World Heritage Sites

Protected Areas and World Heritage

MOSI-OA-TUNYA / VICTORIA FALLS
ZAMBIA & ZIMBABWE

These are one of the most spectacular waterfalls in the world. The Zambezi river, which is more than two kilometres wide at this point, plunges noisily down a series of basalt gorges raising an iridescent mist that can be seen more than 20 km away. However, there are increasing pressures for commercial development in the site.

COUNTRIES
Zambia and Zimbabwe

NAME
Mosi-oa-Tunya / Victoria Falls

NATURAL WORLD HERITAGE TRANSBOUNDARY SERIAL SITE
1989: Inscribed on the World Heritage List under Natural Criteria vii and viii.

STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

IUCN MANAGEMENT CATEGORY

Mosi-oa-Tunya National Park:	II National Park
Victoria Falls National Monument:	III National Monument
Zambezi National Park (part):	II National Park

BIOGEOGRAPHICAL PROVINCE
Miombo Woodland/Savanna (3.07.04)

GEOGRAPHICAL LOCATION
The site straddles the Zambezi River in southern Zambia and northwest Zimbabwe. Mosi-oa-Tunya National Park in Zambia follows the north bank from the Sinde River to Songwe River Gorge below the falls; all islands up to Kandahar Island are within the Park including Lwaandi Island. The town of Maramba (formerly Livingstone) and Dambwa Forest Reserve lie just north. The national border runs in mid-stream. On the south bank Victoria Falls National Park in Zimbabwe runs from 6 km above the falls to Batoko Gorge 12 km below them. It adjoins the town of Victoria Falls on the west. Within the site, a riverine strip of Zambezi National Park extends 9km upstream along the right bank of the Zambezi. The site's centrepoint is 17° 56' S and 25° 51' E.

DATES AND HISTORY OF ESTABLISHMENT
1931: The south side of the river declared a Game Reserve;

1934: The Victoria Falls Executive Committee set up by the Victoria Falls Reserve Preservation Ordinance;

1935: The falls were created a National Monument;

1937: The falls were created a Special Area, managed by the National Historic Monuments Commission and by the Executive Committee, which permitted the development of a power station at the falls;

1948: The Commission established a Conservancy Committee which extended the Special Area on the north bank down to Songwe River Gorge; legally confirmed in 1949;

1952: Victoria Falls National Park was formed by combining the Victoria Falls Game Reserve in Zimbabwe and the Special Area in Zambia. The Victoria Falls Trust was formed and made responsible for the area;

1970: Area re-proclaimed a National Monument by the Monuments and Relicts Act;

1972: The National Park established by Statutary Instrument 44. It falls under Zambia's National Parks Wildlife Act of 1968 and Zimbabwe's Parks & Wildlife Act of 1975.

1979: The National Park was subdivided into its Zambian and Zimbabwean component parks.

LAND TENURE

State. Mosi-oa-Tunya National Park in Maramba district is managed by the Zambian Wildlife Authority of the Department of National Parks & Wildlife Service. Victoria Falls and Zambezi National Parks in Hwangwe district, are managed by the Zimbabwean Department of National Parks & Wildlife Management.

AREA

6,860 ha based on the initial figures for the constituent parks, confirmed by WDPA figures for each site. The UNESCO List of 2010 gives 8,780 ha.

Mosi-oa-Tunya National Park, Zambia:	3,779 ha
Victoria Falls National Park, Zimbabwe:	2,340 ha
A riverine strip of Zambezi National Park, Zimbabwe:	741 ha

The Victoria Falls Park adjoins Zambezi National Park (51,833 ha: WDPA, 2010) on the southwest.

ALTITUDE

816m to 915m (crest of the falls).

PHYSICAL FEATURES

The Park covers both banks of the Zambezi River above Victoria Falls where the river falls off the edge of a plateau into a series of deep gorges below. The falls are the heart of the Park, and when the river is in full flood in February and March, it is two kilometers wide, and forms the world's largest sheet of falling water. During these months some 540 million cubic meters of water per minute pour over the edge, which is 1,690m wide and drops 108m at Rainbow Falls. The spray plume, which may quite obscure the view of the falls in the rainy season, can rise 500m and become visible 20km away. At low water before the rains in November the flow may be reduced to around 10.5 million cubic meters per minute, and the river divides into a series of braided channels that descend in many separate falls (Clarke & Loe, 1974).

