



Flamingos on soda crater lake, Central Island



Cattle

Cormorants

KENYA'S JADE JEWEL IN PERIL FROM ETHIOPIA PLANS

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Patrick is a doctor currently living in Bristol, England where he is training to be a General Practitioner. He was born and raised in Nairobi where his parents still live, and hopes to return there to work once he is fully qualified. He has a strong interest in tropical and expedition medicine and has been a passionate life long enthusiast of Africa's wild places, its people and its wildlife.

Lake Turkana and the Kenyans who live around and off its fabled jade green waters, are under threat from the demands of development in neighbouring Ethiopia.

Anyone who has been lucky enough to visit Lake Turkana will know what a unique and special place it is. But for how much longer?

Ethiopia's plan to use water from the Omo river to generate electricity, food and development may siphon off precious water that has fed Turkana for centuries.

Known as the Jade Sea because of the colour of its waters, it is the world's largest permanent desert lake, running 260km from north to south. It was the last of the great African lakes to be 'discovered' when the Austrian explorer

Count Teleki visited the lake in 1888. He found the alkaline waters of the lake to be teeming with fish and encountered animals such as elephant along its shore. Multiple discoveries of early hominid fossils in the area have led to it being dubbed the 'Cradle of Mankind', and in the 1960s the lake was reported to hold the greatest concentration of Nile crocodiles on earth.

As a casual visitor it is easy to get caught up in the rugged romance of the landscape, and its history, thereby missing the bigger picture. Although the landscape is not much changed, the environmental and social aspects of modern Turkana are spectacularly different from that of Teleki's time and the lake is facing some very serious ecological challenges.

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Cattle Egrets on the lake shore



Cormorants on the beach, South Island



Dead Soft Shell Turtle in fishing camp

An estimated 300,000 Kenyans, mainly from six tribal groups, rely on the lake for their livelihoods, mostly through fishing and agro-pastoral means. The Turkana region has suffered from a severe lack of government investment and the people here are amongst Kenya's poorest with 94% living below the poverty line and in some areas up to 50% of the population reliant on food aid for survival'. The very dry harsh climate makes for tough living conditions and this, coupled with severe recent droughts, has left many people destitute following the loss of all their livestock. So even more people are looking to the lake and fishing as a means for survival.

The story of the complex modern issues affecting this mighty lake is a fascinating and intriguing one that pulls together a range of important current topics that are pertinent to Africa as a whole.

