Facts and Figures – Masoala Rain Forest at the Zoo Zürich

Philosophy

The Masoala Rain Forest Hall represents a direct link between the Zoo Zürich and its nature conservation project on the island of Madagascar.

The objective of the ecosystem building at the Zoo Zürich is to enable visitors to experience through all five senses the natural relationships between plants and animals outside their original habitat and the natural living environment of a diverse range of unusual species.

The Information Centre at the hall features exhibits that emphasize both the importance of this unique world of flora and fauna and the danger to which it exposed. Visitors also learn about opportunities to contribute to nature conservation and species preservation.

Dimensions

The Masoala Rain Forest exhibit is unique in the world in terms of the authenticity of the habitat it depicts.

Width: 90 m  
Length: 120 m  
Height: 30 m  
Total area: 11,000 m²

Volume: 200,000 m³  
Substrate: 5000 m³  
Costs of construction: 52 Million CHF

Architecture and landscape

As recently as twenty years ago, the construction of such a hall would have been inconceivable. The invention of a highly translucent foil made it possible to construct an air chamber consisting of three layers that provides optimum insulation and thus enables the sensitive rain forest plants to survive outside their natural environment. Visitors experience the flora and fauna close-up, without isolating fences, as they walk along paths of various sizes through the different habitat areas. The basic principle of the jungle as a multi-level complex of lush, dense vegetation is emphasized by the topography, waterways and paths.

Steel framework: 10 vertical steel support beams  
Foil roof: roughly 14,000 m² of four-ply, highly translucent foil roof

The climate concept

In order to ensure that the plants thrive, the hall must replicate the climate conditions that prevail on the Masoala Peninsula of Madagascar. Air temperature must range between 20° and 30°C, with relative humidity of 80% and above and up to 6 mm of tropical rainfall per day.
Building environmental technology: heating, heat recovery and ventilation

A highly sophisticated heating and cooling system in the Masoala Rain Forest ensures low energy consumption.

The spacious hall (200,000 cubic metres) is heated by an air circulation system. Additional heating can be provided as needed by a central wood-chip furnace that does not emit CO₂.

A heat recovery system has been installed in order to minimize wood consumption for heating purposes. On sunny days, hall temperature increases rapidly. When air temperature exceeds a specified limit, warm air beneath the dome of the hall is drawn off through a 25-metre-tall chimney. The air is cooled in the central air-conditioning unit and pumped back into the hall through 52 ventilation nozzles in the side walls. Excess heat is stored in a 250 cubic metre water tank.

In the evening, when the air in the hall cools down, heat is drawn from the storage tank to warm the circulating air to the desired temperature. This system supplies 20 – 30% of the heating energy required even during the winter months. During the summer, the energy system is supplied solely with surplus heat from the hall.

Rainfall system

An important element in the hall climate system is the rainfall system. Enormous quantities of decalcified water are required. In order to avoid drawing this water from the public water system, rainwater is collected in a cistern on the roof, which consists of two tanks with a capacity of 500 cubic metres each. The water is conditioned as needed, stored temporarily in several intermediate storage tanks and heated to 20° C. The rainfall and water-conditioning system is capable of supplying up to 80,000 litres of water per day for the rainfall system.

Plants

The Rain Forest is a three-tiered structure. The uppermost tree layer will eventually range in height from 7 to 30 m, the middle level from 2 to 6 m. The ground level will be planted and seeded.

Number of plants: a total of over 20,000 individual plants and trees (approx. 400 plant species from 92 plant families), including

100  dominant tall trees
1600  smaller trees and palms
1000  vine plants
400   bamboo plants
4700  trees from the Zoo’s nursery in Madagascar
4200  orchids and other epiphytes (non-parasitic plants that attach themselves to trees)
13 kg  seeds from Madagascar (98 plant species)

Animals

The animal population planned for the hall is now nearly complete. Several species were already living at the Zoo Zürich before being introduced to the Masoala Rain Forest. Others came successively from other zoos during the first months following the official opening in June 2003. A number of young animals have since been born in the Masoala Rain Forest. Animals that have bred in their new habitat include the Madagascan partridge, Bernier’s duck, the white-faced whistling duck, the crested egret, the hammer-head bat and the great Madagascan phelsuma gecko. Visitors to the Masoala Rain Forest and the Information Centre
today can hope to spot 48 species of vertebrates (more than 300 individuals) – including lemurs, flying fox bats, birds, giant tortoises, tomato frogs and coral fish.

**Visitors**

The Masoala Rain Forest is a part of the Zoo Zürich. Visitors entering the “tunnel” at the Zoolino literally submerge into a darkened, acoustically dampened room illuminated at intervals by fluorescent ceiling lights – the connecting link between the outside world and the Rain Forest hall. A winding main path leads to the various areas of the hall. At the end of the main path, the visitor arrives at the Information Centre, where aquariums, terrariums and an exhibition provide background information on the Masoala Rain Forest and its inhabitants. Visitors can stop at any time and enjoy a wonderful view of the Masoala Rain Forest while dining at the Masoala Restaurant – before resuming their journey of discovery strengthened and refreshed.

**Planning consortium**

bosshard + partner AG, General Planning and Construction Contractor, Zurich  
Gautschi Storrer Architekten AG, architects, Zurich  
Vogt Landschaftsarchitekten AG, landscape architects, Zurich  
KiPlant International, plant management consultant, Aalsmeer (NL)  
Minikus Witta Voss, civil engineer, Zurich  
Getec AG, building engineering/electrical systems/MSR, Zurich

**Staff**

Seven employees are responsible for hall maintenance and care of all plants and animals. Three of these employees are permanent staff members.

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Texts and photographs are available in digital form at: www.zoo.ch/medien