

## Rambling Thoughts on Zoo Animal Collection and Conservation: A Historical Perspective

### Gedankengänge zur Tierbestandentwicklung und zum Naturschutz in zoologischen Gärten: Eine historische Perspektive

Ken Kawata

23 Arielle Lane, Staten Island, NY 10314, USA

Received 28 January 2013

#### Abstract

Zoo animal collections have gone through a variety of changes in recent decades. While an increasing number of species may be establishing self-sustainable populations, early specimens of some animal groups were captured and transported in wasteful and unacceptable methods, a part of history that should not be forgotten. Selection of species has shifted from individual to group decision-making processes, reflecting a different type of personnel now in charge. The fact remains, however, that zoos continue to present a popularity-driven, skewed representation of the animal kingdom to the public. Wildlife conservation has been one of the main purposes for zoos as well as zoo associations, both in Europe and America. In actuality, the concept of conservation is subject to individual interpretation and this is where a clear definition of the zoos' role could become rather vague. An important and worthwhile task for zoos is conservation education. To counteract deep-rooted anthropomorphism in the public's mind is not easy, yet it is a necessary step to raise citizens' environmental awareness. The ultimate results of conservation education include changing daily habits, as well as participation in grass-roots conservation movements, by citizens.

**Keywords:** Animal collection; Breeding; Captivity; Capture; Conservation; Education; Zoo history

Zoos have gone through rapid and far-ranging changes in the last several decades. Eye-witnessing the changes in the midst of the metamorphosis, while working in zoos in the United States as a keeper and curator, has provided a unique experience. Often, caught in daily operational details, it is easy to lose sight of the entire spectrum of the profession, as well as the flow and directions of the society. This account represents random views on two major issues concerning today's zoos, namely the animal collection and conservation.

It is by no means intended to be a thorough examination of the issues. For upgrading the profession American zoos implemented landmark programs such as the accreditation plan and *ex situ* conservation measures. The critical review of these subjects will respectfully be left in the hands of future authors.

## Animal Collection

### Invisible veil

“Capturing wild animals is rape, robbery and crime,” a curator stated at a staff meeting and he received an approving nod or two. It was at a zoo in Michigan in the 1990s. As they spoke, ironically, those young staff members were standing on the shoulders of founders removed from their home habitats and their descendants. An increasing number of species has begun to attain self-sustaining populations, thus the curator may have assumed that he could disassociate himself with the “dirty laundry” in the zoos’ collective closet. The fact stands, however, that no founder stock “volunteered” to join the breeding program; also, recruitment of wild animals is still a part of the long-term zoo animal management in order to exchange genetic materials. “The size of any population at any given time is a function of birth rate, death rate, emigration, and immigration. This is fundamental to any consideration of demography. In terms of a zoological park, (1) immigration stands for an acquisition from a sister institution or the wild, (2) emigration for the sale or trade of a specimen.” (John Eisenberg, 1980; his paper was published during the pre-SSP era when sale and trade were the norm.)

In fact, dealing with an animal fresh from the wild has become foreign in today’s zoos with the discontinuation of large-scale importations of animals. Facing a tiger, captured as an adult but not as a cub, would give a lasting impression, providing a glimpse of life in the wild. Mabel Stark recalled a trip to a port to receive a tiger, still on a boat from India: “She fought the cage so savagely that the sailors were afraid she would break out. . . She struck again and again at the bars, half crazed with terror.” (Stark & Orr, 1940) Once, pinnipeds were notorious for anorexia in captivity: “Very often a sea lion, after capture, will not eat for as long as sixty days. Being used to catching its own fish live, the animal is extremely slow to adapt to a change in environment.” (Bill Ballantine, 1958) With the disappearance of every step like these the image of animals’ long journey from wilderness to captivity diminishes, and along the way the invisible veil that separates us from nature’s way grows thicker and heavier. Also along the way, as more animals are now zoo-born, comes complacency with status quo.

But every now and then, a quick glance at our past will help us to at least attempt to lift that veil. It may spoil a splendid dinner with colleagues if you bring up the topic to the table, but it makes good exercise of minds. Take, for example, the great apes. A birth of a gorilla no longer makes a big national headline but it was another story a mere six decades or so ago. The dawn of the new day arrived for gorillas in captivity on 22 December 1956, when Colo was born at Columbus Zoo, Ohio (Gibson, 2006); the magnitude and sensation of the news were unimaginable today. However, the journey to Columbus was long and brutal.

