IUCN Conservation Outlook Assessment 2014 **(archived)**
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Please note: this is an archived Conservation Outlook Assessment for Lake Malawi National Park. To access the most up-to-date Conservation Outlook Assessment for this site, please visit https://www.worldheritageoutlook.iucn.org.

Lake Malawi National Park

SITE INFORMATION

Country:
Malawi
Inscribed in: 1984
Criteria:
(vii) (ix) (x)

Site description:
Located at the southern end of the great expanse of Lake Malawi, with its deep, clear waters and mountain backdrop, the national park is home to many hundreds of fish species, nearly all endemic. Its importance for the study of evolution is comparable to that of the finches of the Galapagos Islands. © UNESCO

SUMMARY

2014 Conservation Outlook

Significant concern

The policy, legislative and planning framework for Lake Malawi National Park is strong, and the key values of the property – its scenic qualities and the evolutionary processes that have led to the development if its extraordinarily rich, endemic fish fauna - remain largely intact. These values are however threatened by a number of insidious factors related to the pressures of a rapidly growing human population causing deforestation and soil erosion in the lake's catchment areas, and ever-more intensive exploitation of fisheries. LMNP is very small (94km2, of which only 7 km2 covers aquatic habitats), accounting for just 0.02% of the lake's surface area. This makes it especially vulnerable to potentially devastating threats from outside its borders, including the threat of large-scale pollution from oil exploration activities in the north of the lake (already underway), or the impact of predators such as the Nile Perch (which might be introduced at some stage, as it was in Lake Victoria).

Current state and trend of VALUES

High Concern
Trend: Data Deficient

Lake Malawi retains its outstanding attributes as one of the world's great freshwater lakes, and its natural beauty remains undiminished. The evolutionary processes that have resulted in the development of an extraordinary diversity of colourful rock-dwelling cichlid fish are likely to be intact since the rocky lakeshore habitats are stable and potential threats (e.g. introduced predators, or large-scale pollution) have not been realized. The limited available evidence (from fisheries surveys) suggests that species diversity and levels of endemism are being maintained, but more systematic monitoring of these key attributes is required.

Overall THREATS

High Threat

The World Heritage property covers just 0.02% of the lake's area and is vulnerable to threats originating beyond its boundaries, including over-fishing and the degradation of aquatic habitats resulting from soil erosion in the lake's catchment areas. The introduction of alien species, particularly top predators such as the Nile Perch, has so far been avoided, but could be potentially catastrophic for the diverse rock-dwelling 'mbuna' fish fauna. Proposed large-scale tourism development at Cape Maclear would be likely to have a significant adverse impact on the property. Oil exploration has begun recently in the northern part of the lake, with all its associated risks for lake ecology, and a second oil concession was awarded in late 2013, covering the southern part of the lake, including the entire property, which is incompatible with its World Heritage status.

Overall PROTECTION and MANAGEMENT

Some Concern

Protection and management activities are severely constrained by inadequate staffing and park operational budgets. Budgets are insufficient to provide the level of management input required, let alone contribute significantly to community needs through benefit-sharing mechanisms. Whilst the legal and policy framework is sound, enforcement is weak. There are no markers to indicate the aquatic boundary of the property, so it is generally not respected by artisanal fishermen, and it is extremely difficult to patrol and enforce.

FULL ASSESSMENT

Description of values

Values

World Heritage values

▶ **Outstanding natural beauty of lake in Rift Valley**
Criterion:(vii)

The lake is characterized by its crystal clear waters, and the diversity of habitats amongst its many rocky islands and shores. It is situated in the Great Rift Valley and set against the wooded hillsides of steep escarpments on either side. Much of the shoreline is composed of massive rounded granite boulders, partially submerged and washed by wave action. Between the steeper rocky sections are sun-drenched sandy bays, with inflowing rivers and streams creating the occasional reed-filled lagoon and lake-edge swamps. The juxtaposition of these landscape elements creates scenes of outstanding natural beauty (SoOUV, 2010).

