Hi FIVE

2011 MasterClass
Lawrence Tech University

Contents

About Us

We are a team of students at Lawrence Technological University enrolled in the Masterclass Studio. As a research team, we have compiled this book as an analysis of zoos, aquariums, and other systems, ethics, and issues of species management. We have researched the history of such vivaria, their operations logistics, and specific case studies. This broad research will help guide us in our more specific investigation of the ecological systems surrounding the Lake Erie coast.

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Introduction

A vivarium is an enclosed area for the keeping, observation, and research of organisms such as a zoo or aquarium. Humans have gathered plants and animals for the means of observation, entertainment and research for thousands of years. The history of vivaria as a means of research begins with humans' interest in the study and classification of organisms. As various types and scales of vivaria have developed across the world through time, the structures and environments within them have also evolved. Early vivaria were mostly geared toward entertainment, but due to changes in social attitude, modern vivaria stress commitments to education, research, and conservation of living organisms.

History of Species Classification

For centuries, the naming and classification of living organisms into groups has been an integral part of the study of nature.
Aristotle (384BC-322BC) developed the first known method of classifying organisms, grouping organisms by their means of transport (air, land, water). A number of other naturalists followed with other classification systems, but it was Swedish botanist, Carolus Linnaeus (1707-1778) that is considered to be the pioneer of modern taxonomy. In his book Systema Naturae, first published in 1735, Carolus Linnaeus introduced a rather clever way to classify and name organisms. This system, now referred to as Linnaean taxonomy, has been used to varying extents, ever since.

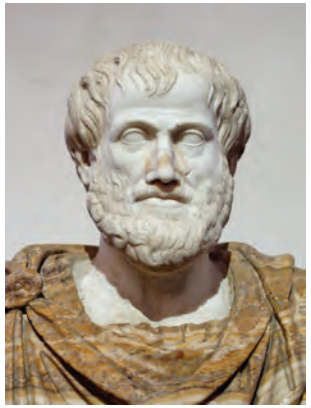
To best understand the science of classification, it will help to first examine a few basic terms:

classification - the systematic grouping and naming of organisms based on shared structural similiarites, fuctional similarities, or evolutionary history

taxonomy - the science of classifying organisms (describing, naming, and categorizing organisms)

systematics - the study of the diversity of live and the relationships between organisms

"Animal Classification - How Animals and Wildlife Are Classified." Animals Wildlife - Animal Facts, Animal Pictures, Habitat Facts, Evolution and Zoology. Web. 30 May 2011. <http://animals.about.com/od/scientificdisciplines/a/classifyinganim.htm>.



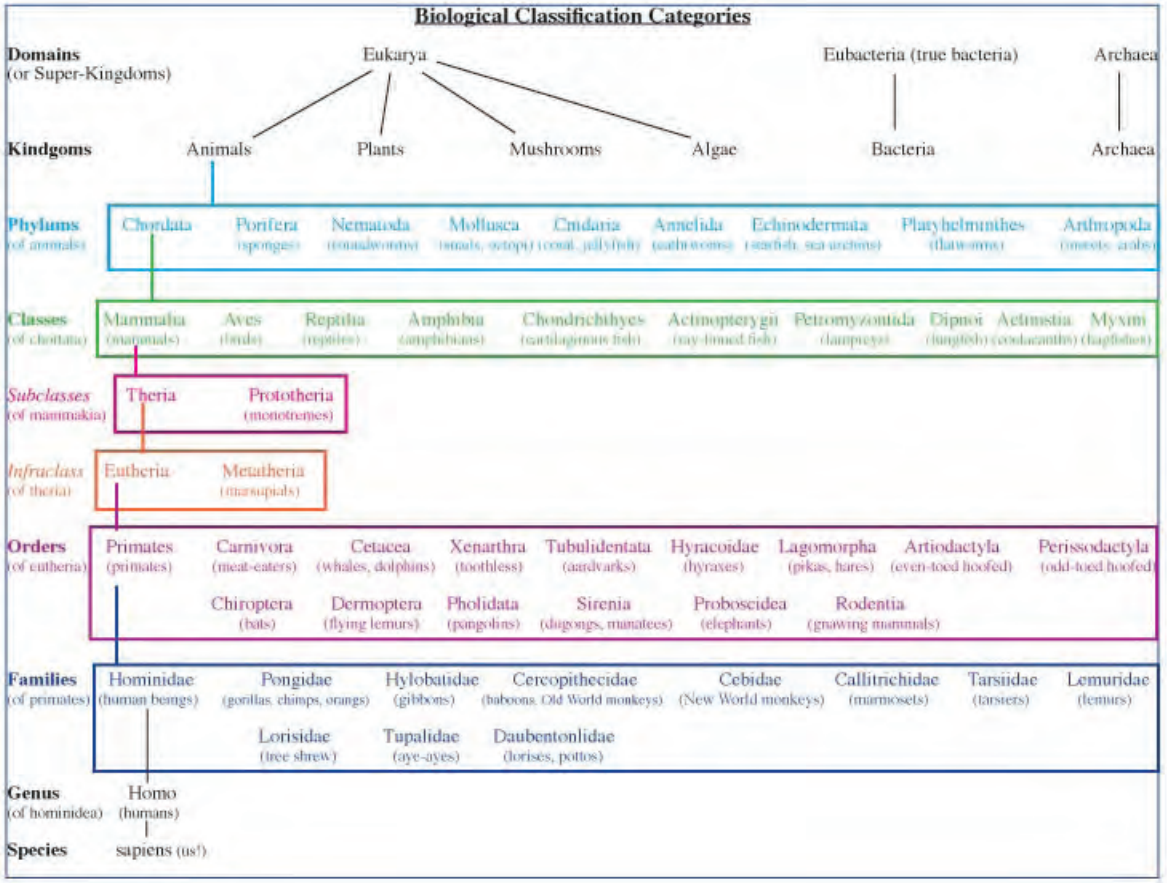
Aristotle
4th century BC

Carolus Linnaeus
18th century

THE MODERN BASIC 6-KINGDOM SYSTEM

MONERA
Prokaryotes (no nucleus); always unicellular (single-celled). Bacteria. May have plant, fungus, or animal characteristics.
ARCHAEA
Prokaryotes; always unicellular. Often adapted to unusual and/or extreme conditions, such as very hot, very salty, or no-oxygen environments. Have several different cellular chemistries from Monera.
PROTISTA
Eukaryotes (nucleus in cell); mostly unicellular, or collections of very similar cells. May have plant, fungus, or animal characteristics.
PLANTAE
Eukaryotes; multicellular; capable of photosynthesis, production of complex molecules from simple molecules using light.
ANIMALIA
Eukaryotes; multicellular; must obtain complex food molecules from external source, broken down and absorbed internally. Usually capable of movement.
FUNGI
Eukaryotes; almost all multicellular; must obtain complex food molecules from external source, absorbed through external surface. Almost never capable of movement.

"Online Introduction to Biology - History - Classification /Taxonomy." FMCC Faculty Server. Web. 30 May 2011. <http://faculty.fmcc.suny.edu/mcdarby/majors101book/Chapter_02-A_Bit_of_History/02-Explaining-Life-Classification.htm>.



Amsel, Sheri. “Classification of Living Things.” Classification - How it Works. Exploring Nature Educational Resource. © 2005 - 2011. May 30, 2011. <http://exploringnature.org/db/detail.php?dbID=87&detID=1192>

About Linnaean Taxonomy

Linnaean taxonomy categorizes organisms into a hierarchy of kingdoms, classes, orders, families, genera, and species based on shared physical characteristics. The category of phylum was added to the classification scheme later, as a hierarchical level just beneath kingdom.

Groups at the top of the hierarchy (kingdom, phylum, class) are more broad in definition and contain a greater number of organisms than the more specific groups that are lower in the hierarchy (families, genera, species).

By assigning each group of organisms to a kingdom, phylum, class, family, genus, and species, they can then be uniquely characterized. Their membership in a group tells us about the traits they share with other members of the group, or the traits that make them unique when compared to organisms in groups to which they do not belong.

Many scientists still use the classification system today, but it is no longer the only method for grouping and characterizing organisms. Scientists now have many different ways of identifying organisms and describing how they relate to each other.

"Animal Classification - How Animals and Wildlife Are Classified." Animals Wildlife - Animal Facts, Animal Pictures, Habitat Facts, Evolution and Zoology. Web. 30 May 2011. <http://animals.about.com/od/scientificdisciplines/a/classifyinganim.htm>.

History of Vivaria

Terms and types of vivaria:

Menagerie- a form of keeping common and exotic animals in captivity the preceeded the modern zoological garden

Zoological Garden/Park- a facility in which animals are confined with enclosures, displayed to the public, and possibly bred

Vivarium- an enclosed area for the keeping, observation, and research of organisms

Aquarium- a vivarium consisting of at least one transparent side in which water dwelling plants or animals are kept

Insectarium- a vivarium where living insects are kept, bred, and studied

Paludarium- a vivarium that incorporates both terrestrial and aquatic elements

Terrarium- a vivarium for land animals and plants, and small birds

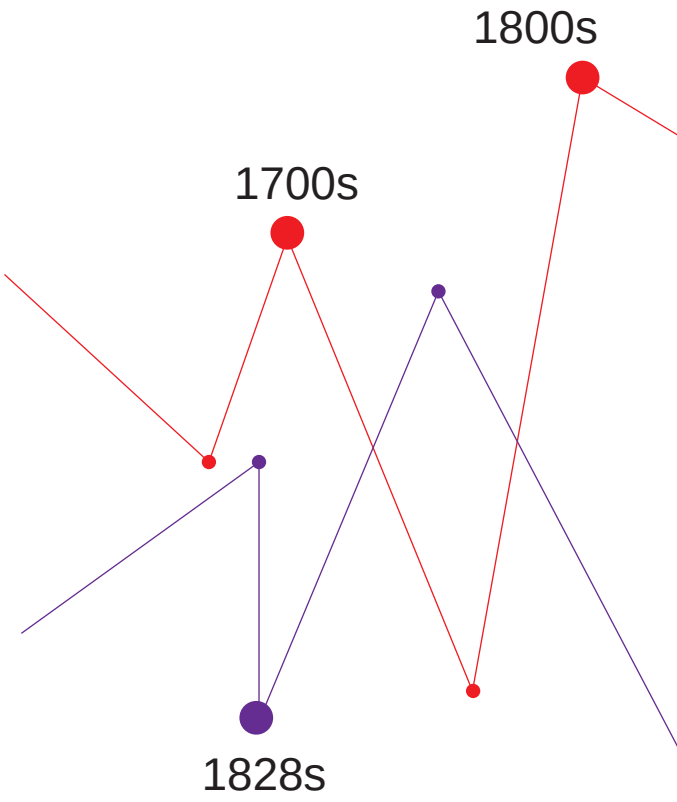
Aviary- a large vivarium for confining birds

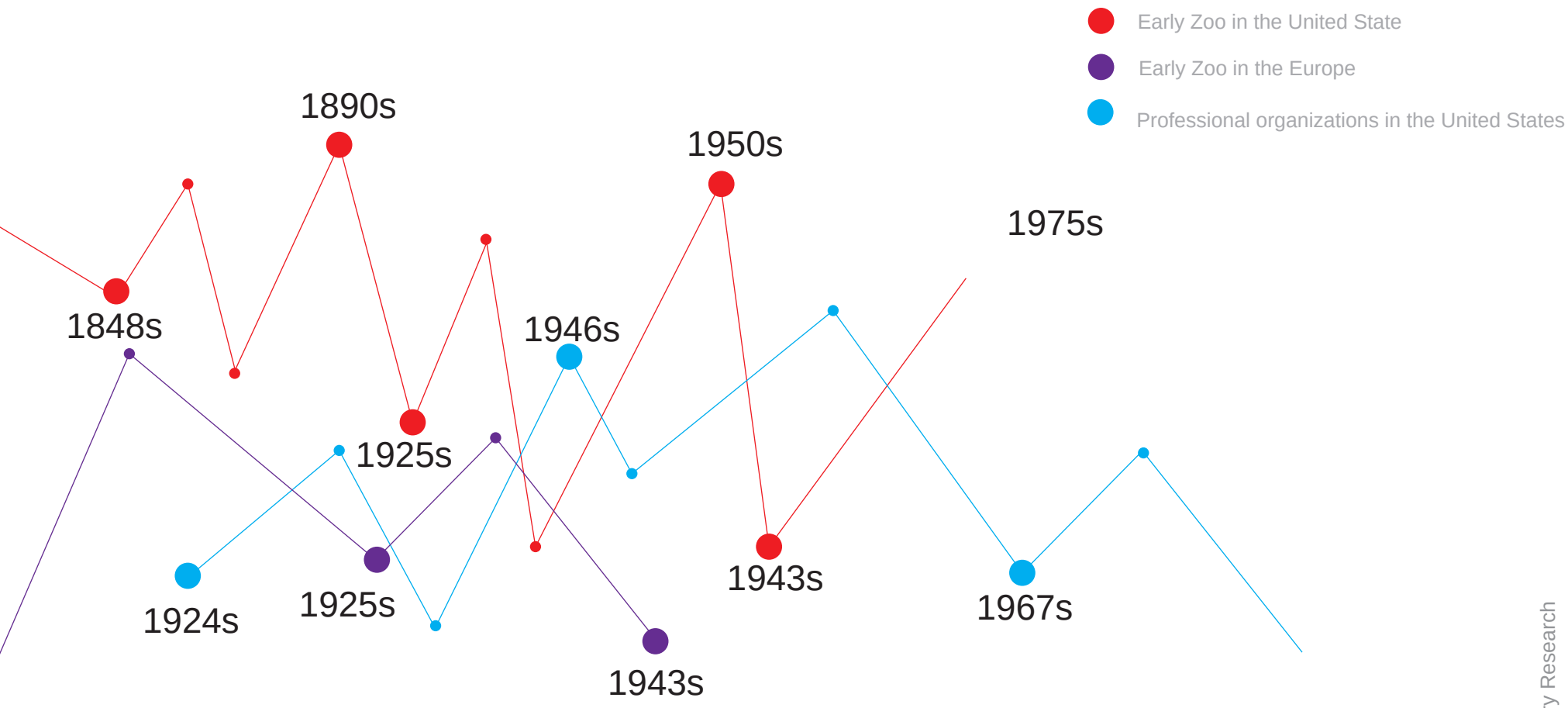
European menageries began as public institutions in the middle 1700s. These were royal collections that were eventually open to the public and later transitioned into public facilities administered by municipalities or societies. Every major city had a menagerie and when the countries developed their colonies, they established menageries in these locations as well (although the rulers of these exotic lands usually had their own collections and these were often incorporated into the colonial collections)

Wild animals began appearing in the United States in the early 1700s. A lion was the first known exotic animal to make an appearance (in Boston, 1716). Itinerant animal acts in the 1700s turned into traveling menageries in the early 1800s as the number and variety of animals increased. Menageries took form as permanent wild animal exhibits in the 1850s, as did aquariums (a London invention of the 1850s that quickly spread to European cities and to the United States). By the turn of the century there were 29 U.S. zoos and 2 U.S. aquariums.