## Inconvenient history

C. Emerson Brown on gorillas in the native habitat: “A mother will fight to the death in protecting her young, much as any human mother would do. . .” Citing another author he noted: “a mother discovered in a tree with her young watched closely the movement of the hunter, and, as he took aim, motioned with her hand in the same manner as a human being would, to have him stop. . . .When wounded, gorillas have been described as trying to stop the flow of blood by holding a hand over the spot.” (Brown, ca. 1931) Armand Denis chronicled large-scale collection trips in Africa during WWII. Villagers prepared themselves with spears and muzzle-loaders, stuffing the latter with nails, screws, nuts and odd scraps of iron; they felled trees in the habitat for the hunt. In one hunting trip four gorillas were killed and one infant was captured. Under difficult conditions Denis kept adding, and assembled a total of 30 gorillas from a day-old infant to a 280-pound (127 kg) male, with the hope that he would bring them back to Florida. Then a viral disease struck the group, killing every one of them. (Denis, 1963)

Back to Brown, “Until 1923, few of the beasts had been brought into this country alive; only five had been landed, and none lived for more than a year. Since then, for some unknown reason, they have become more plentiful, until, by 1930, as I have said, there were five living specimens in the various zoos of the United States. All were young, ranging from two to about five years of age.” (Brown, ca. 1931) Across the Atlantic, in a book about London Zoo Gertrude Gleeson said adult gorillas “seldom live long in captivity, as they refuse to eat. The baby gorillas become very much attached to human beings they know, but, if they are shipped to Europe in charge of strangers, they mope and almost invariably die of pneumonia and misery a very few weeks after they reach our Zoo.” “Some day we may learn how to acclimate young gorillas at our Zoo, but at present, when the babies are often captured from the side of their dead mothers, fed on unsuitable foods and passed on from hand to hand by dealers, it is unlikely that a gorilla will reach our Gardens in sufficiently good health and spirits to survive for any length of time.” (Gleeson, 1933)

It would be comforting to suppose that great apes in other regions may have been collected in humane and scientific methods and received sufficient care. But early accounts on the orangutan are equally bleak. Killing mothers appeared to be the norm: “The mother orangutan makes desperate efforts to save its baby. Even when mortally wounded, and with blood gushing from its mouth, it will fling itself onwards over the tops of trees and from branch to branch, throwing the baby onward, in hopes of placing the baby out of reach of its pursuers. She continues these tactics so long as she possesses an ounce of strength; then, turning for a moment to gaze after her young, reels and topples down, head foremost, to the ground.” (Gleeson citing a French traveler, 1933) But occasionally adults were also taken.

Charles Mayer vividly documented how a segment of a forest was felled as far as sixty feet (18 m) on all sides around a pair until they were isolated on a tree, then fire was set on foliage; “The orang-outangs (sic), high up in the tree, were huddled, swaying back and forth.” The escaping apes were driven into nets, and how they fought: “A huge paw shot out and grabbed my ankle. I was jerked off the ground, and, as I fell, my hands caught the limb of a tree. . . .” Antwerp Zoo offered \$10,000 for each orang; Mayer knew he could get offers of \$25,000 or more in the United States but orangs would not survive the long voyage. “From the moment the steamer headed on to sea, the orang-outangs began to fail.

They became deathly seasick, especially the female, and refused food...she had seemed so human in her suffering!" She died; the male made it to Marseilles, was rushed to Antwerp Zoo where he died 10 days later (Mayer, 1920). Frank Buck told a similar story of an adult male. The orang arrived at Hong Kong then to Yokohama, Japan in good condition. Five days off San Francisco toward another port he developed dysentery and died; he and the cage were tossed into the sea (Buck, 1930).

Their fate at zoos, if lucky to survive the trip, hardly fared better. Based on records at Philadelphia: "Success in breeding orang-utans lies partially, at least, in the ability to secure a good mature pair. Young specimens, according to my observation and records, seldom live to be old enough to breed. Of all the immature specimens purchased by us during the fifty years of the gardens' existence, not one has lived to be more than six years of age. The parents of the two mentioned above were purchased when fully adult." (Brown, ca. 1931) As late as the 1960s Barbara Harrison noted, "Those taken captive frequently died before they reached their intended zoos. Of the survivors, less than one in five survived more than three years' captivity, though an Orang's normal expectation of life is at least twenty-five years," adding that the mortality rate "is much the same today." (Harrison, 1962)

History is often inconvenient, as shown in these cases. If we bring in today's popular terminology, i.e., moral and ethics, into the scene we would have voted against wasteful and inefficient capture and transport methods, yet we cannot put all the blame on our predecessors and wash our hands. For that was how the founders of our great apes were delivered to us. In other words today's healthy, well-adapted apes stand on heaps of dead conspecific; untold numerous lives perished during capture, transport and after the arrival at our door. Adding up all these, we owe so much to nature; we are in immense debt, and there is little consolation that success in breeding in recent decades would atone for the atrocity committed upon them. Success stories, in this context, are bound to become a mulling subtext. Nevertheless, we have to face this stain in history. Amnesia or worse, willful ignorance, will not get us anywhere; although the first reflex is to ignore, our past cannot be expiated. Also important is to realize that onslaught still continues on great apes by way of deforestation and poaching for bushmeat out of sight of affluent societies, a reality that needs to be told to our audience.

## Obsession with angwantibo

Turning a critical eye on the distant past is easy. Yet, occasionally we ought to examine today's scorecards as well. The above issues focus on great apes, among the most popular zoo animal groups along with large carnivores (e.g. big cats, bears) and large herbivores (e.g. elephants, rhinos, giraffes), the so-called "ABC animals". Without them the public would not accept us as a zoo. When we intensely focus on one subject, the "spotlight effect" erases all others from the radar. Step back a moment from the immediate subject, then a different perspective dawns upon us. An example: We take the term a zoological park (or garden) for granted, and rarely ask what "zoological" really means.

