



Photo: Ron Williams



Lake Malawi is the ninth largest lake in the world where over one thousand species of fish have evolved— more than in any other lake in the world. Armed with the first underwater photos and new scientific data on the species richness of Lake Malawi, the Government of Malawi created Lake Malawi National Park (LMNP) in 1980. UNESCO designated it as a World Heritage Site in 1984 to:

Encourage participation of the local population in the preservation of their cultural and natural heritage;

Encourage international cooperation in conservation of our world's cultural and natural heritage

The park includes the bay, the surrounding islands and several national forest reserves. Chembe Village had a population close to 3000 when the park was created. It now has over 15,000, putting a serious strain on local natural resources and threatening the sustainability of the park.

World Wildlife Fund (WWF) Finland created a local NGO - Health, Education, Environment, and Economic Development (HEEED (NEDI)) to work within LMNP and address the needs of both the people and the park. HEEED fosters sustainable projects that promote good health and human well-being. The twin goals of serving humanity and the environment are inextricably linked.

LMNP is challenged by fundamental questions concerning development and conservation. In all of the Great Lakes of Africa human activities threaten the existence of the most diverse vertebrate communities in the world. Lake Malawi is changing dramatically due to deforestation which increases siltation and enhances the habitat for the bilharzia snail vector to survive and covers the algae upon which the cichlids feed. The resulting reduced visibility could lead to fish breeding failures.

Fishing with beach seine nets threatens the extinction of many shallow water cichlids.

Sheltered from the seasonal fierce north-easterly winds known locally as *mwera* and approached via a scenic winding pass through the well-wooded mountains of the Nankumba Peninsula, Chembe Village sits at the centre of a spectacularly beautiful bay generally referred to as Cape Maclear. It is the centre of Lake Malawi's most popular resort area with many accommodation options. Its crystal clear, sparkling waters offer a wide variety of activities and sports. It is also the centre of the World's first fresh water national park famous for its cichlid fishes.

Professor Kenneth McKaye, a world authority on the cichlids of Lake Malawi has lived in and studied the area for more than 30 years. Here he highlights some of the challenges facing this rich national treasure.

BILHARZIA

Alarmist travel advisories on the internet warn of the dangers of bilharzias at Cape Maclear. Regular monitoring by Dr. McKaye indicates risk only where man and snail interact – on Chembe Village beach.

National Park dive areas free of people are FREE OF BILHARZIA – a disease that is easily detected and treated



Local extinctions have already taken place throughout Lake Malawi in these habitats: the sleeper cichlid, *Nimbochromis livingstoni*, was common when I began to study this species in 1977. At that time, males held territories every 10-30 meters. Since 1990, they have vanished from Chembe Beach.

Lake Malawi's temperature is predicted to rise by 1-2 degrees due to global warming. This could have a catastrophic effect if the lower anoxic (oxygen-less) layer was to warm and rise to the surface. This non-oxygenated water would kill all fish. A less drastic warming of the water could change the breeding seasonality of the cichlids and the productivity of zooplankton and phytoplankton – the basic foodstock that ultimately supports all fish-life in the lake. We do not know the consequences of these slow warming trends.

Human population growth and over-fishing pose the greatest threat to the cichlid fishes that the ecosystem is presently facing. Continuous fishing has reduced many populations to sizes that are no longer viable. At the same time, industrialization of the shoreline of Lake Malawi must continue to be discouraged at all costs and oil drilling should not be permitted.

A major human health problem along the shores of Lake Malawi has been caused by overfishing, resulting in an increase of the human disease bilharzia (schistosomiasis). In the late 1970's, the open water of Lake Malawi was free of bilharzia. Research in the early 1980's indicated that Lake Malawi was relatively free of bilharzia because cichlid fishes feed on the snail bilharzia vectors. When the fish were removed by overfishing, the disease appeared and expanded as predicted. Recent research indicates that bilharzia enhances the transmission of HIV/AIDS. Over-fishing and deforestation could lead to dramatic increase in HIV/AIDS along the lakeshore due to increased bilharzia.

Species diversity

Preserving species diversity is critical. Their presence or absence has a practical impact on human health, as well as economic growth. The drying of rivers and loss of snail feeding fishes is catastrophic for the health of Lake Malawi and the people living along its shores.

However, ongoing research by HEEED Malawi and Department of Nutrition and HIV/AIDS Malawi in the Office of President and Cabinet gives cause for optimism. Recent data supported by the UNDP/GEF Small Grants Programme indicate that the snail feeding fishes are returning, and the numbers of snail vectors are declining. Bilharzia and HIV/AIDS rates along the lake shore are also dropping. Our hope is that with proper management of the Lake Malawi ecosystem the health and economic well-being of all will be enhanced. At the same time Malawians and the world can continue to enjoy and appreciate one of the great biological wonders of the world—the cichlid fishes of Lake Malawi.

Previous page:
Japan TV
underwater film
unit at work at
Cape Maclear



Chembe Village,
Cape Maclear
Photo: K. McKaye



View of West
Thumbi
Photo: K. McKaye



Guided
underwater tours
Photo: K. McKaye



Beach seine nets
contribute to
overfishing



Staff at HEEED -
self-sufficiency
through the
sustainable use of
natural resources

(www.heeedmalawi.org)