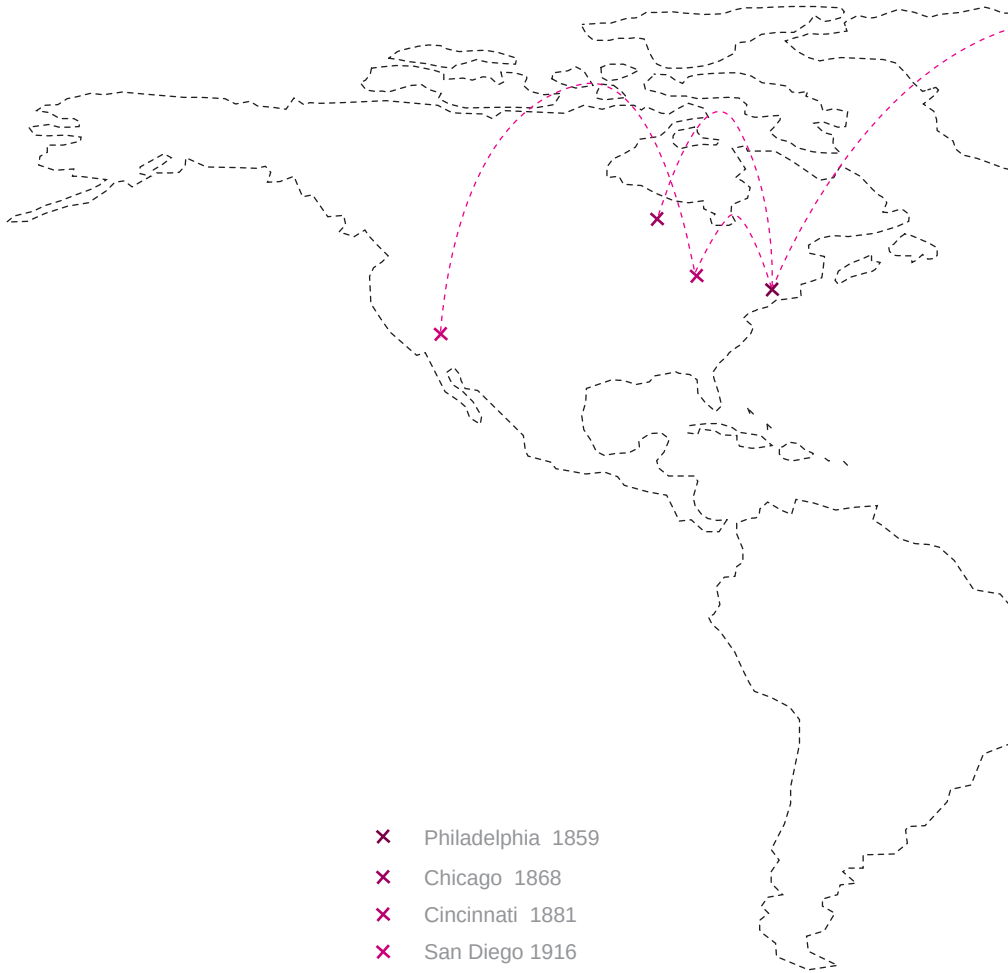
There are many aspects about zookeeping that we know too little about. One aspect that can be discerned concerns the growth of women in what was for a long time, a male dominated profession. Within the United States, Mary Elitch was the first woman director of a private zoo (Elitch Amusement Gardens, Denver, 1890+); Belle Benchley was the first woman director of a public zoo (San Diego Zoo, 1925+) – and she was the first woman President of the American Association of Zoological Parks and Aquariums (1949-50); Margaret Dankworth was the first Executive Director of the AAZPA (1972-75); Patricia O'Conner was the first woman veterinarian (Staten Island Zoo, 1943+); and the first known women zoo keepers were those at the Woodland Park Zoo (Seattle, 1931+).

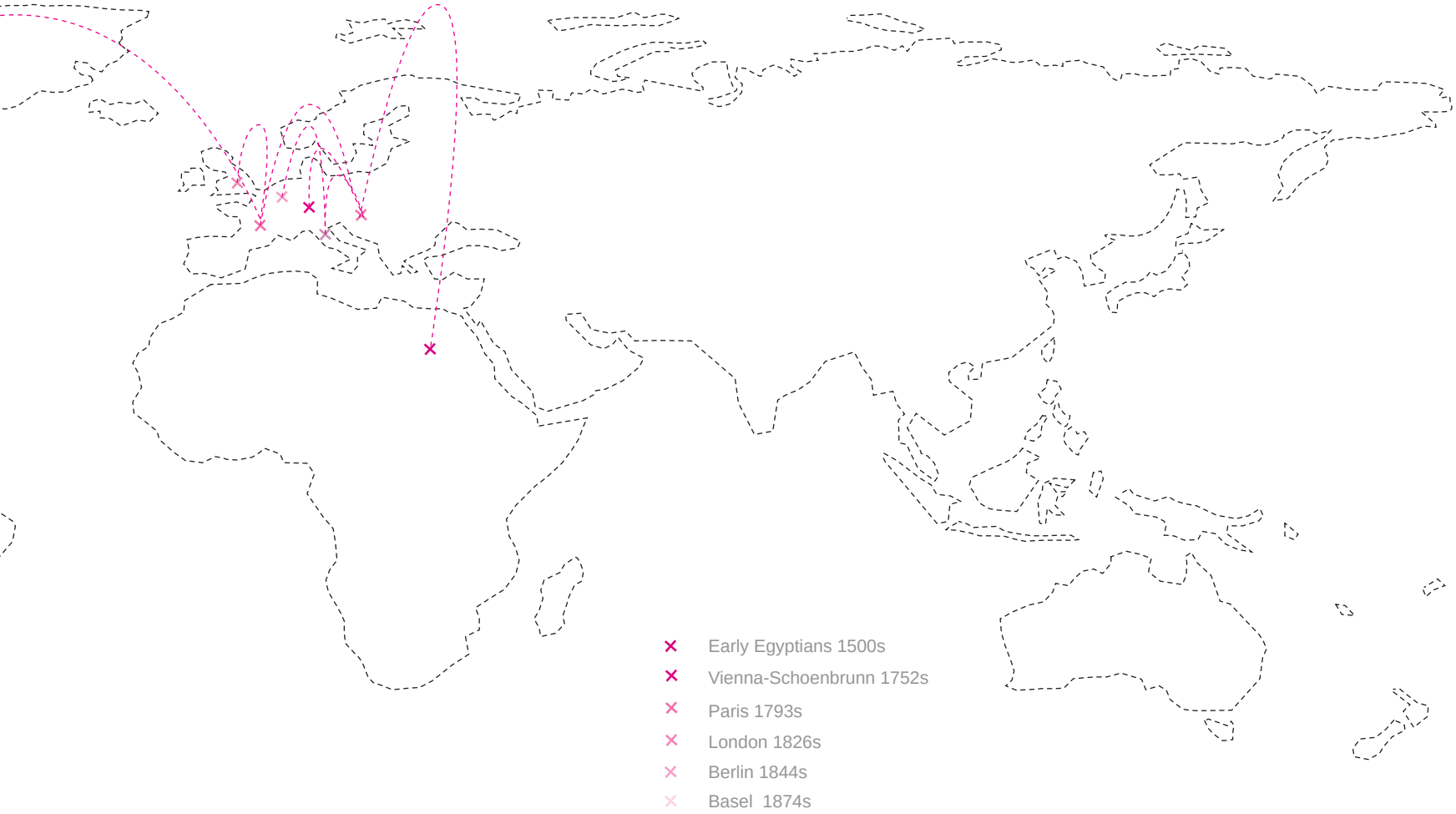
Professional organizations established in the United States include: American Association of Zoological Parks and Aquariums (AAZPA, now AZA, 1924), American Association of Zoo Veterinarians (AAZV, 1946), and American Association of Zoo Keepers (AAZK, 1967).




Early Zoo in the United State
Early Zoo in the Europe
Professional organizations in the United States
1890s
1950s
1975s
1848s
1946s
1925s
1924s
1925s
1943s
1943s
1967s

Early Egyptians brought African animals into captivity around 1500 BC, and a major zoo was established in Alexandria in 280 BC. The more modern concept of "zoo" began in Europe in the 1700's. The earliest zoos were Vienna-Schoenbrunn (1752), Paris (1793), London (1826), Berlin (1844), and Zoo Basel(1874). Taronga Park Zoo was founded in the1920's, The Philadelphia zoo lays claim to being the first in North America (Chartered in 1859, open July 1, 1874). It was followed by Chicago Lincoln Park Zoo in 1868, Cincinnati Zoo in 1881, Smithsonian National Zoo in 1889, and the Bronx Zoo in 1899. The San Diego Zoo was founded by Dr. Harry Wegeforth in 1916, and Chicago Brookfield Zoo was chartered in 1925 and opened in 1934.




Early Egyptians 1500s
Vienna-Schoenbrunn 1752s
Paris 1793s
London 1826s
Berlin 1844s
Basel 1874s

amphitheatrales magistri : wild animal trainers (Latin) bestiarii : performers who worked with wild animals in the exhibitions (Latin) magistri : common servants who took care of animals (Latin)

negotiator ursorum : bear dealers (Latin) piscinarii : a fish pond owner or keeper (Latin) procurator ad elephantos : individual in charge of state owned elephant herds (Latin) veterinarius : animal doctor (Latin) vivarium / vivaria : general term for place where live wild animals are kept (Latin) aviary : enclosure for keeping birds (Latin / European, 1577) menagerie : collection of animals (French, 1712) ch, 1712) z

Zoo and Aquarium Etymology

Little is known of the terminology used for animal collections or the individuals who cared for the animals in ancient societies prior to the Roman Empire. amphitheatrales magistri : wild animal trainers (Latin) bestiarii : performers who worked with wild animals in the exhibitions (Latin) magistri : common servants who took care of animals (Latin) negotiator ursorum : bear dealers (Latin) piscinarii : a fish pond owner or keeper (Latin) procurator ad elephantos : individual in charge of state owned elephant herds (Latin) veterinarius : animal doctor (Latin)