Interpreted literally, zoological is an adjective meaning "relating to zoology," which refers to a branch of biology that deals with animals. Animals consist of a vast world from amoeba to us. As noted above, zoo animal collections are dominated by ABC animals, all of them

mammals, making zoos a mammalocentric entity. Yet mammals occupy only a fraction, 4,000 or so species out of the estimated total of five to ten million species in the animal kingdom. The ABC-type mammals, representing a popularity-driven assemblage, make up a very small minority even within mammals (Kawata, 2011a). Another large part of zoo collections is birds, and they are typically recognized by the likes of penguins, raptors, ratites and psittacines. In view of world's birds, they also constitute a minority among bird species. Missing or poorly represented are Procellariiformes (tube-nosed), Apodiformes (swifts, hummingbirds), Piciformes (woodpeckers and allies) and to top it off, the largest of all, Passeriformes (perching birds) that occupies 60% of all bird species. To sum up, zoos exhibit an extremely skewed representation of the animal world.

And herein lies a built-in dilemma. The reality of business dictates that zoos need the public-drawing power of ABC mammals to ensure gate revenue for the institutional well-being and survival, even though we offer unbalanced examples of the animal kingdom. Baby animals are particularly appealing to the populace, and predictably a website features newborn animals from the world's zoos and aquariums. The site receives a million hits monthly, and the only requirement to be included on the site is "cuteness". (Anon., 2011) This indicates that, hard to resist as it may be, if we are not careful zoos begin to borrow superficial, inflated and marketable elements from the animal world and that is one side of the story. On the other hand, conservation is the common currency for zoo professionals, and the desirable conceptual image of a zoo projects a perfect concentric circle with the dot, conservation, in the dead center. Although the two components, financial and economical and conservational, may not be mutually exclusive, an impression remains that zoos are being pulled toward two different directions. In that sense, zoos represent a bifocal ellipse rather than a perfect circle (Kawata, 2011b). This is not to argue against featuring baby animals, since they embody success stories of captive breeding and that helps the conservation cause. The point, however, is there exists the tendency to place marketability above all, thereby treating the general public as consumers instead of citizens; we need a balance.

Back to the animal collection, selection of animals used to be the domain of zoo directors. They lived in a dream bubble to pursue rarity, blessed with imagination. As Gerald Durrell asserted: "There are only two ways to find out about how an animal lives, and what its habits are: one is to study it in the wilds and the other is to keep it in captivity." He continued: "That is why I thought it was more important to bring back an animal that had never been seen alive in captivity, even if it was only a species of mouse, than to bother over-much with the larger and better-known animals." He seemed almost obsessed with angwantibo, a prosimian from Cameroon. During an expedition in that exotic land, one day a hunter brought him a green basket, and when Durrell peered inside his colleague and the hunter "thought I had gone mad." (Durrell, 1953) It was an angwantibo in the green basket, and Durrell's passion, joy and excitement were genuine and infectious. Acquisition of such animals can lead to pioneering work to establish captive care protocol, to pave a way for husbandry and scientific endeavors.

Collectors' days are gone now, and rarity is no longer in vogue. Zoo world recognized the need for captive propagation as a part of global conservation strategy, and the carrying capacity of zoos of the world was (still is) painfully limited. With conservation serving as the standard-bearer of zoos, precious captive space was to be devoted to species management programs. With the dawn of the new millennium approaching, a number

of articles on collection planning was published in the United States, revealing guidelines for institutional, regional and national strategies. Acronyms became a part of zoo life, for example: IUCN/SSC, IUDZG, CBSG, AZA, CITES, SSP, EEP, TAG, MK, ISIS, ICP, CAMP, GCAP, RCP, GASP and REGASP. On ICP (institutional collection planning) Bruce Read defined five steps: purpose and how; stakeholders; level of understanding; brainstorming and revisit the plan. (Read, 1999) Moreover, “In our view, every taxon maintained by a zoo should have a justification for being in the collection and we further support *The World Zoo Conservation Strategy’s* [IUDZG and IUCN/SSC CBSG, 1993] proposal that every individual animal be justifiable as well.” (Michael Hutchins, Kevin Willis and Robert J. Wiese, 1995) As collections are being shaped by group decision making by committees, the top-down style, with a singular individual choosing species, rapidly became anachronistic.

An unavoidable outcome of this operational model is the uniformity of zoo animal collections across the land. Zoos began to acquire animals from populations managed by national groups and soon, they filled exhibits with a similar set of species, rarely venturing out for new species and sources. As a result visitors see ring-tailed lemurs nearly everywhere; lion-tailed macaques are so common, while there are other macaque species such as rhesus, pig-tailed, Taiwan, stump-tailed and crab-eating that few visitors have the opportunity to see. The trend is not limited to the United States.

