

Gondwanaland – Leipzig’s Rainforest

By Richard Perron

Something which cost 64.5m Euros (US\$ 88m) and took over three years to build raises high expectations, especially when it is a zoo enclosure. Tropical halls are nothing new, but Gondwanaland in Leipzig Zoo is probably the most impressive structure ever built to recreate any rainforest environment.

The external view dominates the Leipzig skyline with its huge 35m high triangular matrix, concealing 17,000 plants within its humidified 16,500 m² arena, and dwarfs all surrounding buildings, but nothing prepares you for the breathtaking experience inside. Despite my best efforts, photographing individual animals amid the dense greenery proved impossible and I have had to use some photos from Leipzig Zoo and elsewhere.



Gondwanaland is the latest element of the zoo design originally conceived in 1998 to be realised. Although there have been shifts of focus, the master plan for Leipzig Zoo has been central to the ongoing development. Dr. Jörg Junhold was the keynote speaker at the German language symposium 'ZooKunft' held in February 2002 at Leipzig Zoo where he explained the concept behind his 15 year master plan. A great deal of research underpinned the plan and experts from many fields were invited to participate. Some of the most interesting were the contributions by Prof. Dr. Heinz-Rico Scherrieb, Erlebniswelten Consulting Wien, on the zoo as leisure destination, the funding options open to zoos as seen by Raimund Otto from Stadt Leipzig and, architectural design principles by Peter Rasbach, Rasbach Architekten. Dr. Junhold successfully integrated these ideas into the master plan for Gondwanaland.



One of the problems with trying to portray a rainforest is the spacial dimension. Many of the trees take 40 or 50 years to reach their great height and girth. The Leipzig planners have taken artificial central stems, which additionally serve a heat-recovery purpose, supported by a variety of natural trees, which will eventually grow to the required height, to give the forest an authentic atmosphere.



Photo: Richard Perron



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Since the super-continent of Gondwana ceased to exist about 180 mya some compromise was necessary in both the zoogeographical and zoological limits of the exhibit. It was decided to focus on the modern day Africa, Asia and South America, all three areas with tropical rainforest and a large number of endangered species. A volcanic tunnel has some Australian species which are mostly nocturnal.

Including these three quite diverse elements under one roof was also a challenge and although the traditional 650m walkway covers all the individual sections giving an aerial perspective on exhibits, the use of boats on a 390m waterway which meanders through Gondwanaland enhances the personal experience.

Throughout Gondwanaland Leipzig Zoo has strived to give the visitor an authentic experience and this is particularly noticeable in the use of natural-looking materials and in not westernising appearances. The only exception to this is in the superb restaurant and service areas which are both of high quality and spotless.



Photo: Richard Perron

Bearing in mind the huge biodiversity of the three regions covered, the few species on display will come as a disappointment to some visitors, but Leipzig Zoo has selected an attractive cross-section of mammals, reptiles, birds, fish and plants which are endemic and spectacular in their own way.

South America is highlighted by the vocal Giant otter *Pteronura brasiliensis*, Southern Tamandua *Tamandua tetradactyla*, Common Squirrel monkey *Saimiri sciureus*, Ocelot *Leopardus pardalis* and the fascinating fungus-growing Leaf-cutter ants *Atta sp.*



Tamandua island. Photo: Leipzig Zoo



Giant otter pond. Photo: Mahmoud Dabdoub



An all-male group of Common Squirrel monkeys inhabit Mr Nilsson Island and have free range over the heads of visitors. Photo: Geoff Gallice



Ocelot *Leopardus pardalis*. Photo: Zoo Leipzig

One particular educational exhibit associated with South America which should not be missed is the 360 degree panorama 'Amazonian' by the artist Yadegar Asisi.



The Serval *Leptailurus serval* and Pygmy Hippo *Choreopsis liberiensis* are the largest African species on display.



Serval *Leptailurus serval*. Photo: Bob Fabry



Pygmy Hippo *Choreopsis liberiensis* Photo: Zoo Leipzig

Having spent several years in total in South-East Asia, I have a particular interest in the species from that area and was pleasantly surprised by the selection in Gondwanaland and their presentation. Of all the regions, Asia receives the greatest attention and one can easily forget the tropical environment is not just dedicated to it alone.