Since the uplifting of the Makgadikgadi Pan some two million years ago, the Zambezi River has been cutting through the basalt plateau, cutting into east-west fissures in the basalt, forming a series of retreating falls. Below the present falls the river enters a zigzag series of narrow gorges, relicts of seven past waterfalls. The Devil's Cataract in Zimbabwe is the start of the cutting back to an eighth waterfall that will eventually leave the present crest high above the river in the canyon below. 16 km of the Batoka gorges border the Parks and the gorge system continues for some 110 km downstream to the east, the cliffs becoming at one point 140m high.

CLIMATE

The annual rainfall averages 730mm, falling mainly between December and March. The spray plume of the water sustains rainforest conditions in the splash zone around the falls. The average maximum temperature range is 26°C to 37°C, the average minimum temperature range 6°C to 19°C; the mean annual temperature is 20°C (Hattle, n.d.).

VEGETATION

The predominant vegetation on the plateau is mopane *Colophospermum mopane* woodland with small areas of teak and miombo woodland, scrubland, savanna and a narrow band of riverine forest along the Zambezi with species of ebony *Diospyros mespiliformis,* Natal mahogany *Trichilia emetica* and sumac *Rhus*. The mist-forest within the splash zone is of unusual interest, a fragile ecosystem of discontinuous rainforest on sandy alluvium, dependent upon the abundant water and high humidity from the spray plume. Tree species within this forest include pod mahogany *Afzelia quanzensis,* ebony, strangler fig *Ficus aurea,* Cape fig *Ficus capensis,* ivory palm *Hyphaene ventricosa,* Transvaal red milkwood

Mimusops zeyheri, African olive *Olea africana,* wild date palm *Phoenix reclinata,* water pear *Syzygium guineense* and Natal mahogany. 70 shrub and 150 herbaceous species are recorded for this rare local habitat. Herbaceous species include *Sebaea pentandra, Lobelia kirkii* and *Gladiolus unguiculatus,* and the dense fern growth includes *Cheilanthos farinosa. Acacia nigrescens* is prominent on the plateau in Zimbabwe. A thick woodland of *Triplochiton, Commiphora, Entandrophragma* and *Sterculia* species grow on the talus scree within the gorge (Fishpool & Evans, 2001). There is infestation by *Lantana camara* on the falls and by water hyacinth *Eichornia crassipes* above them.

FAUNA

Several herds of elephant *Loxodonta africana* (VU) live in Zambezi National Park, crossing to the islands above Palm Island and into Zambia during the dry season when water levels are low. There are small herds of central African savanna buffalo *Syncerus caffer aequinoctialis* and blue wildebeeste *Connochaetes taurinus,* as well as giraffe *Giraffa camelopardalis,* plains zebra *Equus quagga,* desert warthog *Phacochoerus aethiopicus,* and some bushpig *Potamocherus porcus.* Schools of *Hippopotamus amphibius* (VU) are common above the falls. Grivet monkey *Chlorocebus aethiops* and chacma baboon *Papio ursinus* are common, and both lion *Panthera leo* (VU) and leopard *P.pardus* are occasionally seen. Klipspringer *Oreotragus oreotragus* and African clawless otter *Aonyx capensis* can be seen in the gorges. Especially in the Zimbabwean parks, six species of antelope are common and six less so. Some also occur, or have been introduced, on the Zambian side, though recent droughts have diminished these.

Some 35 raptors are found in the Batoka gorge below the falls: 10 pairs of the Taita falcon *Falco fasciinucha* breed there as do black eagle *Aquilla verreauxi,* peregrine falcon *Falco peregrinus* and augur buzzard *Buteo rufofuscatus augur;* also black stork *Ciconia nigra* (7+ pairs) and African swift *Apus barbatus.* Found above the falls are whitebacked night heron *Gorsachius leuconotus,* African finfoot *Podica senegalensis* and rock pratincole *Glareola nuchalis* (Fishpool & Evans, 2001). Victoria Falls forms a geographical barrier between the differing ichthyofaunas of the upper and middle Zambezi River. Thirty-nine species of fish have been recorded from the waters below the falls, including butter barbel *Schilbe mystus,* eastern bottlenose *Mormyrus longirostris*, *nkupi Distichodus mossambicus*, *chessa D. schenga*, and eighty-four species from the waters above the falls, including African mottled eel *Platystacus cotylephorus*, tigerfish *Hydrocynus vittatus*, Kafue pike *Hepsetus odue* and silver barbel *Schilbe intermedius* and several species of bream. Nile crocodile *Crocodilus niloticus* are plentiful above the falls.