A. C. van Bruggen observed the London Zoo over the decades: “From the late sixties I was an almost annual visitor so that I personally witnessed the enormous changes that have resulted in what is now left of the former glories. Let me state first of all that I was trained, and worked almost my whole life, as a taxonomist so that my main interest is in the diversity of the Animal Kingdom. However, the zoo of today is (rightly or wrongly) no longer interested in showing biodiversity. . . .” To conclude: “Gone are the days that all major vertebrate groups were represented in their stunning diversity in the major zoological gardens of the world. . . .” (van Bruggen, 2005) In the mainstream American zoos “taxonomic exhibit system” is a dirty word. Using today’s thinking the old-style zoo would be accused, justifiably or not, as a place of exploiting wildlife, where wild-caught animals were crowded into cages and lived short lives. The aforementioned accounts on great apes are quite grim, easily giving us the spotlight effect that leads us to assume that past was all bad. Yet all this should be taken in the context of history; all was not that grim, according to Clinton Keeling.

He commented: “Most zoological gardens and parks today bear very little resemblance to their counterparts of yesterday and their husbandry methods have undergone an even greater transformation. It is, however, an all-too-common mistake to follow the current trend and dismiss these early institutions as virtual concentration camps for animals in which the vast majority lived brief and unhappy lives. In fact, a great many species did extremely well, bred freely and, in some cases, set world longevity records which are still unsurpassed. The much maligned Jardin des Plantes in Paris compiled an impressive array of longevity records during the closing decades of the last century.” (Keeling, 1989) Also, Dr. van Bruggen’s recollections have a valid point: diversity in collections has been lost from zoos. Zoos now offer limited animal-viewing experience to the visitors, with few chances to watch different sizes, shapes, colors or behaviors within the same group of animals, be it guenons, pheasants or rattlesnakes.

## Off the center stage?

Continuing on the examination of zoo scorecards, one of the pleasures of studying zoos is to sit down and go over animal data, records and statistics. A quiet afternoon of immersing yourself into such materials helps to enrich your mind and recharge your battery. In order to do so, you must first have accessibility to a body of knowledge. Inconveniently, somewhere in recent decades vital information on animal collections began to stay beyond our reach. For instance the International Zoo Yearbook, published by the Zoological Society of London, was once known as “the zoo man’s Bible”. It had a wealth of data on animals and zoos. However “I stopped subscribing when the list of the world’s zoos and aquaria began to be published only every other year. . . . At some point, apparently, the census of rare animals and the list of animals bred in captivity disappeared altogether.” (Herman Reichenbach, 2010) Until the list of animal births appeared for the last time in the 1996 issue, a researcher was able to compile the history of captive breeding of a certain animal group; it was a gold mine. An example is a massive review of hummingbirds in captivity, with a table of world-wide zoo breeding records from 1959 through that year (Lindholm, 2007).

As for AAZPA/AZA, Bob Truett once categorized AAZPA member institutions into four groups in terms of the animal collection size, such as “Category A consists of zoos which have about 2,000 specimens or more, of which at least 1,500 are tetrapods of at least 300 species. Category B consists of zoos which have about 1,000 specimens or more including at least 750 tetrapods of at least 200 species” and so forth (Truett, 1970). It was a quick reference source, at least enabling us to figure out a zoo in your mind. Four decades later, American zoos now seem to be measured in terms of *money* they have, but not animals (e.g. *AZA Communicque* May 2005, p. 5). All these seem to indicate that animals have become a mere abstraction in the zoos’ business world, data on animal collections were no longer relevant and also, the animal collection no longer commands a center stage in the national zoo arena.

No zoo is an isolated island, and what goes on in zoos may reflect the society we live in. Specifically, it may refer to the trends in academia, albeit indirectly and also, the type of persons entering zoo employment today. Aforementioned Dr. van Bruggen brought up taxonomy, a discipline old-school zoo workers are familiar and comfortable with along with natural history. The mainstream biology is now dominated by molecular biology, and there exists “a huge elitist prejudice against natural history and for microbiology”, Richard Louv quotes Paul Dayton, who also said: “the explicit goal of the new philosophy of modern university science education is to get the ‘ologies’—invertebrate zoology, ichthyology, mammalogy, ornithology, and herpetology—‘back in the nineteenth century where they belong’.” Dayton also noted, “In a few years there will be nobody left to identify several major groups of marine organisms.” (Louv, 2006) In a recent research institute website, there was a job announcement for Computational Biologist (a title inconceivable a generation or two ago), whose work involves “the evolution and control of cellular systems”. (Anon., 2012) For sure, organismic aspects have been pushed aside from the mainstay of the biological science.

Louv also points out the trend of today’s children growing up indoors, away from nature about which he coined a term “nature-deficit disorder.” In the generations past, many children ventured out to woods, climbed on trees just to take a look around or hunted little

creatures, or waded into a stream to look for frogs. Among them were those who devoured natural history books with insatiable curiosity. They were fascinated by creatures with exotic names such as kakapo, tuatara, quetzal, okapi, indri and sifaka from far-away lands. Aforementioned Gerald Durrell must have been mesmerized by an obscure small animal with a funny name like angwantibo from the African jungle, from early years. That type of young people often ended up in zoos, and although they may not have had formal higher education, some of them turned out to be practical achievers and problem solvers in animal collection management, forming a basic work force. Some of them managed to climb up the ladder to the top.