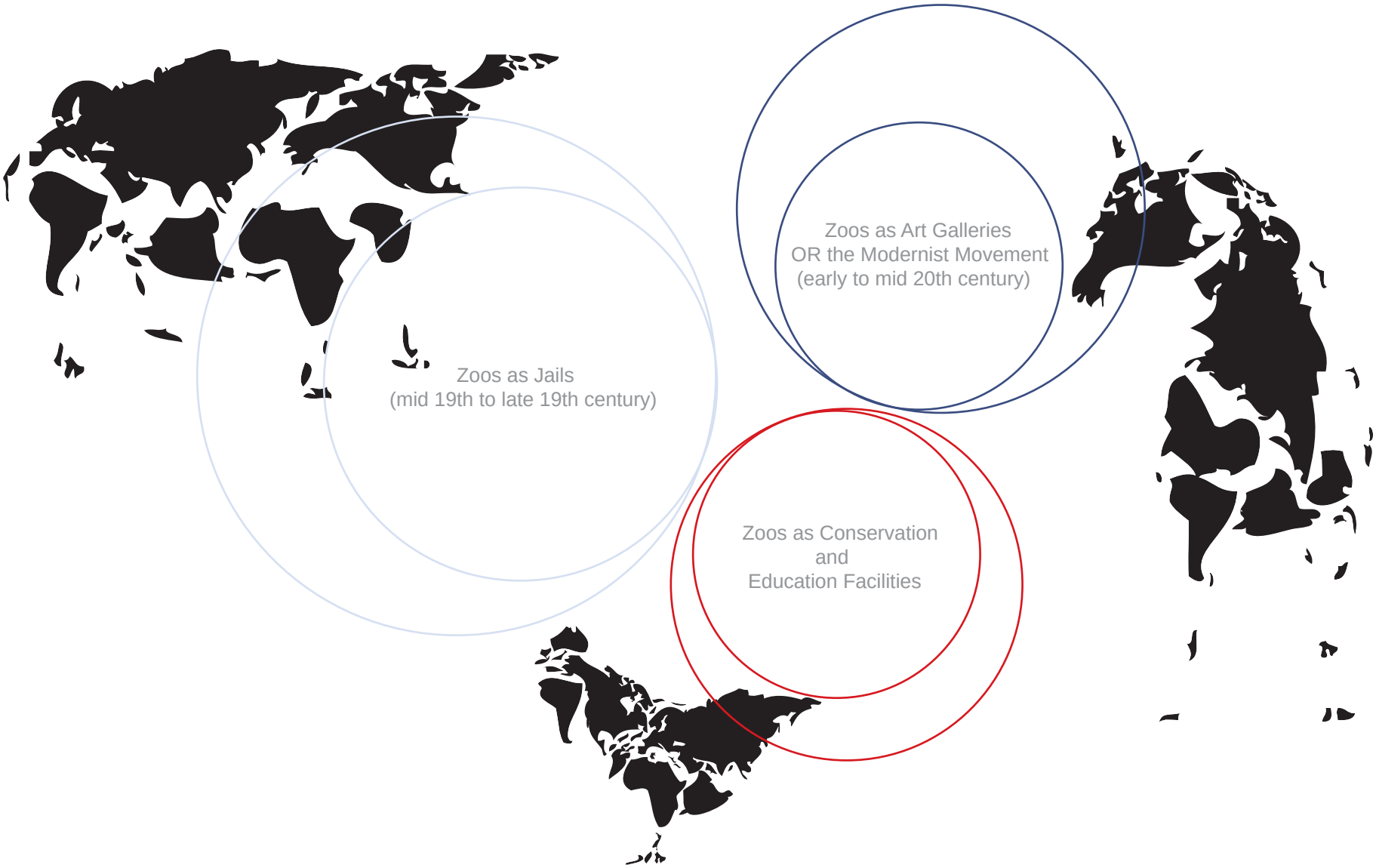
Zoo (English, 1829) zoo : an abbreviation for zoological garden or park first used in Britain to describe the Clifton Zoo but popularized in a music hall song at the time (English, 1847) aquarium : a self contained aquatic environment for keeping fish and aquatic life and first used by the two individuals who invented the modern aquarium (English, 1854) oceanarium : a public aquarium with at least one very large aquarium tank for keeping sea mammals, first used to describe Marineland at St. Augustine, Florida (English, 1938) conservation park : new term for describing zoos (English, 1990s)

Design History of Environments for Animals

Over time, zoos' physical forms have been a direct reflection of our society's values and understanding of science. It is important to understand where we've been in order to move forward, and its is also important for visitors to the older zoos to understand why certain buildings and exhibits are the way they are (as we know, zoos usually do not have an abundance of money, and struggle to keep their physical state up with the trends).

Zoos, in the form we know them now, have been in existence since the mid-18th century. Prior to this, private collections existed throughout the world as far back, it is believed, to Mesopotamian times. Romans kept animals, of course, for sport, but would display the animals in a zoo-like manner, prior to their being released to their deaths in the Coliseum. But we'll focus on the mid-19th century forward.

We can easily divide the eras in zoo design into three general categories:
1. Zoos as Jails (mid 19th to late 19th century)
2. Zoos as Art Galleries OR the Modernist Movement (early to mid 20th century)
3. Zoos as Conservation and Education Facilities


Zoos as Art Galleries
OR the Modernist Movement
(early to mid 20th century)
Zoos as Jails
(mid 19th to late 19th century)
Zoos as Conservation
and
Education Facilities

Zoos as Jails

This was the Age of Enlightenment and the Romantic Age, where beauty was of the upmost value and our understanding the natural world was just becoming a science. Science in this time was all about classification and comparison. Linneaus and Darwin were the scientific stars. The earliest official zoos started now, with the London Zoo in 1828 and Philadelphia Zoo in 1874. The early zoos were based on the mission of science for science's sake, but also were places for socializing.

As such, a balance between beauty and classification was struck. The zoos of this time were laid out by families, and the term "House" came to being, as in Cat House, Bird House, etc. The architectural style was over the top beautiful. Highly ornate bird cages, and buildings themed in the most dramatic fashion were everywhere. But, cages were small, animals were short lived and people enjoyed the animals as beautiful pieces rather than living beings.

Cages under the Colosseum in Rome were used for both animals and slaves. Photo Source: Amanda Kight

Zoos as Art Galleries OR the Modernist Movement

During this time, the world was experiencing several wars. The study of nature became much less important, but Romanticism still existed. Science progressed into problem solving, and medical advances were abundant. Vaccinations became prevalent and the idea of killing germs to increase health and extend life expectancy came into being.

During this time, zoos held a similar value as art galleries, and the exhibits became mini-paintings and sculptures. In the Romantic movement, a proper landscape exists with a foreground, mid-ground, and background. Carl Hagenbeck applied this theory first, and created the firstever barless (moated) exhibit. His desire was more to create this Romantic living landscape, like the famous painters of this time, than to recreate nature for moral sensitivities. This style obviously caught on, but generally became popular much later.

Additionally, the modernist movement was catching fire. Modernism requires that form follow function. This belief along with the advances in medicine and desire for sterilization, created zoo exhibits that were easily hosed down and cleaned regularly. This meant concrete everywhere. Additionally, the Modernist Art scene infiltrated zoo design, and the hardlines and simplification modernist style is famous for, reigned supreme in exhibits that looked more like sculpture than habitat.

With both the Romanticism and Modernist styles abounding in this time period, zoo design was more about creating an art gallery than a responsible home for animals. Interestingly, due to the increased attention to health, captive animals' life expectancies did increase almost to today's levels. The only thing they missed was the mental health aspect of the habitats.

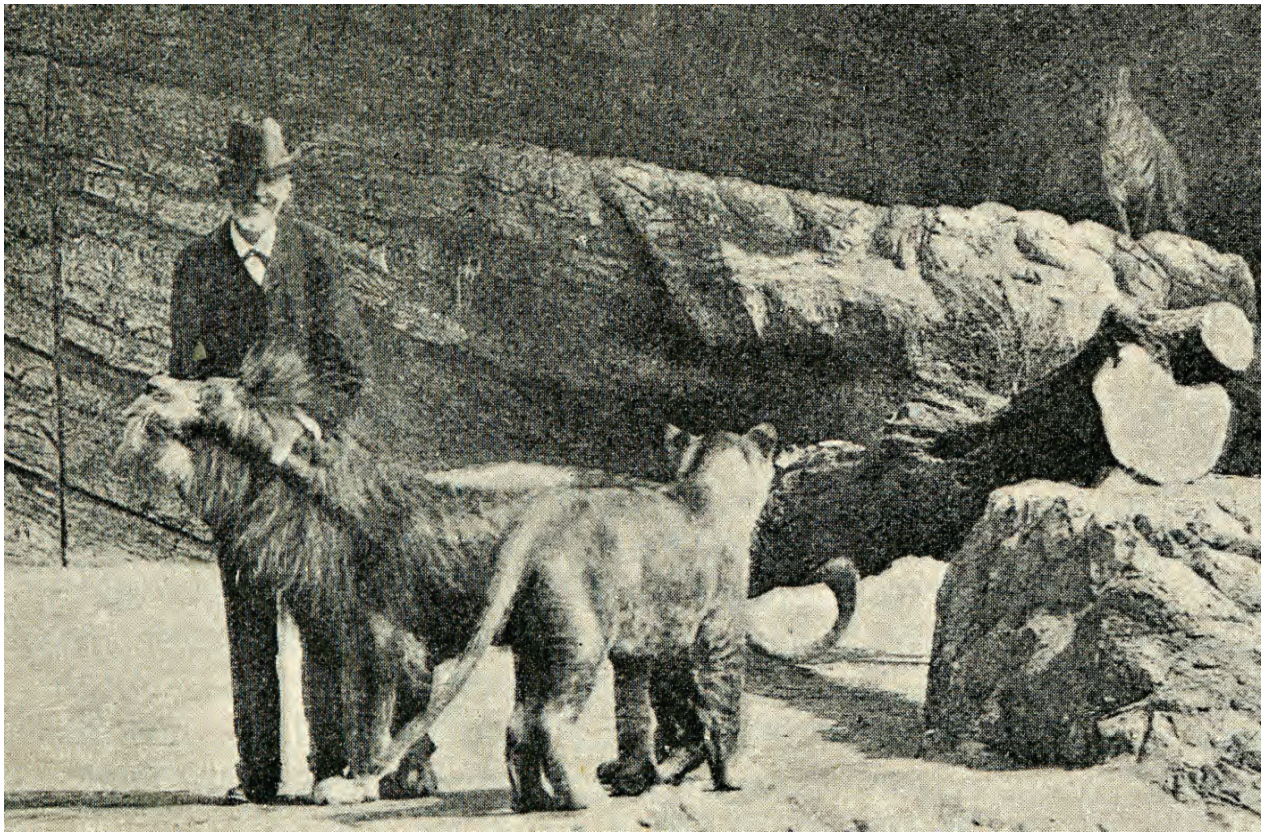


Photo of Carl Hagenbeck in one of his “open” exhibits. Source: The Danish magazine: Frem, Nummer 52, 10. årgang. 29. September 1907. Photographer unknown

Zoos as Conservation and Education Facilities

Since the mid-20th century, our society has developed a strong sense of environmental awareness and human rights ethics, which eventually gave way to animal rights as well. In 1950, Hediger wrote “Wild Animals in Captivity” which opened people’s eyes to the idea of husbandry practices and exhibit design based on an animal’s natural history. What a novel approach! With the advances in healthcare (which overlaps into this era), animals in captivity began to be treat for physical as well as mental health.

During the 1970s, a group of folks at the Woodland Park Zoo (including two young designers from Jones and Jones Architects) decided to resurrect Hagenbeck’s ideas from long ago–but to advance them.

Instead of creating a living painting, they wanted to put the visitor into the habitat…Immerse them in the painting. And, instead of creating a visually exciting statement only, they decided to re-create the habitat in the which the animal was naturally seen. All of these things were incorporated into the gorilla exhibit at Woodland Park Zoo, and, thus, landscape immersion was born.

Since then, the idea of landscape immersion has caught on like wildfire, and today, is the standard of responsible zoo design.

Source: “A Quick Lesson in Zoo Design History « Designing Zoos.” Designing Zoos. Web. 31 May 2011. <http://designingzoos.com/2008/07/10/a-quick-lesson-in-zoo-design-history/>.

A tiger exhibit designed using landscape immersion concepts. Source: “Zoo | Ask.com Encyclopedia.” Ask.com - What’s Your Question? Web. 31 May 2011. <http://www.ask.com/wiki/Zoo>.

History of Animal Welfare Advocacy and Regulation

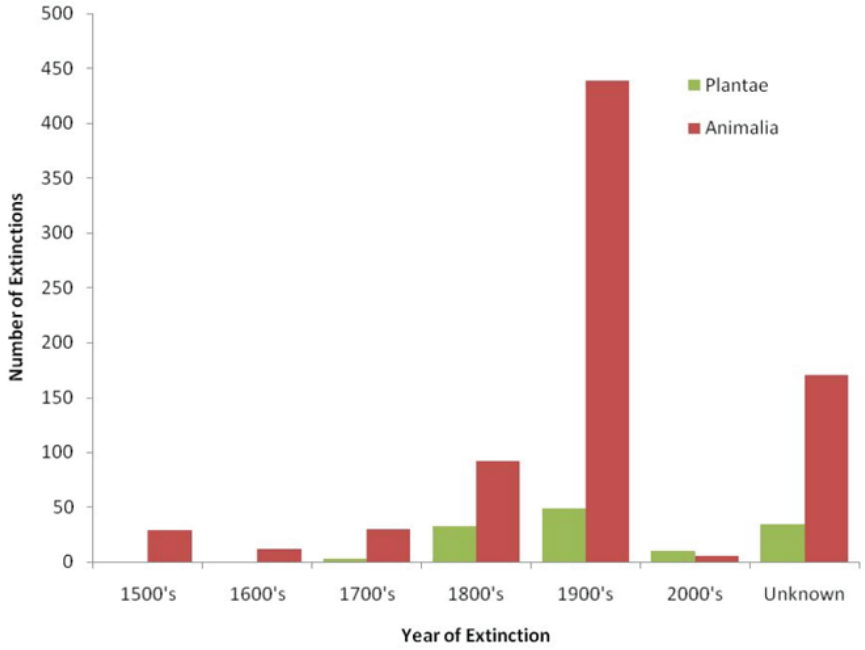
As the various types of animal enclosures have developed around the world, so have social values and ethics surrounding animals in captivity. Several countries have adopted laws and regulations that dictate minimum standards of care for animals. These standards apply to capturing and handling techniques, housing conditions, husbandry and veterinary care, psychological welfare, and stress management. In the United States, organizations such as the Association of Zoos and Aquariums and People for the Ethical Treatment of Animals continually perform inspections to help enforce compliance with the United States Department of Agriculture's Animal Welfare Act.