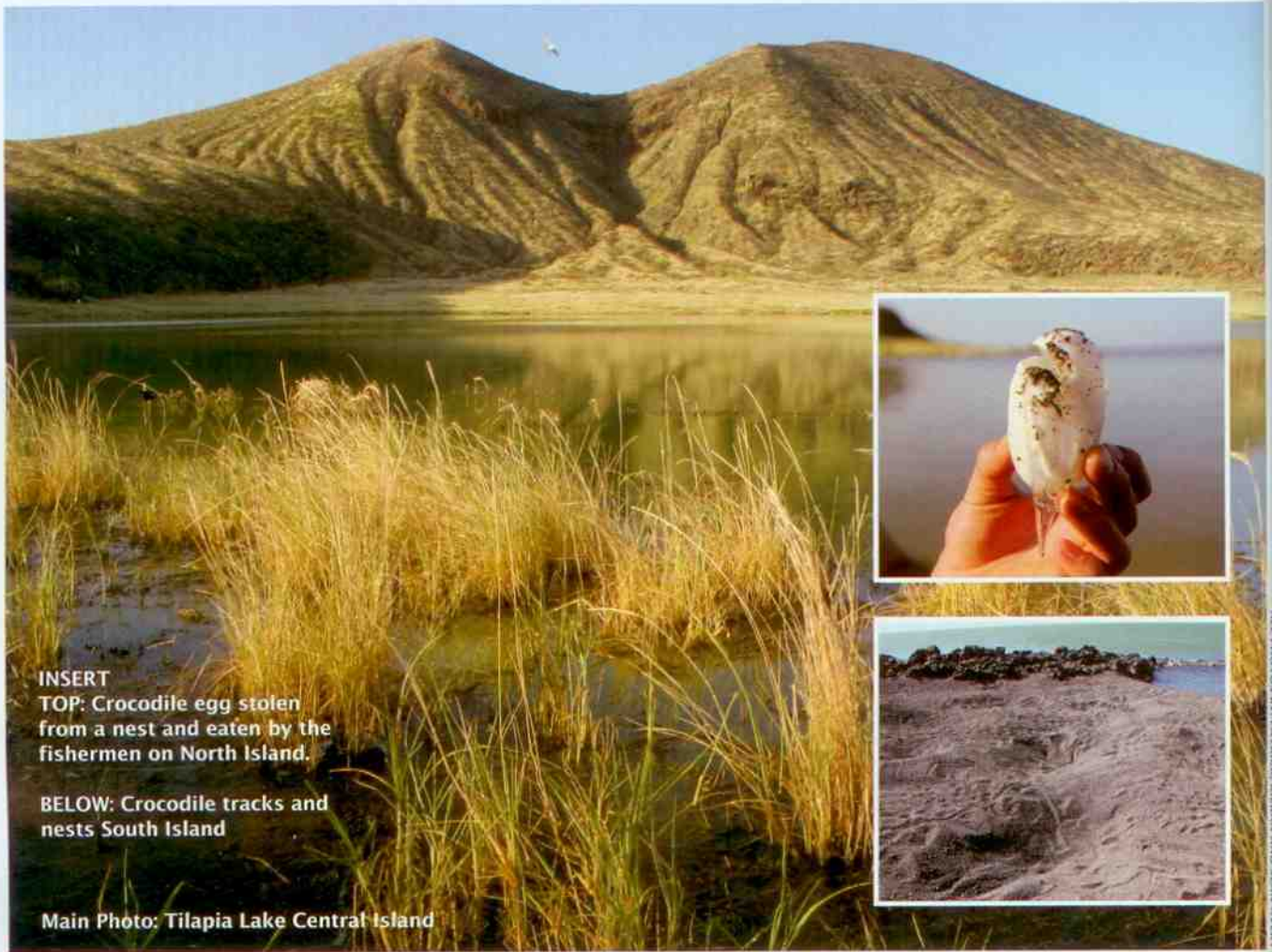
300,000

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I have been privileged to visit Lake Turkana on at least 10 occasions. Getting to the lake takes two long days of driving on rough dirt roads through very wild countryside. The area is frequently subject to tribal tension through banditry and livestock rustling, a situation exacerbated by the widespread availability of modern weapons from neighbouring war zones. These trips have generated in me a great

passion for this wild piece of Africa as well as its culturally diverse people. I have recently returned from a 10-day scientific expedition to the lake with my brother and my father, who is an engineering hydrologist, and who has become one of the modern experts on the lake's hydrology. Through our experiences of the lake over the last 30 years we have noticed a lot of changes, and our most recent trip was thought-provoking.

The lake has no outflow apart from natural evaporation and 80-90% of its inflow comes from a single source, the Omo river, which flows south out of the Ethiopian highlands, ending in a delta at the Lake's northern end². There are three areas on the lake that are conserved as national parks under the jurisdiction of the Kenya Wildlife Service (KWS). These include two large volcanic islands (Central Island and South Island) and a large piece



INSERT

TOP: Crocodile egg stolen from a nest and eaten by the fishermen on North Island.

BELOW: Crocodile tracks and nests South Island

Main Photo: Tilapia Lake Central Island

SINCE 2006, THE ETHIOPIAN GOVERNMENT HAS BEEN BUILDING AN ENORMOUS 1800MW HYDROELECTRIC POWER SCHEME IN THE MIDDLE OMO RIVER BASIN. THE GIBE III DAM IS ALREADY 40% COMPLETED BUT WAS INITIATED WITHOUT ANY PROPER ENVIRONMENTAL IMPACT ASSESSMENT OF THE POTENTIAL DOWNSTREAM EFFECTS ON THE LAKE.

of land adjacent to the lake on its eastern shore, known as Sibiloi. These parks are listed by UNESCO as World Heritage Sites for a number of reasons including their importance as crocodile breeding areas and as a stop over for

migrating palearctic bird species. The area also supports hundreds of native bird species. Sibiloi protects a decent number of plains game as well as smaller numbers of predators including lions, cheetah, leopards and hyenas.