In 1969 a zoo exhibit designer attended an AAZPA conference, and he must have experienced a culture shock. The program “was mainly about animals. . . Those people were ‘animal people’,” he observed: “Collecting was the passion of most zoo directors and the favorite subject of informal conversation was rare and exotic species hoped for or recently acquired.” (Jack Jones, 1994) Time has changed, and they (nearly all of them men) have joined the rank of an endangered species. A different and new breed of persons, armed with advanced degrees, is in the driver’s seat and conversely, we see few old-style “animal people” in the upper hierarchy of zoos. The fact still stands, however, that without a healthy and solid animal collection, a zoo would have no structure in order to plan its missions, including wildlife conservation.

## Conservation

### A blueprint for zoos

The United States was a late starter regarding the birth of the modern zoo due to the young age of the country, and partly because of American Civil War (1961-1965). Influential hunter-conservationists, closely connected to those early years, played a role. In January 1888 the Boone & Crockett Club was organized in New York, with Theodore Roosevelt as its president. The objectives of the Club included: inquiry into and recording of observations on the natural history of wild animals, and preservations of forest regions. . . as nurseries and reservations for woodland creatures which else would die out before the march of settlement. Roosevelt took charge: “Among his first acts was to appoint a Committee on Parks, which was instrumental in the creation of the National Zoo in Washington” in 1889. (Morris, 1979) William Hornaday also “envisioned a conservation center in which herds of endangered species, such as the bison, could live. . .” (Morgan, 1989) For the New York Zoological Society, the operator of the Bronx Zoo (opened 1899), stated “The declared objects of the Society are three in number—‘A public Zoological Park; the preservation of our native animals; the promotion of zoology.’” (Hornaday, 1918) Out West, Zoological Society of San Diego, the operator of the Zoo (opened in 1916), also stated as The Purpose of the Society: “1. To advance sincere and scientific study of nature. 2. To foster and stimulate interest in the conservation of wild life.” (Anon., 1916)

A global commitment to conservation by a zoo association may be traced to the International Union of Directors of Zoological Gardens, or IUDZG. European zoo directors met regularly, beginning in the mid-nineteenth century and IUDZG was officially founded



in 1946. In the following year its first Constitution was approved in Basel. In Article 2, among the objectives of this Union was to “promote zoological research in the widest sense and also the protection of the world’s fauna.” While cities still lay in ashes and ruins from WWII, in 1948 collaboration with international conservation and museum organizations was discussed in Paris, where it was documented: “Taking account of the growing interest in nature conservation, the justification for zoos can be found only in the educational, conservational and research aspects, just as in the case of museums.” (Walter K. van den Bergh, 1973)

Back to this side of the Atlantic Ocean, the view of zoos’ mission gradually expanded from preservation of the nation’s fauna to a global level. “In 1980 the Board of Directors of the American Association of Zoological Parks and Aquariums (AAZPA) voted unanimously at their midyear meeting in Tulsa, Oklahoma to make wildlife conservation the Association’s highest priority. With this action began the development of the extensive efforts now underway to reach this goal. . . . The foundation of AAZPA Conservation Program is the Species Survival Plan (SSP).” (Robert Wiese and Michael Hutchins, 1992) The scope of zoos’ work has since been continuously discussed. More recently, John Fraser and Dan Wharton (2007) define five areas for conservation work; meanwhile William Conway (2010), the key spokesman for zoos, takes a more realistic viewpoint, reviewing the path taken by zoos in this colossal endeavor, and points to future directions.

## Defining the boundary

Although the goals and scope of work have been addressed by many authors, the term conservation is subject to interpretation by each individual. There should be a unified front for carrying out the task by the middle management, as well as the ground level workers in public relation, education, marketing and animal care. In one aspect, at its core, conservation should refer to activities to ensure survival of population(s) or a taxon in the natural habitat without continuous human interventions. Taking that view on consideration, questions remain for zoos: What does conservation mean to zoos after all? Does captive breeding of endangered species itself constitute conservation, a part of it or a support practice as a safeguard against extinction? Can self-sustaining captive populations be maintained for many species? Shouldn’t invertebrates, although less appealing to the public, require attention as mammals do? The cognitive model of conservation can get murky, as sprawling and non-focused ideas seep into daily work. Conservation, then, could turn into a self-fulfilling prophesy, a euphemistic abstraction for immediate gratification. Eager souls may conveniently cast a net on ambiguous areas, but that would eclipse the focus.