Source:
Kohn, B. Zoo Animal Welfare. 1994. MS. Web. 30 May 2011. <http://www.oie.int/doc/ged/D8882.PDF>.

TABLE I

Animal welfare laws in various countries

Country	Legislative acts
Australia	Prevention of Cruelty to Animals Act, 1936 [amended in 1986]; Wildlife Act, 1975; Animal Research Regulation, 1990
Austria	Provincial legislation
Belgium	Protection of Animals Act, 1929
Canada	(United Kingdom) Cruelty to Animals Act, 1876 [amended in 1970] (Chapter C34, Section 402 of Criminal Code of Canada)
Cyprus	Cruelty to Animals Law, 1910
Denmark	Protection of Animals Act, 1950
England/Wales	Cruelty to Animals Act, 1876; Protection of Animals Act, 1911; Performing Animals (Regulation) Act, 1925; Cinematographic Films (Animals) Act, 1937; Dangerous Wild Animals Act, 1976; Endangered Species (Import and Export) Act, 1976; Animal Health Act, 1981; Wildlife and Countryside Act, 1981; Zoo Licensing Act, 1981
France	Combination of Criminal Code and Rural Code
Germany	Animal Protection Act, 1972
India	Prevention of Cruelty to Animals Act, 1960 (Act 59, 1960) [amended on 30 July, 1982 (Act 26, 1982)]
Italy	Article 727 of the Penal Code deals with cruelty to animals
Japan	Law Concerning the Protection and Control of Animals, 1973 (Law No. 105); Standards relating to the Keeping and Custody of Animals for Exhibition, etc., Notification No. 7, 10 February 1976
Luxembourg	Animal Welfare Act, 1965
Northern Ireland	Animal Welfare Act (Northern Ireland), 1972
Norway	Welfare of Animals Act, 7 June 1935; Welfare of Animals Act, 20 December 1974, No. 73
Sweden	Animal Protection Act 1944:219 [amended in 1978:313, and 1988:534]; aided by detailed Government directives; 1959 – edict by King of Sweden regarding public exhibition of animals
Switzerland	Article 264 of Swiss Penal Code; Federal Road Traffic Act, 1958 – Section 30(4); Article 74 of Road Traffic Regulations, 1962
United States of America	Animal Welfare Act, 1966 [amended in 1970 and 1976]; Marine Mammal Protection Act, 1972; Code of Federal Regulations, Part 9



Impact on Endangered Species

Vivaria (mainly zoos) have had a profound effect on world history by protecting several species from complete extinction. While captive breeding continues to be a controversial issue for various reasons, endangered plants and animals have been saved from extinction and in many cases re-introduced into their natural wild habitat. Some species that are still around due to captive breeding are: Guam rails, black-footed ferrets, California condors, Przewalski's horses, scimitar-horned oryx, Partula snails, and Spix's macaws. The industrial revolution in the 1900s brought about unprecidented levels of extinction, and an increased awareness of the issue is hoping to prevent such levels for this century. Breeding efforts continue throughout the world to preserve the long list of current endangered species, such as polar bears and the black rhinoceros.

"Black Rhinoceros : Endangered or Extinct? | The Ultimate Renaissance." The Ultimate Renaissance | Just… The Ultimate. Web. 30 May 2011. <http://theultimaterenaissance.com/2008/11/23/black-rhino-endangered-or-extinct/>.

Contents

Animal Management

Zoo Veterinarian

"Zoo veterinarians administer medication and provide holistic and western style treatment to sick and injured animals. They visit animal enclosures in a zoo and discuss health concerns with the animals' keepers. They give the animals checkups, examining lungs, heart, eyes, ears, teeth, coat and skin. They set broken bones, insert IVs, give anesthesia and sometimes they perform surgery. They also vaccinate zoo animals. A zoo vet is not a zookeeper, someone who cares for the animal by feeding them, cleaning their living quarters and watching them for changes in behavior. The following job postings from the American Association of Zoo Veterinarians website provide examples of typical duties expected by employers:"

- "Duties include: preventative, proactive animal care medicine, follow-up, treatment, diagnosis of health concerns of animals at the zoo, oversee quarantine and testing procedures of all disbursements and acquisitions, perform post mortems, be a part of execution and planning of reproductive and nutrition programs and coordinate consulting vets in areas such as ophthalmology and dentistry.' -- Potawatomi Zoo"

- "Administer preventive medicine to animals. Give individual care to animals. Oversee, direct and plan work of subordinates. Treat and diagnosis injuries and illnesses of animals. Treat either medically or surgically. Keep abreast of vet procedures and practices through reading and research. Utilize and operate different medical equipment. Purchase supplies and equipment. Prepare reports and records and ensure compliance with regulatory agencies.' -- Mesker Park Zoo and Botanic Garden Network"

Program, Degree. "Zoo Veterinarian Career Info." Your Guide to a High School Diploma or GED, College Degrees & Diplomas, and Career Research for after Graduation. 2011. Web. 01 June 2011. <http://diplomaguide.com/articles/Zoo_Veterinarian_Career_Info.html>.

"Help Us Celebrate National Veterinary Technician Week!" Zoophoric! Official Blog of the Virginia Zoo. Virginia Zoo, 7 Oct. 2010. Web. 01 June 2011. <http://blog.virginiazoo.org/news/help-us-celebrate-national-veterinary-technician-week>.

Smithsonian's National Zoo. "Tai Shan's Exam at the National Zoo | Newsdesk." Home | Newsdesk. Smithsonian, 31 Oct. 2005. Web. 01 June 2011. <http://newsdesk.si.edu/photos/tai-shans-exam-national-zoo>.

Brookfield Zoo. "Oiled Pelicans Receive New Home in Chicago." WildBird on the Fly. 23 July 2010. Web. 01 June 2011. <http://wildbirdonthefly.blogspot.com/2010/07/oiled-pelicans-receive-new-home-in.html>.

Zoologist

“A day at the zoo with a zoologist finds him or her employed in one of three fields: Curating, directing, or zoo keeping. The curator oversees the care and distribution of animals in the zoo, while the director does not work directly with the animals but rather performs more administrative duties, such as fundraising and public relations.”

Bernstein, Alan B. "Zoologist." Guide to Your Career. 5th ed. New York, NY: Princeton Review, 2003. 212-13. eBook.

Zoo Curator

“Curators and directors work closely together to determine the best way to contain the animals, maintain their habitats, and manage the facility. They are far more active in the matter of running a zoo, though, and need to have additional business background. The zookeeper provides the daily care of feeding, cleaning, and monitoring the animals and their habitats. Curators design the zoo’s budget, remaining mindful of the zoo’s goals. The educational programs they design for the zoo and the animals they procure for exhibition reflect these goals. The curator leads the zoo staff and delegates assignments to them. Often curators write articles for scientific journals and inform reporters for stories. Zoos often loan animals to other zoos, so a good working relationship with colleagues around the country is vital to the curator. Traveling to conferences and other zoos is part of the curator’s long workweek, too. Often animals are bred in captivity and it is the curator who locates potential mates for his/her zoo’s animals. A curator also makes the arrangements for an animal’s transport to a museum when it dies. Larger zoos employ a number of curators who specialize in specific areas.”

Bernstein, Alan B. "Zoologist." Guide to Your Career. 5th ed. New York, NY: Princeton Review, 2003. 212-13. eBook.

"Chester Zoo Unveils New Baby Giraffe." Zimbio. Web. <http://www.zimbio.com/pictures/RYDsx-QohXB/Chester+Zoo+Unveils+New+Baby+Giraffe/307NtmkMCl2/Tim+Rowlands>.

Zookeeper

“The health of the animals is in the hands of the zookeeper who prepares the food according to each animal’s specialized diet. A zookeeper makes sure that they have enough water, feeds and grooms them, and cleans both the animals and their grounds. When animals transfer locations, the zookeeper attends to them and arranges their new environment. The zookeeper supervises the animals and records their activities continuously, so a zookeeper must understand nuances in animal behavior in order to keep accurate records. If the keeper notices any change in the animal’s behavior, he/she brings it to the attention of the veterinarian. The zookeeper often trains the animals to move in ways that can help veterinarians examine them. All of these responsibilities mean that zookeepers have ample opportunity to venture into the noisy and smelly animal cages, but they are hardly confined to the cages. They must answer the patrons’ questions and tactfully keep them from feeding or teasing the animals. Zookeepers in small zoos work with all the animals, while those in larger zoos specialize. Because animals must be cared for around the clock, zookeepers work a variety of schedules. When emergencies arise, like illness, the keeper may put in extremely long hours. Most importantly, the keeper must be able to develop a rapport with his charges and be infinitely cautious to avoid being injured by the animals.”

Bernstein, Alan B. "Zoologist." Guide to Your Career. 5th ed. New York, NY: Princeton Review, 2003. 212-13. eBook.

"Taipei Zoo Welcomes Mainland Panda Pair_English_Xinhua." China View. 21 Dec. 2008. Web. 01 June 2011. <http://news.xinhuanet.com/english/2008-12/24/content_10552517.htm>.

Zookeeper

"Operations are a big responsibility of a Zoo manager in their day-to-day work. A zoo manager needs to be a leader and oversee the development and implementation of long -and short-range goals for programs, acquisitions and exhibits. They must deal with budgets and expenses in the zoo's operations. The zoo manager must develop policies and procedures for how many and what type of animals the zoo will have in its collection, from that they must coordinate the acquisition or sale of any animals as well as the breeding of any to follow those policies and goals. In relating to that, they must also oversee the planning and design of any exhibit renovations or construction of any new exhibits. Another major operational concern is maintenance and regulation. The zoo manager must direct and supervise maintenance activities and inspections as well as make sure they are in accordance with all local, state, federal, and international laws relating to their zoo. Additionally it is recommendation they keep current on any accreditations the zoo may have."

"The Zoo manager must also deal with the zoo employees every day. They will schedule and assign work for the various zoo employees and help develop schedules for them. They control the hiring, firing, and discipline of the zoo employees. Through policies created they can give authority and responsibility to other employees and delegate work."

"In addition to the employees, the zoo manager has to oversee the care of the animals. A zoo manager will determine means of handling, care, diet, housing, and sanitation of the zoo's animals. They will be a resource for the zoo keepers concerning the care of the animals and assist in observing the animals in terms of health and behavior and coordination with the zoo veterinarians if needed."

"In order to keep the zoo operational, somebody must help the zoo with public relations; this falls on the shoulders of a zoo manager as well. They will plan and coordinate any promotions or special events the zoo desires to have. Helping with fund raising, giving tours, answer questions, provide pamphlets and other publications about the zoo, go to city hearings, and to overall represent the zoo in the public eye are all responsibilities of a zoo manager."

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Floridapfe. "Hwak and Zoo Keeper | Flickr - Photo Sharing!" Welcome to Flickr - Photo Sharing. 13 Sept. 2007. Web. 01 June 2011. <http://www.flickr.com/photos/floridapfe/1435801914/>.

Russell, Lia. "Elephants Painters Seen Behind-the-scenes at the Virginia Zoo." HamptonRoads.com | PilotOnline.com. 18 Sept. 2007. Web. 01 June 2011. <http://hamptonroads.com/node/328851>.

Animal Transfers

Co-operation and Co-ordination

“An essential element for successful transfers is national and international co-operation between the interested parties. Animal transfers within captive breeding programs are part of global conservation initiatives. Such initiatives were initially started by the International Union for the Conservation of Nature (IUCN). Now it is the vision of the World Zoo and Aquaria strategy to become a major force for global conservation. This means that before acquiring and moving animals, partners in such programs must have a strong background in conservation science, played a part in good quality research, and remain well co-ordinated and highly communicative. For good communication between partners, there needs to be good knowledge of the legislation in force, liaison with other collections, good relationships with government bodies such as the Department for Food and Rural Affairs (DEFRA), and also good relationships with transporters (e.g. airlines, agents and road carriers).”

Defra. "Animal Transfers: Captive Breeding and Considerations Involved with Moving Animals." Animal Transfers: 2-3. Web. <www.defra.gov.uk/foodfarm/animaltrade /imports/iins/livebalai/index.htm>.

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Placing Animals

"Animals have to be moved when required, for example if new births mean the collection is over stocked, or if an animal is an important individual within a captive breeding program. Animal transfers are initiated in a number of ways. One is through Studbook Keeper recommendations. The studbooks list all the individuals within a captive breeding program and enable appropriate groupings of animals to be made. Another way is through the production of Wanted\Surplus lists which are circulated through BIAZA & EAZA (British and Irish, and European Association of Zoos and Aquaria) websites. There is also liaison between zoos at Curatorial and Registrar levels."

Defra. "Animal Transfers: Captive Breeding and Considerations Involved with Moving Animals." Animal Transfers: 2-3. Web. <www.defra.gov.uk/foodfarm/animaltrade /imports/iins/livebalai/index.htm>.

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Transport Logistics

“Animals can be transported by air, sea, rail, road and post. Air transfers are governed by the International Air Traffic Association (IATA). There are exacting standards for animal containment and labelling. These are species specific and updated yearly. There are also requirements for container construction, including specific materials, ventilation, partitions, design principles, spacer bars, floor dimensions, lids\tops\sides and density.”

“Air transfers are very expensive and just booking the flight can be problematic. All live-stock must be pre-paid, with the receiving collection footing the bill. Not many airlines carry livestock, and those that do have limited availability and flexibility. Unsympathetic cargo handling can be a problem, and clearing borders is always time consuming.”