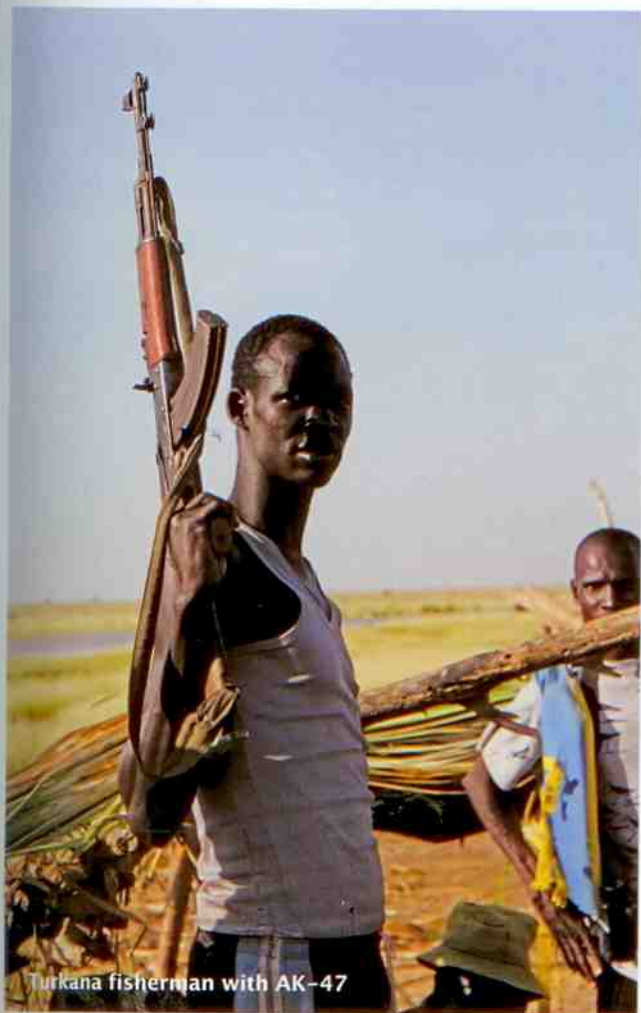
Sadly the wildlife occupying the non-protected shores of the lake has been decimated for bushmeat consumption and the elephants of Teleki's time are long gone. Even within Sibiloi there is much encroachment from people and their livestock and two years ago we heard several poachers with guns shooting at a herd of zebra within five km of the park headquarters at Alia Bay.

Since 2006 the Ethiopian government has been building an enormous 1800MW hydroelectric power scheme in the middle Omo River Basin. The Gibe III dam is already 40% completed but was initiated without any proper environmental impact assessment of the potential downstream effects on the Lake². Chinese banks have reportedly agreed to provide funding to complete

²Avery ST. Hydrological impacts of Ethiopia's Omo basin on Kenya's Lake Turkana water levels and fisheries. Final Report prepared for the African Development Bank, Nov 2010.

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Turkana fisherman with AK-47



Fishing nets on North Island



Nile Perch caught by fishermen

the scheme. Two further hydro schemes are planned downstream at Gibe IV and V. The Kenyan Government signed a memorandum of understanding to buy 500MW of electricity from Gibe III once it is complete although the impacts to Lake Turkana had not been published at that time. Ethiopia predicts that power exports from Gibe III could bring in \$440 million annually and will surpass coffee as the country's most valuable export³. This sort of development utilises a clean renewable energy source and is seen as vital for the growth of the Ethiopian economy and for the future energy security of the whole region, although it makes Ethiopia ever more reliant on hydropower, leaving its electricity supply vulnerable in drought years.

My father calculates that to fill the dam over the proposed course of three years will cause the lake to drop by two metres. A figure of 7-10 metres has been widely quoted but this is based on unsubstantiated calculations that a large proportion of Gibe III's water will be lost to the Omo due to underground cracks in the underlying rock formations⁴. The lake level should eventually restore but the flood cycles that the lake's plankton and fish species thrive on will potentially be lost because the dam will regulate any floods originating from the upper Omo basin. It is proposed that there will be a release of a simulated flood from Gibe III for 10 days every September but this will be very different from the natural state when the river would rise