CONSERVATION VALUE

The Mosi-oa-Tunya/Victoria Falls National Parks surround one of the world's most spectacular waterfalls. These and the deep zigzag gorges formed by past falls are outstanding examples of the erosive power of water. The Parks lie within a WWF Global 200 Eco-region.

CULTURAL HERITAGE

Stone artefacts of *Homo habilis* from 3 million years ago have been found near the falls, and stone tools which indicate prolonged occupation of the area in the Middle Stone Age 50,000 years ago. Weapons, adornments and digging tools indicate the presence of Late Stone Age hunter-gatherers between 10,000 and 2,000 years ago who were displaced by farmers who used iron tools, kept livestock and lived in villages. Mosi-oa-Tunya means' the Smoke that Rises' in the Kololo tongue; Victoria Falls were named by the explorer Livingstone in 1855.

LOCAL HUMAN POPULATION

The ethnic composition of the people living in the area outside the Parks is a mixture of long-term inhabitants and recent immigrants. The Tonga people have lived in the area for at least seven centuries, latterly with smaller numbers from ten other tribes. The area was held by Subiya chiefs for the Barotse kings in 1898, when westerners began to settle. The town of Maramba (formerly Livingstone) has about 100,000 inhabitants and the town of Victoria Falls about 40,000, but refugees from the countryside which has suffered long drought continue to swell the populations of both towns with largely unemployed and poorly housed refugees (Karmokolias, 2000).

VISITORS AND VISITOR FACILITIES

This is one of the most popular National Parks in Zambia, with Zambians even more than with foreign tourists. In 2000 there were 300,000 visitors (Hanyana, 2002). Facilities include 2 hotels, 2 restaurants, a basic visitor centre on each side, a non-catering camp with 70 beds and a camping ground but little signage. There are many footpaths in the falls area, including Knife-edge Bridge which faces the length

of the falls, and there is a field museum with local archaeological artefacts. In the winter dry season the falls are less obscured by spray, but in late summer droughts they run low. Game fishing, riding, rafting, kayaking, bunji-jumping. abseiling, a gorge-swing and overflights are available. The Park is 10 km south of Maramba where there is accommodation, and the town of Victoria Falls in Zimbabwe has 3 hotels, 5 lodges, a crocodile farm and further tourist facilities. Both towns are accessible by road, rail and air. Zambezi National Park adjoins the Matetsi Safari Area which extends to Kazuma Pan, and Hwange National Parks. Current conditions are now affecting visitor numbers and tourism on both sides of the falls, but especially in Zimbabwe.

SCIENTIFIC RESEARCH AND FACILITIES

Apart from the archaeological museum in Mosi-oa-Tunya Park there are no research facilities within the Park, although these exist at the Livingstone Museum in nearby Maramba.

MANAGEMENT

Mosi-oa Tunya National Park is managed by the Zambian Wildlife Authority of the Department of National Parks and Wildlife Service but land planning and development are controlled by Maramba District Council. Victoria Falls and Zambezi National Parks are managed by the Zimbabwean Department of National Parks and Wildlife Management. Six National Monuments in the Park are in the care of the National Heritage Conservation Commission. The guiding objective for the Park is to conserve the area of the falls in its natural state. The area is protected by laws against hunting and the destruction of vegetation and geological features. In Zimbabwe it is covered by four Acts covering the National Museums and Monuments, Environmental Management, Tourism and Forestry. In Zambia it is covered by the Zambia Wildlife Act and the National Heritage Conservation Act Mosi-Oa-Tunya Park is not a major area for wildlife conservation, although wildlife is protected and made visible to tourists as far as possible, and the area of a former zoo upstream has been incorporated as a game park. Development immediately beside the falls is restricted to footpaths, and to the Knife-edge Bridge walk.

However, in the 1990s, the Zimbabwean side prospered more than the Zambian, resulting in economically unbalanced development on either side of the boundary. So between 1994 and 1996, with the aid of foreign funding, the Governments of Zambia and Zimbabwe commissioned a strategic environmental assessment of interrelated impacts for 30 km around the falls and developed a skeleton 10-year management plan for the area of the Parks. This recommended mechanisms for cross-border management of the site and set overall management objectives with specific priorities for five zones. The plan was approved in principle, and awaits the financial and administrative resources needed for its implementation (Nalomino & Meynell, 1997). In 2001 the U.S. Dept of the Interior International Technical Assistance Program (ITAP) began to develop plans for the region, including Mosi-oa-Tunya Park which lies within the huge five-nation Kavango-Upper Zambezi Transfrontier Conservation Area, an agreement to develop which was signed in 2006 (Mittermeier *et al.*,2005). Since 2007 transboundary management of the property has been strengthened by the Joint Integrated Management Plan signed that year which created a Joint Ministerial Committee, Joint Technical Committee and Joint Site Management Committee (UNESCO, 2010).