“There are also specific regulations governing transport by sea, rail and road (DEFRA). One regulation specifically protects the animal against long periods of transit. Postal transfers (e.g. plants, insects), must be specifically labeled especially species listed by CITES. Transfers out of the EU must be declared at Customs, with specific paperwork and labeling showing the post is under control of HM Customs and Excise.”

Defra. "Animal Transfers: Captive Breeding and Considerations Involved with Moving Animals." Animal Transfers: 2-3. Web. <www.defra.gov.uk/foodfarm/animaltrade /imports/iins/livebalai/index.htm>.

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U.S. Department of Defense. "An Air Force 60K Tunner Cargo Loader Approaches a C-17 Globemast." Totally Free Images. 19 Sept. 2010. Web. <An Air Force 60K Tunner cargo loader approaches a C-17 Globemast>.

Taronga Zoo. "Jimiyu The Giraffe Makes A Taronga Sea Change - Taronga Conservation Society Australia." Home - Taronga Conservation Society Australia. 15 Apr. 2009. Web. 01 June 2011. <http://220.233.134.218/tcsa/media/media-releases/jimiyu-the-giraffe-makes-a-taronga-sea-change.aspx>.

Facilites Management

Habitat

“Behavioral and physical problems were once thought to be unrelated to an animal's environment. Yet there is growing evidence of a link between these problems and a lack of physical activity and inhospitable habitats. Research has also shown that providing captive animals with choices through an enriched environment lowers stress levels.”

“Several zoo exhibits over this past decade have done just that. The Woodland Park Zoo in Seattle and Sea World Florida allow some of their animals to search for and catch their food. Orangutans at the National Zoological Park in Washington, D.C., are able to travel across the zoo on overhead ropes to visit friends and potential mates.”

“One recent innovation brought to the United States from Europe is the rotating exhibit. In traditional displays, animals might spend their entire lives in the same space. The rotation concept allows the animals to visit several areas each day. Gorillas at the Louisville Zoo, for instance, can choose between large, naturalistic outdoor habitats or a circular arrangement of indoor rooms.”

“With the transition from small, confined, exhibits to much larger open exhibits that allow the animals to roam, zookeepers roles have changed dramatically in the upkeep of the exhibits. When dealing with the habitats, zookeepers merely had to clean out the cages or the animals. With the rotating exhibits, zookeepers are now presented with the task of constant upkeep with the large open fields and plan life so that the animals feel as if they are in their own natural habit.”

Coe, Jon. "Designing Zoo Habitats That Promote Animal Well-being - December 1, 2002." American Veterinary Medical Association. Web. 01 June 2011. <http://www.avma.org/onlnews/javma/dec02/021201k.asp>.

Coe, Jon. "Designing Zoo Habitats That Promote Animal Well-being - December 1, 2002." American Veterinary Medical Association. Web. 01 June 2011. <http://www.avma.org/onlnews/javma/dec02/021201k.asp>.

"Red Panda Exhibit » Columbus Zoo Gallery." ZooChat :: Zoo and Animal Conservation Community. 4 Jan. 2009. Web. 01 June 2011. <http://www.zoochat.com/558/red-panda-exhibit-58303/>.

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"Moose Exhibit View from Moose Lake Boardwalk » Columbus Zoo Gallery." ZooChat :: Zoo and Animal Conservation Community. 31 Dec. 2008. Web. 01 June 2011. <http://www.zoochat.com/558/moose-exhibit-view-moose-lake-boardwalk-57689/>.

"Columbus Zoo 2003 - Empty Black Rhinoceros Exhibit at the Pachyderm House » Columbus Zoo Gallery." ZooChat :: Zoo and Animal Conservation Community. 16 Mar. 2010. Web. 01 June 2011. <http://www.zoochat.com/558/columbus-zoo-2003-empty-black-rhinoceros-136792/>.

"Columbus Zoo 2003 - View into the Famous Gorilla Exhibit » Columbus Zoo Gallery." ZooChat :: Zoo and Animal Conservation Community. 16 Mar. 2010. Web. 01 June 2011. <http://www.zoochat.com/558/columbus-zoo-2003-view-into-famous-136795/>.

Breeding Facility

“Because of expense, the availability of animals and stress related problems relating to transportation as well as permit requirements many zoos carry out their own breeding programs. By breeding animals in the zoo and having the ISIS resources available, zoos can maintain genetic diversity in the zoo animals. Breeding programs thus keep the captive populations viable and keeping the sexes together allows visitors to observe natural reproductive behavior. Reproductive biology is an area of considerable interest and an opportunity for research in many zoos.”

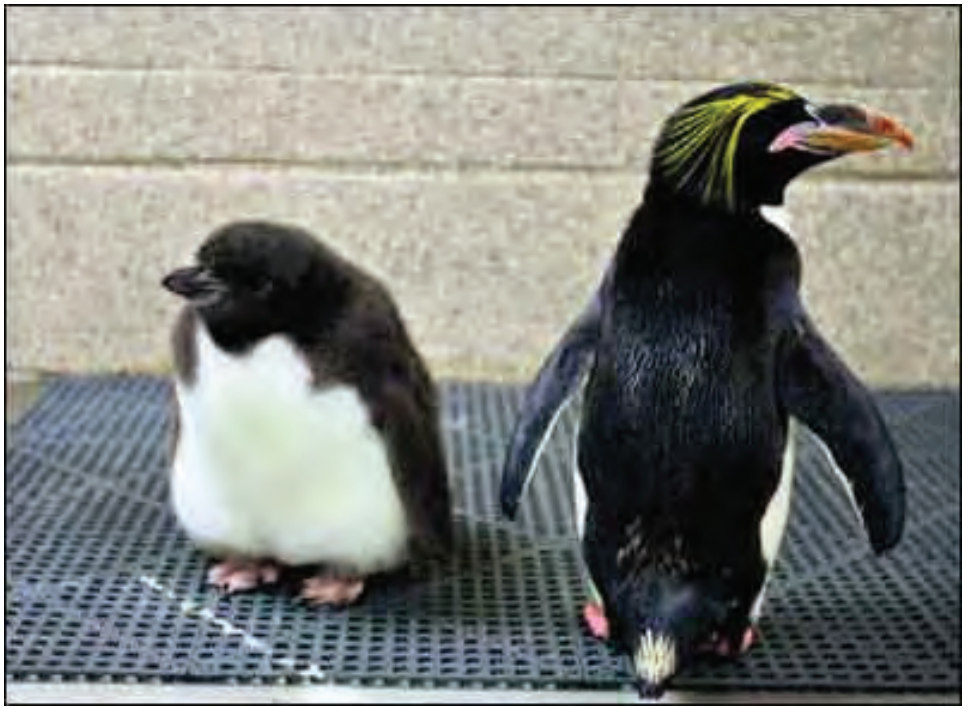
“Reproduction of zoo menagerie members is extremely important for several reasons. Diminishing numbers of wild animals are available for capture. Habitat destruction has reduced their numbers to the point many are listed as rare or endangered. Most countries of the western world are signatories to the Convention on International Trade in Endangered Species which places tight restrictions on either importing or exporting any species of wild animal or plant that is listed in the appendices CITES has published. Thus zoos find it extremely difficult to replace specimens native to other countries, and must rely on breeding their own animals and trading with other zoos. In the past the option of replenishing zoo stock from the wild was an option that today is largely absent.”

“A well-managed breeding program provides more than just a chance for visitors to observe the animals mating behavior. Newborn and young animals provide a focus for visitor interest, and excitement too, as they are often more active than the adults. Their presence helps encourage natural behavior, increases the value of the zoo collection and they may serve as a source of income through sales or serve as stock for trades. For many species that have become extirpated or endangered this is the only source. It needs to be emphasized that breeding programs fulfill a zoo's role in conservation and zoo born animals have been reintroduced into native habitats from which they were extirpated. Membership in ISIS helps ensure that genetic diversity is maintained so animals reintroduced into the wild carry a maximum assortment of alleles. This helps maintain a diverse gene pool in the species.”

"Module II - Breeding and Reproduction." Science & Art Multimedia - Calgary Web Design and Training for Small Business. Web. 01 June 2011. <http://www.scienceandart.org/zoocourse/breedingreproduction_mod2.html>.

Sanchez, Marcio J. "The Frame: Animals in Captivity." Blogs. 15 June 2009. Web. 01 June 2011. <http://blogs.sacbee.com/photos/2009/06/animals-in-captivity.html>.

Perry, Tony. "Baby Rhino Debuts at San Diego Zoo's Wild Animal Park - Latimes.com." Politics, National, California, Washington, Barack Obama, Hillary Clinton, John McCain, Republican, Democrat, President, Election - Top of the Ticket - Latimes.com. 3 Sept. 2008. Web. 01 June 2011. <http://latimesblogs.latimes.com/unleashed/2008/09/rhinos-kaya-mak.html>.



Pate, Claude. "New Releases, Smoosh, Top All-time Videos, Misers, Baby Zoo Animals." Claudepate.com. 18 July 2006. Web. <http://www.claudepate.com/index.php?name=News&file=article&sid=523>.

Medical Facility

“The primary focus of the National Zoo's Department of Animal Health is to provide the best clinical veterinary care to the animals in our collection. This includes a managing a coherent preventative medicine program as well as treating illness as it arises.”

“Preventative health management consists of routine examinations, vaccinations, parasite screenings, dewormings, and quarantine of new animals coming into the collection. The preventative medicine program is especially important for Zoo animals as many wildlife species tend to mask symptoms of illness until they are very sick. It is our priority to prevent illnesses from arising as it is easier to prevent disease than to treat it.”

“Despite prevention, animals get sick. Clinical veterinarians at the National Zoo respond and treat any medical problems or conditions in any species, ranging from minor ailments to serious life-threatening conditions. Additional specialists, such as cardiologists, ophthalmologists, dentists, and surgeons, are consulted on a regular basis to obtain expertise in treating more specialized problems and challenging medical cases.”

"Zoo and Wild Animal Medicine - National Zoo| FONZ." Welcome to the National Zoo| FONZ Website - National Zoo| FONZ. Smithsonian Conservation Biology Institute. Web. 01 June 2011. <http://nationalzoo.si.edu/SCBI/ZoologicalMedicine/clinical.cfm>.

Cheetah Conservation Fund. "CCF Concludes Annual Cheetah Workups." Cheetah Conservation Fund. 24 Apr. 2009. Web. 01 June 2011. <http://www.cheetah.org/?nd=2009_cheetah_workups_pr>.

Data and Record Keeping

Why Records are Important

"Animal records form the permanent history of an institution's animal collection. In the past, the purpose of such records was unclear and few institutions had formal protocols for what to record or how to record it. In many cases, institutional policies were vague and record keeping was a curatorial responsibility; thus, records varied greatly in content and quality as each curator decided what should and should not be recorded. For the most part, at the institutional level, the early emphases were on inventory aspects: acquisition and disposition and related costs. Identification of individual specimens was not a high priority as most curators and keepers "knew their collection"; relatively few animals were born in captivity and even fewer moved between institutions. Moreover, animal collection staff typically held jobs for long periods of time, and their successors learned about the collection and husbandry practices by "coming up through the ranks."

"Detailed records are now essential for internal and external functions at every institution. Internally, records are used to track husbandry practices, medical treatments and histories, potential exposures to disease or mates, and events required for various local, regional, and federal permits for possession, transport, and display of threatened, endangered, or potentially injurious wildlife."

"Externally, records are exchanged with other institutions and a central database at ISIS. Use of these data depends on their presentation in a common language (format) that is readily interpretable by others. These records are used for cooperative breeding programs, by scientists conducting research, by other zoos, aquariums, and by governmental authorities regulating importation and exportation of specimens across state and international boundaries."

Standards for Data Entry and Maintenance of North American Zoo and Aquarium Animal Records Databases. Ed. Joanne M. Earnhardt, Steven D. Thompson, and Ginny Turner-Erfort. Chicago, IL: Lincoln Park Zoo, 1998. 5-11. Print.

Association of Zoos and Aquariums. "Animal Data and Records." Association of Zoos and Aquariums. Web. 01 June 2011. <http://www.aza.org/animal-data-and-records/>.

Role of a Records Keeper

"Filling a long overlooked gap and now critical need, specialized positions bearing titles such as records keeper, animal records specialist, data manager, information specialist and registrar are becoming more common in zoos and aquariums. Regardless of title, these positions share similar duties: recording transactions and related data, assigning ID numbers and creating new records, guaranteeing the security of records and dispersing information to other appropriate areas or institutions. Most records keepers also provide information for surveys, questionnaires, permits, licenses, studbooks and loan updates. They may prepare reports such as inventories and collection statistics, and usually act as the institutional representative to ISIS. Additional responsibilities may include preparation of shipping documents and scheduling shipments, maintenance of permits and preparation of permit reports, maintenance of medical records, preparing loan agreements and maintenance of animal-related publications. Registrars generally function as a member of the Animal Management Committee, assure that animal transactions are in compliance with legal and policy requirements, direct shipping/quarantine arrangements, monitor animal legislation, and are responsible for procurement of permits. The size and complexity of an institution usually dictate the level of responsibility and specific assignment of duties."

Standards for Data Entry and Maintenance of North American Zoo and Aquarium Animal Records Databases. Ed. Joanne M. Earnhardt, Steven D. Thompson, and Ginny Turner-Erfort. Chicago, IL: Lincoln Park Zoo, 1998. 5-11. Print.