▶ **Key example of evolutionary processes**
Criterion:(ix)

The lake provides an extraordinary example of evolutionary processes, the phenomenal adaptive radiation of cichlid fishes (known locally as mbuna) along its rocky shores resulting in an array of species and varieties unmatched anywhere else in the world. The speciation of cichlid fishes in Lake Malawi is considered to be of equal or greater importance for the study of evolutionary processes as the Galapagos Island finches or honeycreepers of Hawaii (IUCN Evaluation, 1980, SoOUV, 2010)

► Extraordinary diversity of fish species

Criterion:(x)

The lake is thought to have the largest number of fish species of any lake in the world, with estimates varying between about 1,000 (SoOUV, 2010) and 3,000 species (UNEP-WCMC, 2012), of which as many as 800 belong to the family Cichlidae. Lake Malawi is home to 15% of the world's freshwater fish species (Chafota et al., 2005)

► Extremely high levels of species endemism

Criterion:(x)

Endemism is extremely high, with more than 98% of cichlid fish known only from Lake Malawi (SoOUV, 2010).

Other important biodiversity values

► Terrestrial biodiversity

The terrestrial part of property comprises wooded hillsides that protect part of the catchment of the lakeTthe biodiversity of these terrestrial habitats includes a few notable species. Mammals include hippo (particularly in the Monkey Bay area) duiker, baboon, vervet monkey, bush pig, warthog and occasional elephant (reported as coming down to the lake between Mwenya and Nkhudzi hills). Leopard, kudu, bushbuck and impala have been reduced or extirpated from the area. The park is rich in birdlife including fish eagle along the shoreline. The islands, especially Mumbo and Boadzulu, are important nesting areas for white-throated cormorant which number several thousand. Reptiles include crocodiles and abundant monitor lizards on Boadzulu Island.(SoOUV, 2010)

Assessment information

Threats

Current Threats

High Threat

The main threats to the unique fish fauna are related to over-fishing and degradation of aquatic habitats as a result of deforestation and soil erosion in the lake's catchment areas. Smaller-scale, localized threats include over-fishing and translocation of fish to 'wrong' localities by those involved in the aquarium fish trade; localized problems of pollution and over-use of resources around fishing villages; and problems associated with the recent introduction of industrial-scale fish farming operations using floating cages in the lake.

▶ Solid Waste

High Threat
Inside site
Outside site

Tourist and municipal wastes, including sewage, are polluting both land and water. This is a particular problem around the fishing village enclaves within the property, but also affects all lakeshore communities.

▶ Fishing / Harvesting Aquatic Resources

Low Threat
Inside site
Outside site

Although most of the (considerable) worldwide demand for Lake Malawi's colourful rock-dwelling 'mbuna' cichlids is met through captive breeding programmes in other countries, there is still a significant trade in wild-caught fish from Malawi and Tanzania. The effects of this trade have not been investigated, but it is thought that it may lead to (1) local over-fishing of particular (high-value) species and (2) re-introduction of fish to parts of the

;lake where they do not naturally occur (most of the mbuna have evolved in particular parts of the lake isolated from other areas of potentially-suitable habitat by habitat barriers such as lagoons or stretches of sand)

► Housing/ Urban Areas

High Threat
Inside site
Outside site

The enclave villages supported about 5,400 people in 1977 (UNEP-WCMC, 2012), but have expanded considerably in subsequent years, creating ever-increasing demands on the area's natural resources

► Marine/ Freshwater Aquaculture

Low Threat
Outside site

A recent development in Lake Malawi has been the introduction of large-scale fish-farming in floating cages. This carries the risk of introduced disease, and leads to eutrophication of lake waters as a result of the extra nutrient load associated with feeding and excretion in the cages.