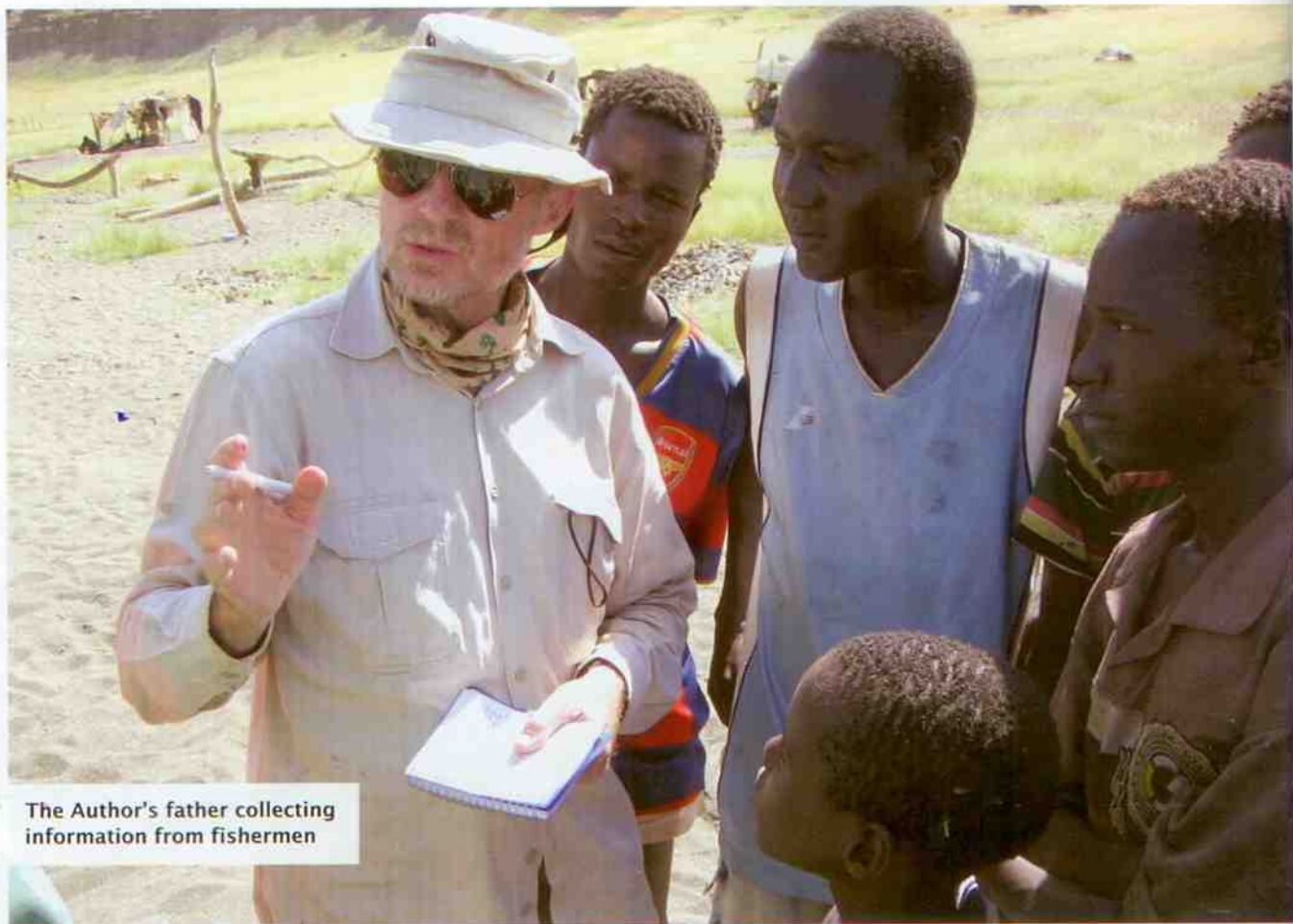


Dead tilapia, Turkwell delta



Catfish skeleton in fishing camp, South Island

³Ethiopia's Gibe III dam sowing hunger and conflict. *International Rivers*, October 2009.
⁴ARWG (Africa Resources Working Group), January 2009. A Commentary on the Environmental, Socioeconomic and Human Rights Impacts of the Proposed Gibe III Dam in the Lower Omo River Basin of Southwest Ethiopia, ARWG-GIBE.org



The Author's father collecting information from fishermen

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and fall over several months. The exact impact of the loss of these large floods and the nutrients they bring is not yet fully certain but one would suspect that it will have a negative impact on fish populations that rely on the seasonal inundation of the lake shore to trigger their breeding cycles. The loss of seasonal flooding of the lower Omo valley will also affect the people there who depend upon flood-recession agriculture to grow their crops.