"Research Gallery." Forskning Dolkhaler. Galathea 3, Dec. 2006. Web. <http://130.226.56.246/dk/Menu/Forskning/Dolkhaler/research+gallery>.

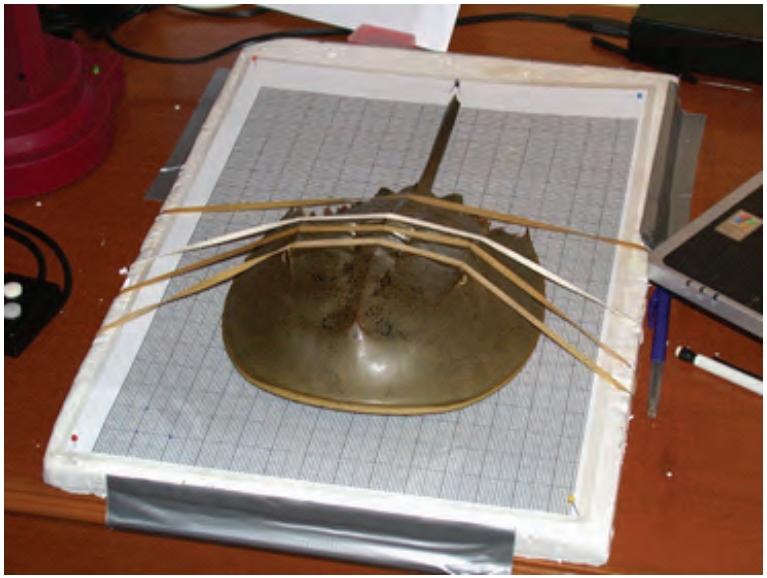
Daily Data Reports

"Animal keepers and aquarium biologists are in the unique position of being able to observe and collect daily information on the specimens in their care. This information is recorded on a form which most institutions call a daily report. The daily report is especially important as it is one of the primary sources of information used for animal management decisions and for regional and international conservation programs. Data from the daily report are entered into the ARKS3 program. Thus, it is very important for keepers and biologists to collect and record the necessary data on the daily reports. The following information should be collected:"

- Acquisitions and dispositions (including births, deaths, and descriptions of their circumstances)
- Parental identification
- Changes in identifications, markings and physical appearance
- Sexing or changes in sex and how sex was determined
- Medical problems, medical treatments, medical procedures
- General behavioral observations
- Reproductive behavior
- Enrichment
- Transfers of specimens between cages, buildings
- Changes in food consumption, feeding behavior, feeding location, diet
- Animal introductions

"Each zoo should develop its own guidelines for the daily report. At a minimum, each institution's daily report form should require all information essential to track individuals between institutions and to establish pedigree relationships."

Standards for Data Entry and Maintenance of North American Zoo and Aquarium Animal Records Databases. Ed. Joanne M. Earnhardt, Steven D. Thompson, and Ginny Turner-Erfort. Chicago, IL: Lincoln Park Zoo, 1998. 5-11. Print.



"Research Gallery." Forskning Dolkhaler. Galathea 3, Dec. 2006. Web. <http://130.226.56.246/dk/Menu/Forskning/Dolkhaler/research+gallery>.

Contents

LOCATION

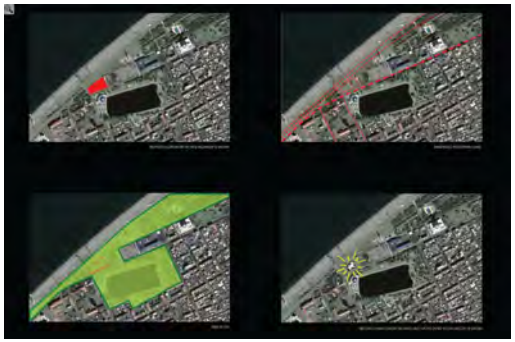
Batumi is a seaside city on the Black Sea coast and capital of Adjara, an autonomous republic in southwest Georgia. It has a population of 121,806.
Batumi, with its large port and commercial center, is also the last stop of the Transcaucasian Railway and the Baku oil pipeline. It is situated some 12 miles from the Turkish border, in a subtropical zone, rich in agricultural produce such as citrus fruit and tea. Industries include shipbuilding, food processing, and light manufacturing.

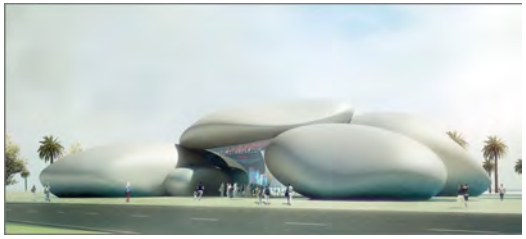
"Batumi." Wikipedia, the Free Encyclopedia. Web. 30 May 2011. <http://en.wikipedia.org/wiki/Batumi>.

DESCRIPTION

Inspired by the characteristic pebbles continually shaped by the wash of the waves of the Batumi beach the building stands out as an iconic rock formation visible from both land and sea.
The 2,000 m2 building will compose a modern, cultural aquarium offering visitors an educational, entertaining and visually stimulating journey through the different seas. The central, multipurpose space in connection with the aquarium features a café and retail functions and its flexible layout makes it well-suited for presentations and workshops.

"Bustler: Henning Larsen Architects Wins Batumi Aquarium in Georgia." Bustler: Architecture Competitions, Events & News. Web. 30 May 2011. <http://www.bustler.net/index.php/article/henning_larsen_architects_wins_batumi_aquarium_in_georgia1>.





"Bustler: Henning Larsen Architects Wins Batumi Aquarium in Georgia." Bustler: Architecture Competitions, Events & News. Web. 30 May 2011. <http://www.bustler.net/index.php/article/henning_larsen_architects_wins_batumi_aquarium_in_georgia1>.

Batumi Aquarium
Adjara, Batumi, Republic of Georgia

Lincoln Park Zoo
Lincoln Park Area, Chicago, Illinois

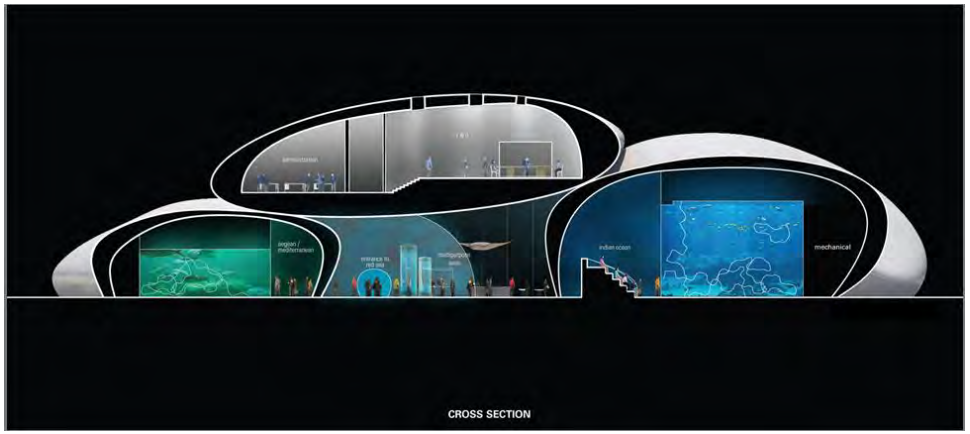
Schönbrunn Tiergarten zoo Vienna
Maxingstrasse 13b, Vienna, Austria

Duke Lemur Center
Duke University, Durham, North Carolina

DESCRIPTION - continued

The formation constitutes four self-supporting exhibition areas where each of the four stones represents a unique marine biotype – the Mediterranean, the Black Sea/Red Sea, the Aegean Sea and the Indian Ocean. The four dispersed aquarium exhibitions are connected by a central, multipurpose space including café, auditorium and retail functions with views of the black sea and Batumi beach as scenic backdrop. Visitors gather in the central space to convene, play, eat, shop and relax before continuing their adventures through the exhibitions.

"Batumi Aquarium :: Henning Larsen Architects." Frontpage :: Henning Larsen Architects. Web. 01 June 2011. <http://www.henninglarsen.com/projects/1000-1099/1061-batumi-aquarium.aspx>.



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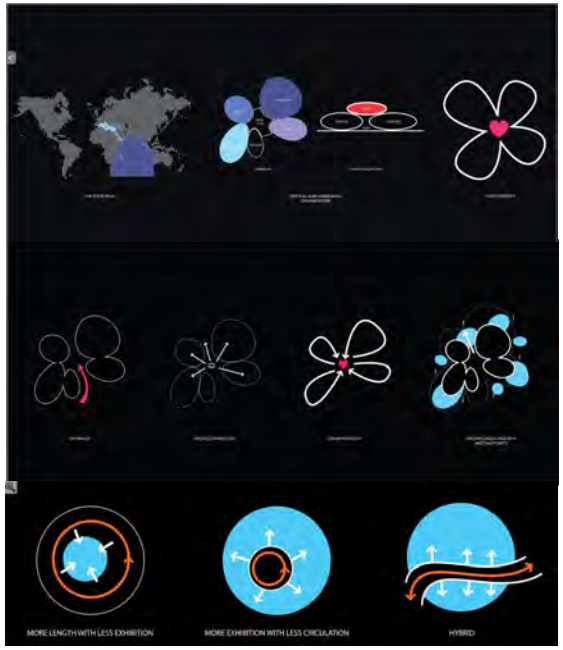


"Bustler: Henning Larsen Architects Wins Batumi Aquarium in Georgia." Bustler: Architecture Competitions, Events & News. Web. 30 May 2011.

ACCOMPISHMENTS

Named ‘Architecture of the Year 2010’ in the Conceptual Category at the International Design Awards (IDA) in Los Angeles.

"Bustler: Batumi Aquarium in Georgia Named ‘Architecture of the Year’." Bustler: Architecture

Quai Branly Museum by Jean Nouvel
Environment Scope
Central Park Zoo by Kevin Roche
Environment Scope
Eden Project by Nicholas Grimshaw
Environment Scope
New Orquideorama by Plan B Architects
Structure Scope
California Academy of Sciences by Renzo Piano
Structure Scope

LOCATION

Lincoln Park is Chicago's largest park, covering an area of about 1200 acres (486 ha) just north of the city's downtown area. It stretches for six miles (10 km) along the lakefront between North Avenue to the south and West Ardmore Drive to the north.

"Lincoln Park, Chicago." A View On Cities. Web. 31 May 2011. <http://www.aviewoncities.com/chicago/lincolnpark.htm>.

HISTORY

Founded in 1868, the Lincoln Park Zoo is the oldest free public zoo in the country. The atmosphere is extremely warm and welcoming, with beautiful flowering gardens situated here and there, wide walking paths, ample shade trees, and stately Georgian Revival buildings mixed with spacious modern structures.

"Lincoln Park, Chicago." A View On Cities. Web. 31 May 2011. <http://www.aviewoncities.com/chicago/lincolnpark.htm>.

"Lincoln Park Zoo Review in Chicago." Travel Reviews and Tourist Destinations, Entertainment and Attractions Worlwide. Web. 01 June 2011. <http://www.worldbestspot.com/Spots.php?id=247>.

Batumi Aquarium
Adjara, Batumi, Republic of Georgia

Lincoln Park Zoo
Lincoln Park Area, Chicago, Illinois

Schönbrunn Tiergarten zoo Vienna
Maxingstrasse 13b, Vienna, Austria

Duke Lemur Center
Duke University, Durham, North Carolina

DESCRIPTION

Lincoln Park Zoo is a world of wildlife in the shadow of skyscrapers. Located within a verdant park just minutes north of Chicago, the zoo has been a natural, free oasis for generations of animal lovers, who come to hear a lion's roar echo off nearby apartment buildings, see gorillas climb trees as the Willis Tower looms in the distance, or forget where they are as they immerse themselves in tropical rainforests, dry-thorn forests or spacious savannas.

"Lincoln Park Zoo Timeline." Lincoln Park Zoo. Web. 26 May 2011.<http://www.lpzoo.org/interactives/int_timeline.html>.

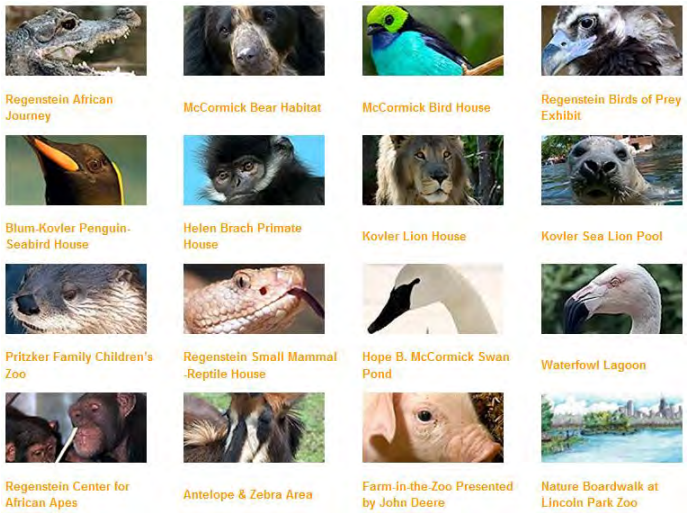
COMMUNITY

1949 – Television series "Zoo Parade" is established.
1959 – Traveling Zoo Program and the Zoological Society is established.
1963 – The public is invited to become members of the zoo.
1970 – The Zoo's volunteer program is established.
1973 – The Zoo's Women's committee is established.
1976 – The "To Make a Great Zoo Greater" society is established.
1977 – The Zoo's Education Board is established.
1978 – The ADOPT-an-animal program is established.
1984 – Zoo's Auxiliary Board is established.
2008 – The Volunteer Gardeners society is established.
2010 – Community Nature Boardwalk is established.