► Fishing / Harvesting Aquatic Resources

High Threat
Inside site
Outside site

There are five fishing village enclaves within Lake Malawi National Park (Chembe, Masaka, Mvunguti, Zambo and Chidzale), and over-fishing is reported to be a serious problem, with many species suffering dramatic declines in numbers (Pers. comm., 2006; Chafota et al., 2006). However, it is reported that that the populations and distribution of mbuna cichlids in the National Park have not changed (GMP, 2007, based on fisheries data collected since the 1970s). A new current fisheries survey needs to be undertaken in order to be able to evaluate the current status of the fish populations.

► Erosion and Siltation/ Deposition

Very High Threat
Inside site

Outside site

Satellite imagery of the lake catchment areas reveals dramatic declines of vegetation cover and increased incidence of bare (eroded) soil between 1984 and 2004 (Pers.comm., 2006) implying increased rates of surface run-off and soil erosion. This is leading to increased rates of siltation, decreased water clarity and alterations in water nutrient balance. The long-term ecological consequences of such changes are not fully understood, but it is likely to have an adverse effect on the rock-dwelling mbuna cichlids many of which graze algae from submerged rocks. Sedimentary deposits on these rocks and decreased penetration of light are likely to interfere with these fish feeding grounds.

► Subsistence hunting

Low Threat
Inside site
Outside site

Various kinds of resources are used illegally from the terrestrial areas of the park. Poaching is an ongoing threat, as is the grazing of livestock, tree cutting for building poles, timber and firewood, extraction of sand, gravel and rock for building

Potential Threats

Very High Threat

Potentially catastrophic developments could result from ongoing oil exploration activities in the far north of the lake; or from ill-conceived ideas of introducing Nile Perch (or other alien species) into the lake. Tourism is developing fast and inappropriate developments or activities could threaten the areas scenic beauty and aesthetic qualities.

► Tourism/ Recreation Areas

Low Threat
Inside site
Outside site

Although all the existing tourism facilities in and around the park appear to be low-impact establishments, there is a real risk of inappropriate

developments that could impact the natural beauty and other attributes of the area, such as the large scale proposed development at Cape Maclear, which would include a 5-star hotel, golf court, casino, etc. This is clearly incompatible with the World Heritage status of the property.

► Oil/ Gas exploration/development

Very High Threat
Outside site

Off-shore oil exploration activities have recently been commenced in the northern part of the Lake (Ntaukira, 2012). Although this is some distance from the World Heritage property it presents the risk of oil and other pollutants spilling into the lake, which would have far-reaching consequences. Oil drilling anywhere in the lake could affect the entire lake ecosystem and represents a significant threat to the unique assemblage of endemic fish species, other biodiversity and associated evolutionary processes, which are the basis for the property's inscription on the World Heritage List (SOC Report 2013). In late 2013, a second oil concession was awarded, which covers the southern part of the lake, including the entire property. This concession is incompatible with the property's World Heritage status, and should be adjusted to exclude the property (UNESCO/IUCN Mission Report, 2014).

► Invasive Non-Native/ Alien Species

Very High Threat

The adaptive radiation of fish species within Lake Malawi is a unique phenomenon that results from its ecological isolation. This could be seriously upset through the introduction of species from elsewhere which have not co-evolved with the Lake Malawi fauna. Particular threats are the possible introduction of Nile Perch, a top-level predator that was introduced to Lake Victoria with dire consequences for many rock-dwelling cichlids there (similar to those in Lake Malawi). Another potential threat arises from a mooted project to open a new channel to the Zambezi which could allow colonization of the Lake by the predatory Tiger Fish with unknown ecological consequences (Pers. comm., 2006)

Protection and management

Assessing Protection and Management

► Education and interpretation programs

Some Concern

An Environmental Education Centre was built at Monkey Bay in the 1980s (with funding from WWF-US) and has been a popular and heavily-use facility. The DNPW was actively seeking donor support to rehabilitate and upgrade these facilities at the time of preparation of the GMP (2007).