In a zoo in Illinois, a building for amphibians was labeled Conservation Center; in another zoo in this state, an elevated observation platform, from where the public looked *down* at cheetahs, was titled Conservation Deck, not far from a children’s area called “Petting Zoo”. (Pers. observ., 2010) From these the public may assume conservation means merely placing an animal in captivity. One day in a zoo in Missouri, a man (who remains anonymous) who began work in 1960 observed younger colleagues (e-mail, 2003): “We often discuss how the animal keepers and staff appear to perceive the visitors. I think we fit into the ‘modern AZA’ attitude that we’re conservationists and the public is welcome if they don’t get in the way of

our ‘important work’. I’m sure it’s really not that extreme on the whole but the extremists are not frowned upon in lunchroom conversations.” In reviewing a book *Animals in the Blood* Nick Gould notes, “Most . . . readers, probably, are broadly in favour of the changes that have taken place to zoos in the last half-century. But many will feel an uneasy suspicion that the pendulum has swung too far.” He talks about “an age when the conservation ethos and the demands on international breeding plans had not imposed their uniformity on so many collections, when safety barriers were not compulsory, when visitors were allowed (even at Jersey!) to feed many animals. . .” (Gould, 2012)

Nostalgia aside, reversing the trend is inconceivable and we must make the most of our day. As an idea for zoo function, “We live in a world that is disconnected, isolated and insulated from the wild. We must, in the final analysis, connect people with plants and animals in a way that makes us care for all living things. That must be our mandate for the future.” (Jeffery Bonner, 2002) Thus conservation education becomes, perhaps arguably, the most vital function for zoos today, and that puts us facing a set of challenges.

In the urban society, the public’s “experience” with animals is largely limited to caring for household pets and watching nature’s images on the screen. Too often, wildlife films have become an entertaining art; images are manipulated, intensified, dramatized and fictionalized, thus distorting reality; “story is king, and science its servant,” asserts Derek Bouse. His example: African lions often spend up to twenty hours a day at rest. “In a one-hour (fifty-two minute) wildlife film for television this would amount to forty-two minutes of relative inactivity—true to nature perhaps, but anathema to distributors, broadcasters, and advertisers. Such a film would surely induce mass channel-changing even among viewers who might be content to sit and watch the same lions for forty-two minutes from a Kenyan tourist van. . .” Such a production will be considered “bad television” and therefore, bad business. And “it is not surprising that a common complaint heard in national parks is that the animals don’t seem to *do* anything; they just lie there.” (Bouse, 2000) Nature may appear so familiar, yet so far and the crowds cast the same expectations upon zoos.

### **Eco-soap? Lesson from Knut**

Also in an urban society, the concept of an “animal” is developed, from early childhood, through emotional attachment to individual pets, dogs in particular. Citizens are bound to perceive wild animals as an extension of their beloved pets that are totally cut off from nature. Consequently, their capacity to comprehend nature’s intricacy stays quite limited. Even the mass media imagery provides a snapshot of nature’s crises, such as clear-cutting of tropical rainforests or rapidly receding polar ice caps. For the populace, these images are viewed as just another type of soap opera with no real connection to breathing, furred, feathered and scaled creatures; we might call it ecology soap opera, or eco-soap. In order for zoos to convey concepts such as biodiversity and ecosystem to the public, it is essential that the audience be receptive to the message. As Sue Dale Tunnicliffe puts it, “to plan effective interpretation, it is necessary to start with the visitors and the knowledge that they bring with them to the zoo because visitors pay attention to and comment about that which attracts them and they recognize, which matches with their personal mental model.” (Tunnicliffe, 1998) Yet, the average zoo visitor does not appear to be equipped with mental (or cognitive)

model, knowledge and sensitivity to an animal's environmental components, in order to understand the above concepts.

Knut was a polar bear, born in Berlin Zoo in 2006. Orphaned and hand-raised, he became a news media phenomenon dubbed "Knutmania." With immense media coverage catapulting his status into a global celebrity, his presence began to vividly illustrate the central conflict between conservation philosophy and the public's perception of a wild animal. "The secretary of state for the environment, Sigmar Gabriel, adopted Knut as a symbol for nature conservation, but the public mostly ignored the symbolism. Neither the zoo nor the political powers were able to use Knut effectively for this important purpose. The people and the journalists were not interested in the stories about global warming, thin and hungry Polar bears and melting pack ice, they wanted Knut and his keeper Doerflein to be two beings living together in harmony. So the story left the realms of natural history and became a modern fairy tale; Knut and Doerflein seemed to live together like the lion and the lamb in the Garden of Eden." Knut died suddenly in 2011 but the saga continues. "The story of Knut illustrates the danger of personalisation with animals." (Harro Strehlow, 2012)

He was more than a bear. Heini Hediger said it all: "The mania of anthropomorphism is generally widespread and unbelievably deep-rooted in the public; it is one of the most important and worthwhile tasks of the zoological garden to counteract this attitude to animals because it leads to a total misunderstanding of the animal and thereby quite frequently to animal torture. There can be no animal protection without knowledge of animals and humanizing is a main obstacle on the road to knowledge." (Hediger, 1970) Given the intensity of anthropomorphism by the public and the power of news media, zoos of the world face a daunting task ahead.

The public becomes serious when their emotion gets roused; news of animal abuse, cruelty, suffering, killing or rescue will get them out of the comfort of the living room. Conversely, the story of declining polar ice cap does not prompt them for action even though beautiful and magnificent polar bears may be suffering, starving and dying, all of which taking place out of sight. Extinction of another species will generate a passing reaction, "Oh, poor thing. . ." It all goes back to the cognitive model. Once that model is established, the person will realize that passively admiring beautiful animals alone is far too inadequate for wildlife conservation. Instead, it calls for action to make things happen, such as influencing the public policy making process. If that is the ultimate outcome of conservation education, how can zoos nurture the cognitive model in the citizens' mind? There is no simple or easy formula and it will no doubt take an almost evangelical zeal to even start the process.