"Plan Your Visit." Lincoln Park Zoo. Web. 26 May 2011. <http://www.lpzoo.org/plan-your-visit>.

PUBLICATIONS

The Ark in Park: The Story of Lincoln Park Zoo
Lincoln Park Zoo: An Oasis in the Shadow of Skyscrapers



"Exhibits & Animal Houses." Lincoln Park Zoo. Web. 01 June 2011. <http://www.lpzoo.org/animals/exhibits-animal-houses>.

Lincoln Park Zoo Visitor Map. Web. 31 May 2011. <http://www.chicago.com/blog/wp-content/uploads/2011/02/lincoln-park-zoo-map.jpg>.

Quai Branly Museum by Jean Nouvel
Environment Scope
Central Park Zoo by Kevin Roche
Environment Scope
Eden Project by Nicholas Grimshaw
Environment Scope
New Orquideorama by Plan B Architects
Structure Scope
California Academy of Sciences by Renzo Piano
Structure Scope

LOCATION

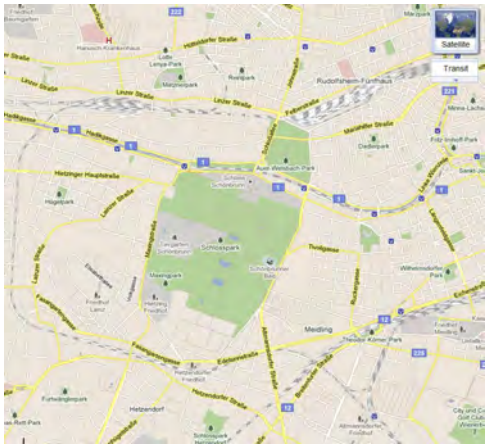
Tiergarten Schönbrunn (literally, Schönbrunn Zoo) or Vienna Zoo is a zoo located on the grounds of the famous Schönbrunn Palace in Vienna, Austria. Founded as an imperial menagerie in 1752, it is the oldest zoo in the world.

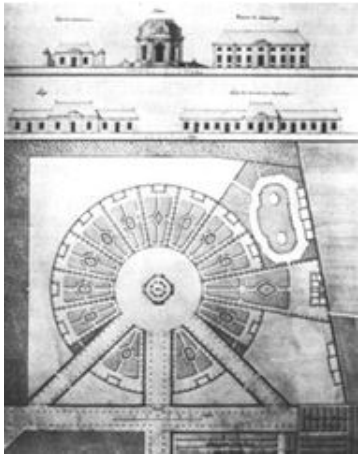
"Tiergarten Schönbrunn." Wikipedia. Web. 31 May 2011. <- http://en.wikipedia.org/wiki/Tiergarten_Sch%C3%B6nbrunn>.

HISTORY

The history of Tiergarten Schönbrunn goes back to Empress Maria Theresia and her husband Franz Stephan von Lothringen (Franz Stephan of Lorraine). Franz Stephan of Lorraine (as Franz I) was chosen as the Emperor of the Holy Roman Empire of German Nations in 1745. He commissioned his compatriot from Lorraine, the architect Jean Nicholas Jadot der Ville-Issey, to design a menagerie in the park of Schönbrunn, the new Habsburg-Lothringen summer residence. The facility consisted of 12 enclosures with equally sized animal houses along with an administrative/technical building opening into a garden area (the whole complex was later known as the "loggia circle"). This was accompanied by a pond and two farmyards with additional buildings. This ensemble was separated from the remaining Castle Gardens and neighboring properties by a wall.

In summer 1752, after a one-year construction period, the animals were brought to the zoo and presented to the public.





"Visitor Information – Zoo Vienna / Tiergarten Schönbrunn." Startseite –Tiergarten Schönbrunn. Web. 01 June 2011. <http://www.zoovienna.at/en/zoo-and-visitors/visitor-information/>.

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Maxingstrasse 13b, Vienna, Austria

Duke Lemur Center
Duke University, Durham, North Carolina

HISTORY - conitinued

The octagonal pavilion in the center of the facility, designed as a breakfast room and salon, was only completed in 1759. Even today, this pavilion remains the zoo's historical centerpiece. From 1949 onward, it has served as a restaurant.

Under Franz II/I, who ruled Austria from 1792 to 1835, Schönbrunn received its first giraffe as a gift from the Viceroy of Egypt (1828).

"Zoo Vienna Tiergarten Schönbrunn." Vienna - More than Sisi, Sachertorte and St. Stephen's Cathedral. Web. 26 May 2011. <http://www.wien-vienna.com/zoovienna.php>.

"Zoo Vienna Tiergarten Schönbrunn." Vienna - More than Sisi, Sachertorte and St. Stephen's Cathedral. Web. 31 May 2011. <http://www.wien-vienna.com/zoovienna.php>.

DESCRIPTION-

Part of the imperial summer residence of Schönbrunn, a UNESCO World Heritage Site, the world's oldest zoo is indeed an unforgettable experience, and one that no visitor to Vienna should miss. Along with the historic complexes of the former "menagerie" of Emperor Francis Stephen of Lorraine, visitors discover what is perhaps the world's most beautiful zoo in a unique setting where culture and nature blend. More than 500 animal species, some of them threatened, have found a home here and a chance for survival as a species.
From A as in anteater to Z as in zebra: A visit to the Schönbrunn Zoo is a tour through every continent in the fascinating world of animals. See giant pandas, Siberian tigers, orangutans, and elephants, or immerse yourself in the Amazon and experience the tropical rain forest. A visit to the zoo offers young and old alike an enjoyable vacation in an incomparable setting and interesting insights into our nature and species conservation work.

"The World´s Oldest Zoo – Zoo Vienna / Tiergarten Schönbrunn." Startseite – Tiergarten Schönbrunn. Web. 30 May 2011. <http://www.zoovienna.at/en/zoo-and-visitors/welcome-worlds-oldest-zoo/>.

"Visitor Information – Zoo Vienna / Tiergarten Schönbrunn." Startseite – Tiergarten Schönbrunn. Web. 01 June 2011. <http://www.zoovienna.at/en/zoo-and-visitors/visitor-information/>.

Schönbrunn Tiergarten zoo Vienna
Maxingstrasse 13b, Vienna, Austria

Quai Branly Museum by Jean Nouvel
Environment Scope
Central Park Zoo by Kevin Roche
Environment Scope

Eden Project by Nicholas Grimshaw
Environment Scope

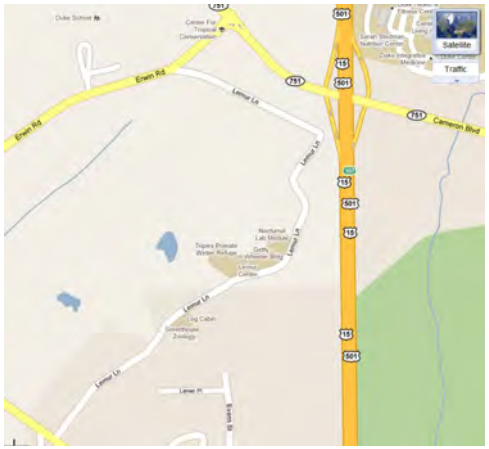
New Orquideorama by Plan B Architects
Structure Scope

California Academy of Sciences by Renzo Piano
Structure Scope

LOCATION

The Lemur Center, the only university-based facility in the world devoted to the study of prosimian primates, is home to the world's largest colony of endangered primates, including more than 250 lemurs, bush babies and lorises. More than 85 percent of the center's inhabitants were born on site.

"Duke Lemur Center." Wikipedia, the Free Encyclopedia. Web. 26 May 2011. <http://en.wikipedia.org/wiki/Duke_Lemur_Center>.



HISTORY

The Duke Lemur Center was established in 1966 and today is the world's largest sanctuary for rare and endangered prosimian primates. Nestled on 85 acres in Duke Forest, the Lemur Center houses about 250 animals, including 233 lemurs encompassing 15 species, along with lorises from India and Southeast Asia and bushbabies from Africa.

"About the Duke Lemur Center | Duke Lemur Center." Duke Lemur Center Tours, Conservation, Research and Education of Lemurs. Web. 30 May 2011. <http://lemur.duke.edu/about-the-duke-lemur-center/>.

Dexigner. Web. 01 June 2011. <http://www.dexigner.com/news/22038>.

Batumi Aquarium
Adjara, Batumi, Republic of Georgia

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Lincoln Park Area, Chicago, Illinois

Schönbrunn Tiergarten zoo Vienna
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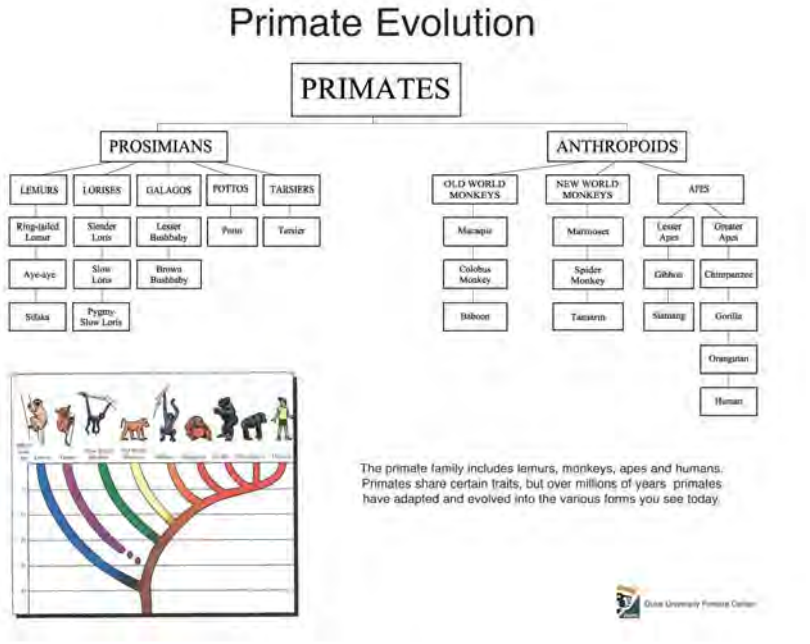
Haring, David. "New Tours at." Duke Lemur Center. Web. 01 June 2011. <http://dukelemurcenter.blogspot.com/2010/05/new-tours-at-duke-lemur-center.html>.



"Duke Lemur Center Animals | Duke Lemur Center." Duke Lemur Center Tours, Conservation, Research and Education of Lemurs. Web. 01 June 2011. <http://lemur.duke.edu/animals/>.

DESCRIPTION

State-of-the-art facilities at the Duke Lemur Center (DLC), a refuge owned by Duke University that houses the world's largest collection of lemurs outside of their native Madagascar.

The DLC, a world renowned sanctuary tasked with non-invasive research and conservation of lemurs and other prosimians

LESSONS LEARNED

36-hour adventure of Berisades and Ivy, a pair of 6-year-old ringtailed lemurs who daringly vaulted the electric fence of Natural Habitat Enclosure #4 at the Duke Lemur Center. This same pair had experienced a brief breakout the week before when a storm pushed over a tree, forming a bridge over the electric fence.

Escapes have happened before at the Lemur Center, not always with such happy endings. But the natural habitat enclosures that the animals enjoy are essential to their well-being and natural behavior

Haring, David. "Daring Escape Leads Lemurs to School Library Lured by Fruit,Two Ringtailed Lemurs Are Rounded up at Cresset Christian Academy." Duke Lemur Center. Web. 26 May 2011. <http://dukelemurcenter.blogspot.com/2010/06/daring-escape-leads-lemurs-to-school.html>.

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MISSION STATEMENT-

The Mission of the Duke Lemur Center is to promote research and understanding of prosimians and their natural habitat as a means of advancing the frontiers of knowledge, to contribute to the educational development of future leaders in international scholarship and conservation and to enhance the human condition by stimulating intellectual growth and sustaining global biodiversity.

The Lemur Center commits to achieving these goals through:

1. Conducting and facilitating innovative research on prosimian behavior, and physiology.
2. Furthering undergraduate, graduate and professional education in multiple disciplines.
3. Encouraging efforts to preserve prosimians and tropical biodiversity through international collaboration;
4. Serving as a national and international center for the dissemination of information on prosimians and their natural habitat

"About the Duke Lemur Center | Duke Lemur Center." Duke Lemur Center Tours, Conservation, Research and Education of Lemurs. Web. 30 May 2011. <http://lemur.duke.edu/about-the-duke-lemur-center/>.