► Relationships with local people

Some Concern

Collaborative wildlife management is one of the core programmes detailed in the General Management Plan (2007-11), involving co-management of resources by park authorities and Village Trusts and/or fishermen's groups. Such community-based groups may be granted access rights to specified resources (including forestry products from the terrestrial zones and aquarium fish in the aquatic zones) within designated 'Community Resource Management Zones'. At the time of preparing the GMP (2007), three Village Trusts had been established and additional trusts were expected. However, whilst this new approach to community relations is developing in promising directions, the 100m-wide 'aquatic zone' remains 'a source of continuous and escalating conflict with rural communities' (GMP, 2007). Whilst the ban on fishing in this area is respected by aquarium fish traders, it is routinely flouted by artisanal fishermen (GMP, 2007)

► Legal framework and enforcement

Some Concern

The principal legislation is the National Parks Act No. 11 of 1992, amended in 2004. There is a progressive Wildlife Policy (2000) which outlines the principles for collaboration with communities, the private sector and other key stakeholders. Whilst the legal and policy framework is sound,

enforcement is weak (see under management effectiveness, below)

► Integration into regional and national planning systems

Mostly Effective

Management of Lake Malawi National Park (LMNP) is closely aligned with national policies and procedures of the Department of National Parks and Wildlife (DNPW), as detailed in the DNPW Strategic Plan 2006-11 (GMP, 2007). It is also closely integrated with the regional plans, including the Strategic Plan of the Nankumba Peninsula Traditional Authority.

► Management system

Mostly Effective

The Lake Malawi National Park has been under planned management since its establishment in 1980, the latest GMP covering the period 2007-11 (GMP, 2007). Management is carried out by staff of the government's DNPW, with increasing emphasis on (1) community participation and benefit sharing and (2) involvement of the private sector in provision of tourist accommodation and related activities. The park is zoned into 'Special', Wilderness, Semi-Wilderness and Utility Areas and Community Resource Management Zones (with varying degrees of protection). A 100m-wide Aquatic Zone is the subject of a separate management plan and provisions (2002).

► Management effectiveness

Serious Concern

Management is severely constrained by inadequate staffing and park operational budgets. Staff morale is reported to be very low, staff accommodation poor, equipment and facilities lacking, and operational budgets insufficient to fuel boats and vehicles or support other essential tasks (GMP, 2007). There are no staff or facilities on any of the islands, despite the presence of fish landings and 'temporary' settlements used by fishermen to access more remote fishing grounds.

► Implementation of Committee decisions and recommendations

Data Deficient

There have been no committee decisions or recommendations since the

property was listed in 1984

► Boundaries

Serious Concern

LMNP covers a relatively small total area (94 km2), but includes 16 separate components (the Cape Maclear peninsula, three other disjunct mainland areas and 12 islands), spread across an area 40 km E-W and 50 km N-S in the southern part of the lake. Each of these 16 component areas is associated with a 100m-wide aquatic zone, (which covers only 7 km2, but protects the mbuna fish habitat, the ‘core value’ of the property). The park is thought to include the habitat of a remarkably high proportion of the mbuna fish species (500 species, GMP, 2007), making its configuration highly efficient from a biodiversity protection perspective. However, there are no markers to indicate this important aquatic boundary, it is generally not respected by artisanal fishermen, and it is extremely difficult to patrol and enforce. The property is also considered small and geographically limited to protect the full range of unique endemic fish species, many of which are confined to individual islands or quite small areas of habitat throughout the lake. Furthermore, the small size of each component of the serial site makes them vulnerable to threats from outside the property (SOC Report).