MANAGEMENT CONSTRAINTS

There has been a large range of developments within the Park to accommodate tourism, much of it built before the Park's establishment. Buildings include two hotels, one recently built very near the falls, and other leisure facilities (lodge, chalets, boat club, field museum and a curio sellers shelter). There are also a very unsightly hydroelectric power station with ancillary works, housing for the station and Park staff, and a few old homesteads and villages. The road and rail links between Zambia and Zimbabwe bisect the Park, crossing the river by the spectacular Falls Bridge, and both railway line and road between Maramba and Kazungula run through the Park above the falls. The Zambian customs and immigration services are stationed in the Park. The water take-off for the power station regularly diminishes the eastern end of the falls in the dry season. A 196m barrage, the Batoko dam on the Zambezi, has been proposed for the Batoka gorges downstream. This would create a 50 km lake, flood several of the gorges in the Park, destroy the habitat of cliff-nesting raptors and expose them to tourist disturbance.

Neither management plan was revised between 1996 and 2007, before which date the lack of cooperation between the two national authorities and of a joint management plan to coordinate the activities of the four main national regulatory agencies aggravated the lack of control (Hanyana, 2002; UNESCO, 2006). Since 2007, joint management has resulted in some improvements (UNESCO, 2010). Cattle grazing is well established within the boundaries and there is gradual encroachment by small-

scale cultivation of maize and sorghum. The spray-forest is vulnerable to disturbance by trampling, which allows serious penetration by alien species such as *Lantana camara*. Upstream, water hyacinth is gaining hold. Fire is also a problem, and where grossly disturbed, the forest does not regenerate easily, giving way to xeric scrub. During 2001 and 2002 severe drought destroyed the grazing and decimated the fauna of the Park which was only supported by feed imported by the Zambian Wildlife Authority. The situation was exacerbated by the small area of the Park, insufficient funding and inadequate manpower. Wildlife in the Zimbabwean part of the site is coming under similar pressures as the rest of Zimbabwe which are said to have led to the destruction of nearly half the wildlife of that country since 2002 (David Shepherd Wildlife Foundation, 2003).

Major present problems are the haphazard proliferation of tourist infrastructure, invasive species, upstream water abstraction and pollution. Visual and aural pollution from development are intensifying. There are 20 helicopter and light aircraft flights a day over the falls, disturbing the wildlife, and 40 cruise boats, some being jet boats, ply above them in Zimbabwe. There are bunji-jumping, a gorge-swing and plans for a balloon to be tethered over the falls, with service buildings on the ground, and a staff of 50-75 employees. Several hotels are have been built within the site on both sides of the river. And the Zambian President has approved a large 5-star hotel / convention hall /golf course / marina development with a secondary 4-star hotel and luxury villas planned along the north bank mostly within the World Heritage site. The management of the Parks is not very effective in the face of these urgent pressures for large commercial developments and the presence of a growing local population (UNESCO, 2007). In Zambia the town of Maramba is expanding rapidly. Local people and businesses are not particularly oriented towards nature conservation. Hoteliers within the Park resent the damage caused to their grounds by monkeys, baboons, hippopotamus and crocodiles. They are also fencing their properties against burglars. Tourist and municipal wastes, including sewage, are polluting both land and water to the detriment of river-based tourism.

STAFF

No current information is available.

BUDGET

No information is available on the government funding for these parks. In the past, the Canadian International Development Agency funded a planning study and since 2001 the U.S. ITAP has done the same for Mosi-oa-Tunya. In 2001-2 the World Heritage Fund granted US$94,500 to increase management capacity through staff training and in 2007 the Fund granted US$30,000 for the preparation of a joint management plan (UNESCO, 2010).

LOCAL ADDRESSES

The Director, The Natural Heritage Conservation Commission, Mosi-oa-Tunya Road, PO Box 60124, Maramba, Zambia.

Chief Wildlife Ranger, Zambia Wildlife Authority, Private Bag 1, Chilanga, Zambia.

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