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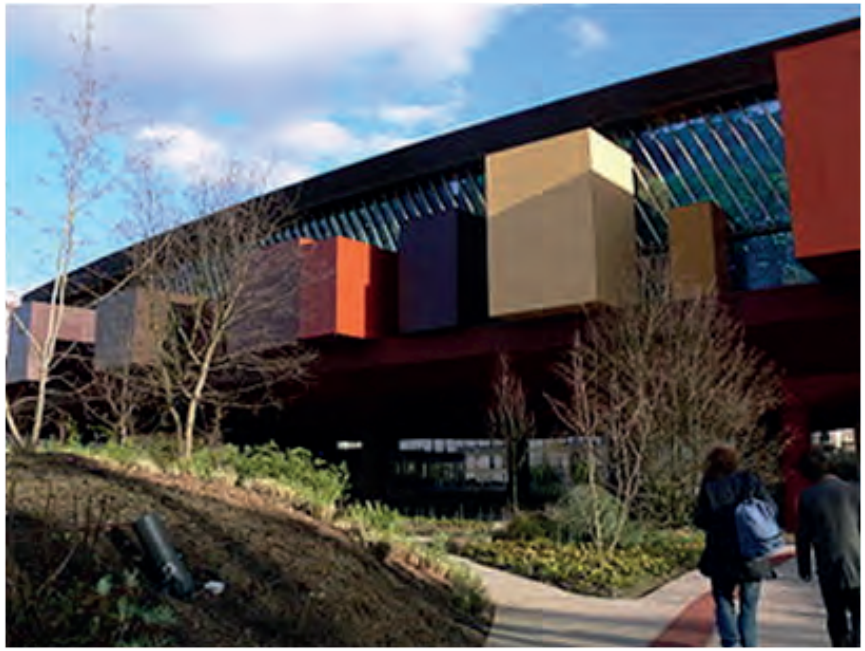
Quai Branly Museum by Jean Nouvel

The museum complex contains several buildings, as well as a multi-media library and a garden. The museum's frontage facing onto quai Branly features very tall glass panelling which allows its interior gardens to be remarkably quiet only metres from the busy street in front of them.

"Musée Du Quai Branly." Wikipedia, the Free Encyclopedia. Web. 1 June 2011. <http://en.wikipedia.org/wiki/Mus%C3%A9e_du_quai_Branly>.



The exterior of the administration building is swallowed up by a vertical carpet of exotic plants punctured by big windows. On some stories, the plants invade the building, crawling down the interior walls. ("When you put in little flowers, people are happy," Mr. Nouvel said of his design.)

The forms seem carelessly patched together. A cylindrical lobby and temporary gallery tucked under the main building seem squashed under the weight; the connection between the gallery buildings and the offices — a few small bridges — looks flimsy.

Ouroussoff, Nicolai. "For a New Paris Museum, Jean Nouvel Creates His Own Rules - New York Times." The New York Times - Breaking News, World News & Multimedia. 27 June 2006. Web. 01 June 2011. <http://www.nytimes.com/2006/06/27/arts/design/27bran.html>.

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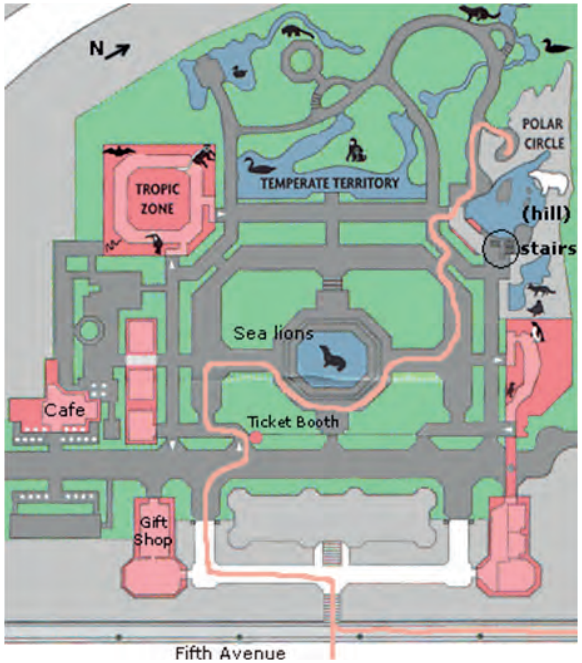
“A strange property, located along the Seine, in Paris (France), the Quai Branly Museum consists of three buildings, each with a distinct identity: the museum proper, the administration building, with its façade full of plants, and the property devoted to the management of the collections and library”

"Quai Branly Museum." Constructalia.com. Web. 1 June 2011. <http://www.constructalia.com/en_EN/gallery/galeria_detalle.jsp?idProyec=2342600>.

Central Park Zoo by Kevin Roche

The new zoo is an improvement on the old Central Park Zoo on nearly every count. Like most zoos of the last generation, it has no traditional cages; the animals are in elaborate "environments" that simulate their native habitats and through which visitors walk. And while the new zoo is more elegant architecturally than the old one and the environments vastly more elaborate than the cages of the old zoo, this new zoo far less conspicuous a presence.

The structures of the old zoo, particularly the huge brick building housing the cafeteria, formed walls that cut the zoo off from the rest of Central Park, now the landscape of the park melds gracefully into the zoo. The large structures of the new zoo have been tucked away in the corners, made to appear much more modest than they in fact are, and the vista toward the west through the center of the zoo that was once blocked by the cafeteria is now an open landscape, joining the zoo visually to the heart of Central Park. Now the zoo is not only in the park, it is of the park.



Map: Central Park Zoo. Digital image. Angelfire: Welcome to Angelfire. Web. 01 June 2011. <http://www.angelfire.com/journal2/afdiary/maps/cp_zoo.htm>.

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This design is fanciful and dignified at the same time; it seems right for Central Park, yet it is not nostalgic architecture, directly imitative of what has come before. Mr. Roche has managed to pick up on the spirit of the park and the park landscape while creating something that is new and very much his own.

What Kevin Roche has wrought, then, is at once a civilized urban piazza, a wild landscape, and a controlled exhibit center - three seemingly contradictory conditions that he has reconciled, gracefully. To sit on a Central Park bench within the zoo on a sunny, cool morning, to look at the sun washing the red brick and gray granite of the arcades as it filters through the lush trees, is to feel that you are not in the New York of the present at all, but in some idealized New York of the past, where buildings and public places and the landscape existed in harmony.

Goldberger, Paul. "ARCHITECTURE VIEW; The New Zoo: At Home in Central Park - New York Times." The New York Times - Breaking News, World News & Multimedia. 25 Sept. 1988. Web. 01 June 2011. <http://www.nytimes.com/1988/09/25/arts/architecture-view-the-new-zoo-at-home-in-central-park.html>.

Eden Project by Nicholas Grimshaw

The Eden Project is a visitor attraction in Cornwall in the United Kingdom, including the world's largest greenhouse. The complex is dominated by two huge enclosures consisting of adjoining domes that house plant species from around the world. Each enclosure emulates a natural biome. The domes consist of hundreds of hexagonal and pentagonal, inflated, plastic cells supported by steel frames. The first dome emulates a tropical environment, and the second a Mediterranean environment.

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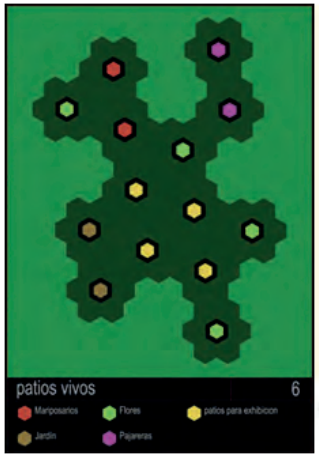
The Eden Project successfully combines ecology, horticulture, science, art and architecture. It provides an informative and enjoyable experience while promoting ways to maintain a sustainable future in terms of human global dependence on plants and trees. The exhibits include over one hundred thousand plants representing five thousand species from many of the climate zones of the world

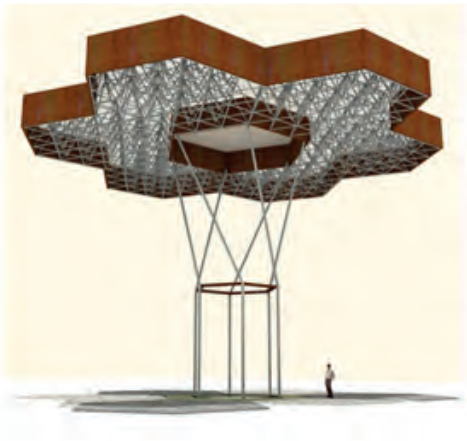
Perrin, John. "Eden Project Cornwall UK by Nicholas Grimshaw." Galinsky. 2002. Web. 01 June 2011. <http://www.galinsky.com/buildings/eden/index.htm>.

New Orquideorama by Plan B Architects

The Orchideorama is composed of 10 Flower – tree structures, that can be built individually, and allow the system grow or response to any uncertainties, such as budget, construction inconvenients or political decisions.

“We propose the Orchideorama to be built as sowing flowers: One flower – tree grows, and just beside it, another will appear, until the complete system of Flower – tree structures is defined. They can grow or be sow where is possible, adapting its system structure to the field where it is intended or needed.”

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“Each “flor-árbol” is composed of a steel reinforced trunk and six hexagonal petals that form an intricately latticed patio. The plants situated beneath each trunk are sustained via rainwater collected by the petals, and are protected from the elements by the translucent pine wood weave that is sourced from reforested lands. Taken as a whole, the Orquideorama is a delicate display of the relationship and structural similarities between architecture and living organisms.”

"ORQUIDEORAMA: A Beautiful Floating Meshwork of Modular Flower Tree Structures Read More: ORQUIDEORAMA: A Beautiful Floating Meshwork of Modular Flower Tree Structures | Inhabitat - Green Design Will Save the World." Inhabitat.com. 27 Mar. 2008. Web. 1 June 2011. <http://inhabitat.com/waxing-architectural-on-columbias-orquideorama/>.

California Academy of Sciences by Renzo Piano

Over 90% of the demolition waste from the old Academy was recycled. 9,000 tons of concrete were reused in Richmond roadway construction, 12,000 tons of steel were recycled and went to Schnitzer Steel, and 120 tons of greenwaste were recycled on site.
At least 50% of the wood in the new Academy was sustainably harvested and certified by the Forest Stewardship Council.
Recycled steel will be used for 100% of the building's structural steel.
The insulation that will be installed in the building's walls is made from recycled blue jeans. The product contains 85% post-industrial recycled content and uses cotton, a rapidly renewable resource, as one of its main ingredients.
All concrete contains 30% fly ash, a by-product of coal-fired power plants. It also contains 20% slag, a waste product from metal smelting.

Building features

- Produces 50 percent less waste water than previously
- Recycles rainwater for irrigation
- Uses 60,000 photovoltaic cells
- Supports a green roof with an area of 2.5 acres (1.0 ha)
- Uses natural lighting in 90 percent of occupied spaces
- Was constructed of over 20,000 cubic yards (15,000 m3) of recycled concrete
- Construction includes 11 million pounds (5,000 t) of recycled steel
- Wall insulation made from scraps of recycled denim

"California Academy of Sciences." Wikipedia, the Free Encyclopedia. Web. 01 June 2011. <http://en.wikipedia.org/wiki/California_Academy_of_Sciences>.

"California Academy of Sciences / Renzo Piano." Archdaily.com. 28 Sept. 2008. Web. 1 June 2011. <http://www.archdaily.com/6810/california-academy-of-sciences-renzo-piano/>.

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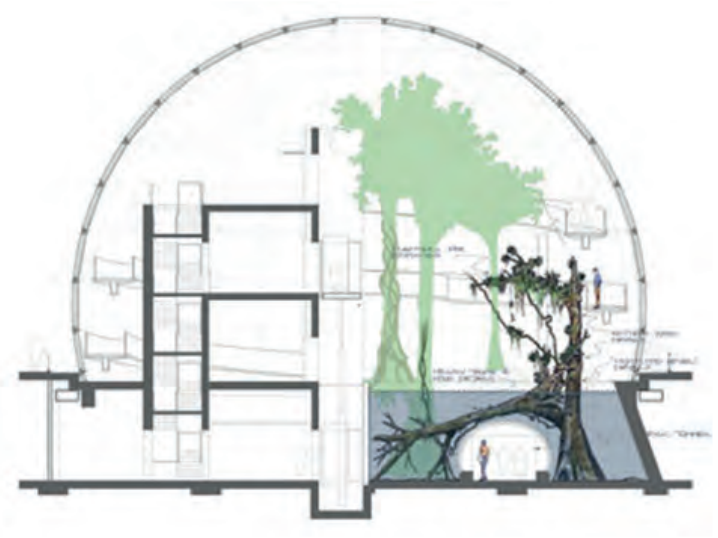
“A row of steel columns soaring 36 feet high along the facade lends the building a classical air; the sense of lightness is accentuated by a wafer-thin canopy above that creates the illusion that the roof is only millimeters thick.”

Ouroussoff, Nicolai. "Architecture Review - Renzo Piano‘s California Academy of Sciences Blooms and Grows, Balancing Man and Nature - Review - NYTimes.com." The New York Times - Breaking News, World News & Multimedia. 01 June 2011. Web. 01 June 2011. <http://www.nytimes.com/2008/09/24/arts/design/24acad.html>.



"With the new Academy, we have created a museum that is visually and functionally linked to its natural surroundings, metaphorically lifting up a piece of the park and putting a building underneath." Renzo Piano

"Renzo Piano Building Workshop - California Academy of Sciences :: Arcspace.com." Architecture Online - Arcspace Is an Architecture and Design Magazine That Features Today's Most Creative Projects as Well as the Most Influential of the Past. Web. 01 June 2011. <http://www.arcspace.com/architects/piano/cas/cas.html>.