### **Toward grass-roots movement**

Actions for wildlife conservation take many forms. Here follows a sample menu for ordinary citizens. One of them is to engage in the political system for promoting the type of change, from more funds and support for the local zoo, protection of tropical rainforests to banning importation of products made from endangered species. Writing letters to elected officials will be a start. Ironically, working on the political system is the strategy which the news media-savvy anti-captivity advocacy organizations employ effectively. They run

campaigns to fight against circuses and zoos. Circus fans take up the cause to counter-campaign, yet we see no surge of pro-zoo movements or campaigns. Letters may also be sent to news media, such as the headquarter offices of television stations and newspapers, to encourage them to advocate for wildlife conservation.

Net-working is also important. Joining zoo-support groups and legitimate nature conservation organizations is one way to show your willingness to help wildlife. As an additional step, you might consider donating funds for worthy causes and volunteering for various programs. Just one word of advice—use every caution in choosing organizations, and to stay away from those heavily focused on romanticism, emotionalism for individual animals, and gearing toward radical, illegal and military strategies. No matter how appealing their plea may sound, you may be wasting time and money by careless choices.

Something anyone can do while staying home: Examine daily habits and modify them as necessary. Conservation can mean changing people's behavior, for instance, to curb the march of excessive consumerism in affluent nations. The familiar phrase, "Reduce, reuse, recycle" comes to mind for helping to reduce natural resource consumption. An example: Water is renewable for which we take granted, yet we can look for a better way to utilize it. On Lisbon's waterfront stands the fabulous Oceanario. Stepping inside, a sign greets visitors: "The Oceanario's mission is to promote the knowledge of the oceans, inspiring the public for the protection of natural resources through changing its daily habits." Not far from the entrance is a model of a kitchen, exhibiting water usage. (Pers. observ., 2010) This is as basic and as simple as it can get; our daily activities begin in the kitchen to prepare for breakfast, where a conservation process may begin. (One of the most urgent approaches to conservation is to manage the ever-increasing human population on a global basis. However, that issue is beyond the scope of this account.) So much can be done at home, and that takes us back to writing letters.

Letter-writing has none of the novelty of cuddling exotic animals. It is a non-glamorous, monotonous, tedious undertaking, yet a necessary part of a grass-roots movement. A decade or two ago when I was on the committee for the Mexican wolf recovery program I once attended a citizen's group meeting. It was in Arizona and we (mostly zoo staff) were taken to a small conference room of a museum at night. The recovery program was facing difficulties, financial and political. This small meeting was attended by housewives, students and other concerned citizens. A middle-aged woman called the meeting and led the discussion. "Write to your congressman and senators," she stressed, "...and express your concern, tell them how important it is to save the wolves! Just one letter may not do much, you might think, but we *must* keep sending them letters. Unless we get into the political arena, there is NO victory." Wolves and "man's best friend" belong to the same genus *Canis*, and wolves can be just as adorable, cute and cuddly. Yet during this meeting, I never heard such adjectives being uttered. It was an eye-opener, as I sat and witnessed the citizens' grass-roots movement in action.

### **Cast thy bread upon the waters**

Modern zoos have been around for roughly two centuries. The river of history continues to flow with varying width, depth, volume and speed, making turns every now and

then, sharp or gradual, through good times and bad. The last half-century has seen another turn, characterized by shifts and changes described in this account. Internally, however, the operational aspects of a zoo remain basically unchanged, unaffected by the rapid transformation. A preferred profile of a zoo may be summarized by three criteria, not necessarily in the order of importance: That animals are well cared for with their records accurately chronicled; for employees it is a comfortable and worthwhile workplace; and the visiting public enjoys the visits, and hopefully learns something about the animals.

Externally, throughout the years, a zoo's position in our increasingly urbanized society has also been consistent with the three premises, regardless of its mission or purpose of the time: No other institution keeps an assemblage of a wide variety of live wild animals as a zoo; it is open to the public; and thirdly, the zoo offers the populace the only contact with those animals. Although the position stands firm, we have inherited an often nagging contradiction: Zoos introduce wild animals, a component of nature, to the public while confining them in captivity. Debates continue, as some animal advocates intend to push zoos into gradual irrelevancy. As William Conway once observed: "Inevitably, zoos will be caught up in the controversy between those who would rather be certain that an individual animal dies well than that an entire species survives at all; between those who believe it better for animals to die in the 'dignity' that comes from pesticide poisoning, random shooting, and habitat destruction than to survive in captivity through knowledge and care. Somehow, it will be necessary to secure a synthesis of the ideas of people who ascribe rights to animals and people who ascribe responsibilities to man." (Conway, 1980)

The task of caring for wild animals requires a serious personal commitment. Many in this profession must have asked a question, late at night in bed: Can we justify taking wild animals into our hands, subjecting them to a variety of potential risks from vandalism, national political turmoil, natural disasters to wars, regional and world-wide? In the search for an answer, bringing up religion may not be permissible, or even objectionable. One of the potential answers, however, may be found in the time-tested wisdom in the Scripture: "*Cast thy bread upon the waters, for after many days you will find it again.*" (Ecclesiastes 11:1) It calls for people to know that their good deeds will eventually benefit them. The lesson for us: Wildlife is a vital component of our world, and that is precisely the reason why zoos take them into the flow of living history, bringing them closer to the people. We hope that it will lead to an assurance that wildlife will continue to share this Planet with us, for millennia to come.