The dam itself is not the immediate challenge however, because the Ethiopian Government is now

developing a huge 150,000 plus hectare irrigation scheme in the Lower Omo near the Lake, the Kuraz Sugar Cane Development Project. The scheme will need 19% of the total annual Omo flow and up to 135,000 hectares of the plantation has been taken from the Tama Wildlife Reserve and the Omo and Mago National Parks⁵. The Lower Omo is also a UNESCO listed World Heritage site so the national park excisions are extraordinary. The Ethiopian Government says that the project will address the domestic sugar demand as well as generating

150,000 much-needed jobs. The local infrastructure will benefit from new roads and a new bridge over the lower Omo. Once again there has not been any publicly disclosed environmental and social impact assessment of these developments and the knock-on effects on Lake Turkana are a growing concern.

The Ethiopian government insists that the indigenous peoples of the lower Omo valley have been consulted as stakeholders in the new scheme on their tribal lands but there is much criticism growing from the likes of the NGO Survival International, with reports that these people are being forcibly removed from their lands by the Ethiopian authorities and re-housed in new villages to make way for the development. There is much concern about further marginalisation of the rightful owners of the land. The loss of 19% of water from the Omo will be

⁵Enawgaw C, Deksis D, Timer G. Plantation development versus wildlife conservation in the Omo-Tama-Mago complex. Ethiopian Wildlife Conservation Authority, September 2011.

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dramatic and my father's model predicts that the lake will drop permanently by five metres.

It goes without saying that Africa needs to develop in order to improve food security and an unfortunate cost of this is the impact to the environment. The question is what is the limit point at which we say the benefit in terms of development no longer justifies the social and environmental costs?

The lake is under plenty of pressure locally too. It is heavily utilised mainly by the Turkana tribe as a fishing resource. The people doing the fishing get paid very little for their efforts and most of the fish is dried and shipped to western Kenya or the DRC. When I first visited the lake as a child you would see huge crocodiles at numerous places along the shoreline. Sadly on our most recent trip we only counted 22 crocodiles in eight days on the lake. During this time we travelled the entire length of the lake by boat and visited the Omo delta, as well as the three protected areas including Central Island, which was famous for its huge numbers of crocodiles. Unfortunately we did not visit Alia Bay or Koobi Fora, two traditional crocodile strongholds. We found numerous remains of crocodiles, pelicans and Soft-shell turtles in the many fishing camps that we visited around the lake. These are killed, sometimes unintentionally, for food with the added bonus that with fewer crocodiles there is less competition on fish and less danger to the fishermen. We also saw the fishermen digging up crocodile nests and eating the

eggs. From our own observations and from speaking to the local people it would appear that the predatory fish population is being depleted too and the fishing is more widespread than we realised. The lake once held a substantial hippo population but they too have mostly been eaten and we did not see a single hippo on the lake.

The sad thing is that much of the evidence of over-fishing and crocodile killing came from areas that are supposedly protected. All three protected areas are meant to be a haven for wildlife with no commercial fishing allowed within 2km of shore. Sadly all three are heavily utilised by fishermen. On South Island, which is more than 10 km long, we saw semi-permanent fishing camps but there are only two KWS rangers tasked with protecting the island. They are stationed on the mainland 40 minutes boat journey away, have limited resources, and only visit the island periodically. Local fishermen complained of corrupt practices. It is very hard to see how the crocodiles and turtles will survive when the few protected areas where they can breed are being exploited by commercial fishing. On a positive note, we did see over 100 hundred species of birds on the lake during our trip, including a large number of migratory plovers, raptors, gulls and terns.

It is very sad to see the lake changing so much but when one spends time with the local fishermen and gets to understand how impoverished and poorly educated they are one realises that the daily struggle for survival does

not allow time for forward thinking. They live hand to mouth. As such they augment their diet in any way that they can, to the detriment of the wildlife, the lake and future generations of Kenyans. The reality is that crocodiles are very dangerous and damage their nets, and if we were in the same position we would want to get rid of them too. I think the key is to provide the animals with enough genuinely protected space whilst educating the fishermen and encouraging government investment in the region to improve the opportunities for those who live there, and ensure regulated fishing on the Lake. The reality is that this seems very unlikely to happen any time soon and if we are not careful irretrievable losses may result unless a serious and concerted effort is made to address this wealth of problems.

Turkana is no stranger to change. Within the four million years of its existence the lake has at times been 80m deeper than at present, when it spilled into the Nile system and in so doing inherited many Nilotic aquatic species including crocodiles and Soft shell turtles. There is evidence that it has been much lower too. The only difference today is that the changes are man-made and potentially within our control. Wider publication of the issues facing the lake can only be a good thing because the last thing we want is another Aral Sea. ●



Fishing boats at sunset, North Island