragmatic focus, invites us to take action; it encourages us to avoid inadequate routes, and rejects all excuses linked to low budgets or financial problems.

However, there is an important issue missing in Ham's work which leads us to reflect on the ideas before putting them into action.

The first big omission is the lack of empirical evidence supporting the effectiveness of the ideas. This is consistent with the absence of practical resources for the evaluation of the programmes and activities suggested.

Ham validates his proposals by reviewing case studies, successful, of course, from the perspective of their creators, but an "activist" tendency carries the risk of action for action's sake, without clear objectives, or even more importantly, without clear results.

Probably in the time frame in which Ham's book was published, the enthusiasm for action was much more important than the need for accurate evaluation.

Environmental educators in informal education settings should be much more concerned about balancing the priority between innovation and evaluation.

These comments aside, the clarity and profusion of practical ideas, and the review of interpretation experiences all over America make this publication a complete tool box suitable for use in a number of informal education settings. However, this is a toolbox which, for the sake of efficiency, we should evaluate carefully.

Reinaldo Niebles, Head of Education Department at the Barranquilla Zoo

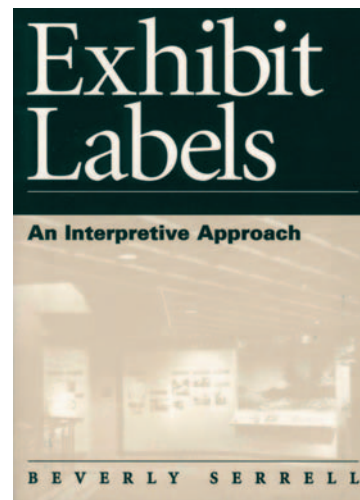
Exhibit Labels: An Interpretive Approach

by Beverly Serrell

Altamira Press

261 pp

ISBN 0-7619-9106-9



Surely a masterpiece. The author has done a great job in explaining to the reader about creating interpretive signage, where words compensate for sensory experience. Though of more use in a museum, it certainly has its role in guiding zoo managers in the preparation of interpretive signage. This book has filled the void that existed in the field of exhibit presentation in museums and zoos world-wide.

Bipul Chakrabarty

Serrell's work is certainly a good "How to" guide for designing exhibit labels. It covers all steps in the process, from developing a concept as a "big idea" to actually designing and building labels.

From physical aspects such as space, layout, lighting and materials, to conceptual aspects such as objectives, ideas and messages to communicate, to finally human aspects focusing on visitors' expectations, backgrounds and learning styles, they are all part of this excellent step by step guide to designing and building successful exhibit labels.

In this easy to read book, Serrell thoroughly shares her vast experience on label design by explaining all aspects to consider, not only from the designer's point of view, but also, and most importantly, from the audience's perspective.

In fact, many of the discussions on this book focus on debating the argument that labels should provide different levels of information for different kinds of visitors, somehow discriminating the public into groups. On the contrary, this book stresses the importance of a holistic perspective, where simple, well designed labels can meet the needs and expectations of all kinds of public.

It is also a well-illustrated book, providing graphic images which complement the text, with both good and bad examples on label design. Case studies are also a part of each chapter, relating the reader with additional references for a clear understanding of the concepts and ideas expressed by the author.

Perhaps the most valuable lesson in this book is the urgent need for a systematic evaluation of exhibit labels, before and after they are built. It looks like we just don't do enough of it in our own institutions.

This is well received at a time when professionals involved in the field of environmental education are really questioning the effectiveness and impact of exhibit labels on the visiting public.

Probably most of us have experienced how much effort is required for label design and building, and also how time consuming and budget demanding it is. But it all could really go down the drain if the visiting public don't use or read labels, or if even using and reading labels, the message doesn't get through. And the only way to find this out is by implementing a serious evaluation throughout the whole process.

Serrell's work illustrates how developing front-end, formative and summative evaluations offers a thorough process for adjusting the designer's ideas with the public expectations. The book makes it clear that these two don't usually go together.

Only one observation could be added from the perspective of a zoological institution. Most examples and arguments on Serrell's publication refer to museum settings. Though probably most concepts and processes can be applied to a zoo environment, it makes you wonder if the fact that people go to zoos to see live animals will condition some of the concepts of label design exposed by Serrell, especially referring to the length and type of information, and also colours, typefaces and graphics, since probably labels would be competing for attention from the visiting public. This would probably be an interesting area of research to develop further.

**Rosamira Guillen, Executive Director,
Barranquilla Botanical and Zoological
Foundation**



**International Zoo Educators Association
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Please refer to the website for details: **www.izea.net**



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IZE is an association dedicated to expanding the educational impact of zoos and aquariums worldwide. Its dual mission is to improve the education programmes in the facilities of its members and to provide access to the latest thinking, techniques and information in conservation education. IZE facilitates communication and professional development among zoo/aquarium educators and supports liaison with related organisations such as WAZA (The World Association of Zoos and Aquariums) and CBSG (Conservation Breeding Specialist Group).

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