## Acknowledgements

I would like to express appreciation to Dr. William Conway for his encouragement to compile my thoughts into this essay.

## References

- Anon. (1916). An unpublished internal document, San Diego.  
 Anon. (2011). AZA benefits from new-born zoo animals. *Int. Zoo News*, 387, 126.

- Anon. (2012). <http://www.stowers.org/careers>
- Ballantine, B. (1958). *Wild Tigers & Tame Fleas*. New York.
- Bonner, J.P. (2002). The president's letter. *Zodus* 17(2, 3), Mar/Apr.
- Bouse, D. (2000). *Wildlife Films*. Philadelphia.
- Brown, C. E. (ca. 1931). *My Animal Friends*. New York.
- Buck, F., & Anthony, E. (1930). *Bring'em Back Alive*. New York: Garden City.
- Conway, W. C. (1980). New conservation perspective. In *AAZPA 1980 Annual Conference Proceedings* (pp. 30–38).
- Conway, W. G. (2010). Buying time for wild animals with zoos. *Zoo Biol.*, 29, 1–8.
- Denis, A. (1963). *On Safari*. New York.
- Durrell, G. (1953; reissue 1987). *The overloaded ark*. London.
- Eisenberg, J. F. (1980). Zoo and aquarium animal management in relation to conservation. In *AAZPA 1980 Annual Conference Proceedings* (pp. 39–41).
- Fraser, J., & Wharton, D. (2007). The future of zoos: a new model for cultural institutions. *Curator: The Museum Journal*, 50(1), 41–54.
- Gibson, A. (2006). Something to celebrate at Columbus Zoo. *Int. Zoo News*, 353, 470–473.
- Gleeson, G. (1933). *London Zoo*. New York.
- Gould, N. (2012). Book review. *Int. Zoo News*, 397, 482–484.
- Harrison, B. (1962). *Orang-utan*. New York: Garden City.
- Hediger, H. (1970). *Man and Animal in the Zoo*. London.
- Hornaday, W.T. (1918). *Popular Official Guide to the New York Zoological Park* (fifteenth edition). New York.
- Hutchins, M., Willis, K., & Wiese, R. J. (1995). Strategic collection planning: theory and practice. *Zoo Biol.*, 14, 5–25.
- Jones, J. (1994). Reactive past—responsive future. *Zootrend*, 5(4), 1–3.
- Kawata, K. (2011a). Romancing the celluloid nature: a review of American zoo exhibits, part I. *Zool. Garten N.F.*, 80, 239–253.
- Kawata, K. (2011b). Of circus wagons and imagined nature: a review of American zoo exhibits, part II. *Zool. Garten N.F.*, 80, 352–365.
- Keeling, C. (1989). Cages and common sense: early animal keeping. In *abstracts and biographies of the participants, the history and evolution of the modern zoo*. Washington, DC.
- Lindholm, J. (2007). The aviculture of hummingbirds: a historical perspective. In *Proceedings of the 4<sup>th</sup> International Conference on Breeding of Birds in Captivity Toronto*.
- Louv, R. (2006). *Last Child in the Woods*. North Carolina.
- Mayer, C. (1920). *Trapping Wild Animals in Malay Jungles*. New York: Garden City.
- Morgan, A. (1989). The 1880s: an idea is born. *Zoogoer*, 18(3), 4–6.
- Morris, E. (1979). *The Rise of Theodore Roosevelt*. New York.
- Read, B. (1999). Institutional collection planning (ICP) and the purpose of developing one for an institution. In *AZA Annual Conference Proceedings* (pp. 69–74), 1999.
- Reichenbach, H. (2010). Book review. *Int. Zoo News*, 381, 224–226.
- Stark, M., & Orr, G. (1940). *Hold That Tiger*. Idaho: Caldwell.
- Strehlow, H. (2012). Knut—a cautionary tale. *Int. Zoo News*, 396, 406–407.
- Truett, B. (Ed.). (1970). *Zoos & Aquariums in the Americas*. AAZPA.
- Tunncliffe, S. D. (1998). Everyday zoo animals—mental models of children in England and the USA. In *AZA Regional Conference Proceedings* (pp. 604–608), 1998.
- van Bruggen, A.C. (2005). Half a century ago: visits to the Zoological Society Gardens, London, 1947-1955-1958. *Bartlett Society Newsletter/Britain* Jan, Mar, May, July, Sep, 22-24.
- van den Bergh, W.K. (1973). An IUDGZ internal document.
- Wiese, R. J., & Hutchins, M. (1992). The AAZPA conservation program: there is a method to our madness. *AAZPA Conservation Resource Guide*. AAZPA.