Victoria crowned pigeon *Goura victoria*. Photo: Richard Perron



False Gharial *Tomistoma schlegelii*. Photo: Richard Perron



Komodo dragon *Varanus komodoensis* in Gondwanaland. Photo: Tomasz Doron



Underwater in Gondwanaland. Photo: Tomasz Doron



Entrance to boat tour next to Leaf-cutter ant colony. Photo: Richard Perron



Asian tapir *Tapirus indicus*. Photo: Leipzig Zoo

Another interesting feature of Gondwanaland is the focus on tropical plants. Although many plant species may be familiar elements of the rainforest ecosystems it is not very often that information about them is integrated into zoo displays. Leipzig Zoo has taken great care to use imported trees, shrubs and plants so that the Gondwanaland landscape has a genuine and sustainable forest. You don't have to be a botanist to find plants like the Coralberry, the Queen sago, Medinilla and the Sausage tree interesting and attractive or learn something about their use. Make sure you do not miss the range of domesticated plants, which we have adapted to form part of our diet. The vast number of bamboo, palm, fern and other green plants are the essence of the Gondwanaland rainforest and an essential background for the selected animal species.



Gondwanaland across the roof tops. Photo: Richard Perron

Like many other leading zoos, Leipzig Zoo participates in conservation projects *in situ* and uses Gondwanaland to especially focus on their association with the Leibniz Institute (IZW), specialists in artificial insemination, and the attempt to save the Sumatran rhino in Borneo in Sabah.

The species has been decimated by hunting for its horn, used in Chinese traditional medicine, and habitat loss due to the spread of palm oil plantations. The remaining Bornean population of about 50 animals is split into two groups, one of which lives in the protected Tabin Wildlife Reserve. In cooperation with the local authorities and the Borneo Rhino Alliance (BORA), a sanctuary and breeding station has been established.

Three Sumatran rhinos have been captured from the wild in Sabah in recent years – a male in 2008, and female in 2011 and in 2014. Both females captured have severe reproductive tract pathology, a result of lack of breeding, in turn a result of no fertile males remaining in the wild. Yet both produce oocytes, the cells that form eggs that are fertilized by sperm. Thus, these few remaining rhinos can help prevent the extinction of the species through application of advanced reproductive technology: removing the gametes and germ cells from living rhinos to try to produce Sumatran rhino embryos in the laboratory. This work is underway with the support of the Leibniz Institute and associated experts. The role of BORA is to care for the rhinos held in facilities in Sabah and to seek and capture any last rhinos that might exist, doomed in the wild.

Although no live specimens are on show in Gondwanaland, an information hut with interactive stations provides details about the project in Sabah and ways the visitor can contribute.



Michael Ernst from Zoo Leipzig in Tabin Wildlife Reserve. Photo: Rasmus Gren Harmoller

It is a daunting technological task to re-create the temperature and humidity of a rainforest. The climate-control system to attain sub-tropical humidity of 60% to 75% while maintaining a temperature of 26° to 28° suitable for the resident animals is hidden from the average visitor, but I was able to get a behind-the-scenes view during my visit.

Gondwanaland is a giant greenhouse which has been turned into a smoothly functioning and ecologically sustainable tropical hall with a lot of high-tech equipment and ingenuity. Maintaining the ideal range of humidity and temperature inside when outside conditions vary dramatically over the year has demanded innovative thinking and taken four years of testing and research to achieve. Because the project is unique in both size and requirement, experimentation and adjustments were essential and the team had to fine-tune the concept based on traditional heating techniques, some together with the structural architects and planners.

Some individual enclosures, such as that for the Giant otters, have their own water treatment and filter plants. Rain water on the roof is collected and recycled through gravel filters. Underfloor heating, evaporation, air vents and condensation were all problem areas which had to be resolved and, where necessary, synchronised.

The entire system is now controlled through two computers and automatically regulates the Gondwanaland installation.



Utilities room where Gondwanaland is connected to the district heating network.

Photo: Leipzig Zoo



Forest Stewardship Council exhibit. Photo: Richard Perron

Education about biodiversity and the threats to it is a strong point in Zoo Leipzig and not just in the Gondwanaland complex. Several exhibits here stress the importance of species, like the tree cross-sections above, the fish in the ponds and rivers as well as the essential invertebrates and plants which are often ignored in many zoo collections.

The dictum today is fewer species are more and Zoo Leipzig has managed to achieve this without losing regional variety. They have made a credible sub-tropical exhibit with attractive species displayed in near-natural environments.

Despite knowing that this is an artificial construct, the visitor will be overpowered by the majesty and density of the rainforest and is a must-see for every zoo enthusiast.

Zoo Leipzig has set such a high standard with Gondwanaland that it will be difficult to follow, both for other zoos in the world and for itself with any subsequent exhibit.

Richard Perron