► Sustainable finance

Some Concern

In 2005/6 LMNP was managed on a budget equivalent to about US$ 30,000, with revenues totaling around US$20,000 (GMP, 2007). Half of LMNP revenues come from park entry fees, with significant contributions from tourism concession and research fees. Revenues were expected to increase to around US$ 66,000 by 2010/11 (at the time the GMP was prepared in 2007). Budgets are insufficient to provide the level of management input required, let alone contribute significantly to community needs through benefit-sharing mechanisms. Three main tourism accommodation concession opportunities had been identified by 2007, but only one of these was operational at the time (GMP, 2007)

► Staff training and development

Some Concern

The GMP identifies a requirement for a staff establishment of 74 positions, of which 43 were filled by 2007. The DNPW has developed a staff training plan, but the role of on-the-job mentoring is identified as the most effective component of staff training at LMNP (GMP, 2007). There is no indication of specific identified training needs.

► Sustainable use

Some Concern

Sustainable use of specified forestry resources from designated Community Resource Management Zones in the terrestrial parts of the park is an integral part of the parks management programme. This is implemented through collaborative management agreements between the DNPW and Village Trusts (of which three had been established by 2007, at Chembe, Kasankh and Tiyanjane). Resource use rights may be granted for sustainable low-impact use of aquarium fish from within the aquatic zones of the park at some stage in future (GMP, 2007).

► Tourism and interpretation

Mostly Effective

In 2005/6, tourism contributed about 75% of park revenues, based around snorkeling and diving in the crystal clear waters and other aquatic activities. Three main tourism accommodation concessions have been identified, of which one was operational in 2007, and another was under construction (GMP, 2007). Small-scale lodges and tented camp facilities are envisaged, with a maximum of 50 beds per facility. There are reported to be some problems associated with sewage and waste management by some hotels.

► Monitoring

Serious Concern

Some general monitoring needs that would assist with development of an informed adaptive management approach are identified in the GMP (2007), but this is clearly not yet a well developed aspect of management at LMNP. The Fisheries Department has been carrying out a Catch Assessment Survey on a regular basis since the 1970s, from which it is concluded that (1) populations of the small rock-dwelling mbuna cichlids are stable, and (2)

most other categories of fish are in serious decline through over-fishing (GMP, 2007) However, the monitoring system would benefit from a new comprehensive fish survey undertaken by an independent body.

▶ **Research**

Some Concern

There is a Fisheries Research Station in the park at Monkey Bay, but the park does not have a significant management-orientated research programme. Research activities by foreign scientists are subject to payment of fees, which are a significant source of funding for the park (GMP, 2007)

Overall assessment of protection and management

Some Concern

Protection and management activities are severely constrained by inadequate staffing and park operational budgets. Budgets are insufficient to provide the level of management input required, let alone contribute significantly to community needs through benefit-sharing mechanisms. Whilst the legal and policy framework is sound, enforcement is weak. There are no markers to indicate the aquatic boundary of the property, so it is generally not respected by artisanal fishermen, and it is extremely difficult to patrol and enforce.

▶ **Assessment of the effectiveness of protection and management in addressing threats outside the site**

Data Deficient

Efforts to engage local communities in the enclave villages and other neighbouring areas through co-management of Community Resource Management Zones are at an early stage and are yet to deliver clear benefits

State and trend of values

Assessing the current state and trend of values

World Heritage values

► Outstanding natural beauty of lake in Rift Valley

Low Concern
Trend:Stable

The scenic values of the lake are largely dependent on large-scale attributes of its landscapes, the nature of the rocky shore-lines, beaches and islands set against the wooded hillsides of the Rift escarpment. These attributes are largely unaffected by development, but the aesthetic values of certain locations are being diminished by expanding human settlement, related problems of waste management and the sometimes conflicting demands of tourism and other local economic activities.

► Key example of evolutionary processes

Data Deficient
Trend:Stable

The evolutionary processes exemplified by the adaptive radiation of mbuna cichlid fish are not fully understood, but circumstantial evidence suggests that evolution is largely driven by the isolation of ‘islands’ of suitable habitat. Since the rocky lakeshore habitats are stable and potential threats (e.g. introduced predators, or large-scale pollution) have not been realized, it is reasonable to assume that related evolutionary processes continue.

► Extraordinary diversity of fish species

High Concern
Trend:Data Deficient

According to Fisheries Department Catch Assessment Survey data, populations of mbuna cichlids (which represent the property’s most globally-significant value) appear to be stable in LMNP over the past few decades (GMP, 2007). However, a new comprehensive survey needs to be undertaken in order to be able to evaluate the current status of the fish populations. The diverse communities of endemic rock-dwelling Mbuna cichlid fish appear to be resilient to present levels of fishing, but more systematic monitoring is required.

► Extremely high levels of species endemism

Low Concern
Trend:Stable

According to Fisheries Department Catch Assessment Survey data, populations of mbuna cichlids appear to be stable in LMNP over the past few decades (GMP, 2007). There have been no reports of any species becoming extinct (although data are understandably very limited).

Other important biodiversity values

► Terrestrial biodiversity

The terrestrial part of property comprises wooded hillsides that protect part of the catchment of the lakeTthe biodiversity of these terrestrial habitats includes a few notable species. Mammals include hippo (particularly in the Monkey Bay area) duiker, baboon, vervet monkey, bush pig, warthog and occasional elephant (reported as coming down to the lake between Mwenya and Nkhudzi hills). Leopard, kudu, bushbuck and impala have been reduced or extirpated from the area. The park is rich in birdlife including fish eagle along the shoreline. The islands, especially Mumbo and Boadzulu, are important nesting areas for white-throated cormorant which number several thousand. Reptiles include crocodiles and abundant monitor lizards on Boadzulu Island.(SoOUV, 2010)

Summary of the Values

► Assessment of the current state and trend of World Heritage values

High Concern

Trend: Data Deficient

Lake Malawi retains its outstanding attributes as one of the world’s great freshwater lakes, and its natural beauty remains undiminished. The evolutionary processes that have resulted in the development of an extraordinary diversity of colourful rock-dwelling cichlid fish are likely to be intact since the rocky lakeshore habitats are stable and potential threats (e.g. introduced predators, or large-scale pollution) have not been realized. The limited available evidence (from fisheries surveys) suggests that species diversity and levels of endemism are being maintained, but more systematic monitoring of these key attributes is required.

Additional information

Key conservation issues

▶ Protection and law enforcement

Local

Increase protection and law enforcement effectiveness, particularly through increased investment in patrols by boat of the aquatic zones of the park to eliminate illegal fishing.

▶ Boundary demarcation, particularly off-shore aquatic zone boundaries

Local

Use floating buoys to clearly demarcate the off-shore boundaries of the park so that fisherman are clearly aware of restrictions

▶ Extension of site and definition of buffer zones

National

Undertake a comprehensive planning process to identify critical habitats for expansion of the property, so that it encompasses a greater proportion of the unique endemic cichlid fish species found across the length and breadth of the lake.

▶ International collaboration

National

Establish formal mechanisms to enhance international cooperation between the three countries whose territories include parts of the lake, so as to enable coordinated action in all aspects of management, including catchment protection, pollution control and planning of an extended trans-boundary world heritage property

▶ Education programmes

Local

Strengthen education programmes to foster an appreciation of the outstanding values of the property and the requirements for its protection and management at community, local and national level

▶ Catchment protection

National

Develop far-reaching land-use standards and practices throughout the Lake Malawi catchment so as to prevent excessive erosion, run-off and siltation of the Lake.

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	WB WEF LDCF		Shire River Basin Management Programme

Compilation of potential site needs

№	Site need title	Brief description of potential site needs	Support needed for following years
1	N/A	There needs to be an up-to-date survey of the fish stocks and species populations within the NP. This has not been done for many years and the current status is unclear.	

REFERENCES

№	References
1	Chafota, J, N. Burgess, M. Thieme and S. Johnson (2005). Lake Malawi Ecoregion Conservation Programme In: Priority Conservation Areas and Vision for Biodiversity Conservation. WWF SARPO
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