

# Mara River Flows

## Integrated Water Resource Management

... for people and for nature

February 2010

Greetings from the Mara River Basin! Normally, February would be one of the driest months of the year, but sporadic rains throughout the last two months have kept the grass tall and green and the river reasonably full. Everyone in the basin is enjoying this break from the drought, although the real key will be the arrival of the long rains from March-June, which have generally failed for the last two years. Studies of historic rainfall data from the basin have shown that rainfall isn't decreasing in amount, but it is getting less predictable, possibly as one impact of global climate change. These changes have been a challenge for local farmers, who traditionally rely on rainfall for their crops and may be inclined to move towards irrigation to supplement unpredictable rains. However, when the rains fail, the river falls, meaning there is less water available for everyone.

### State of the River

It was easy to see this month how quickly the river began to drop with a brief break in the rains. After dissolved oxygen levels rose in January to 85.7%, levels quickly dropped to 65.3% in mid-February after a few weeks with less rain. By the end of the month, though, levels were back up again. These sporadic rains seem just to be causing temporary increases in water level and not sustaining the base flows, which makes us even more eager to see the long rains arrive.



New Mara Bridge – February 13<sup>th</sup>, 2010



New Mara Bridge – January 19<sup>th</sup>, 2010

### Water quality parameters for the Mara River

Date	Time	Temp	<u>pH</u>	<u>DO%</u>	<u>Salinity</u>	<u>Turbidity</u>
M/D/Y	hh:mm:ss	C		%	ppt	NTU
01/19/2010	12:54:26	23.80	7.19	85.7	0.05	781
02/13/2010	15:45:48	28.07	7.37	65.3	0.1	

## Research



*Picture 1: Wesley Langat measures discharge in a tributary of the Mara*

This month we visited the upper catchment of the Mara to work with one of the Masters students being sponsored by GLOWS. Wesley Langat is a student at [Moi University](#). As a contractor for the [National Environmental Management Authority](#) and a Youth Representative for the Mara River Water Users Association, Wesley will no doubt be one of the future resource managers of Kenya, so we are delighted to be able to assist him in his pursuit of an MSc in Environmental Science. Wesley is studying land use impacts on soil erosion and sediment loads in the river by sampling several tributaries to the Mara River that run through regions with distinctly

different land uses. Wesley measures the discharge and the sediment load at upstream and downstream locations in these streams several times per month, especially after rainfall events. He hopes to be able to understand what land use changes are the biggest contributors to sediment loads in the river, in order to target best management practices to address those issues.

We were pleased to be joined on this sampling trip by William Deed from the [Mara Conservancy](#). William has been a great champion of conservation in the Masai Mara National Reserve since he began working there two years ago, and he maintains an excellent [blog](#) and [website](#) with current updates from the Conservancy. This trip was his first visit to the upper catchment of the Mara River, and it was interesting to hear his observations, primarily regarding the very high human population density and the nearly contiguous human impacts on land use. After this trip, we returned to the Masai Mara, where Will guided us to sample some of



*Picture 2: Sampling the impoundment on the Kagawet*

the small drains and streams that pass through an area of the savanna that the Conservancy has planned to burn soon. Burning is a standard land management tool that can have beneficial impacts on vegetation and wildlife. We are interested in learning some about the subsequent impacts on nearby aquatic communities, by measuring these streams before and after the burn.

## Governance

February was an interesting month for water resource conservation in Kenya. Although sporadic rains kept the Mara River full, levels in Lake Naivasha several hours to the east have continued to fall. This month, [a massive fish kill occurred in the lake](#), with hundreds of dead fish, primarily large adults and spawning females, showing up on the banks. You may recall from previous newsletters that we also documented fish kills in the Mara River, in February and November, 2009. The fish kill in Lake Naivasha received quite a bit of local and international attention, though, because 1) the lake sustains a large

fishery that is commercially important in the region, and 2) the lake and its tributaries also sustain a huge commercial flower industry, in addition to the subsistence farmers upstream, and there is a long history of contentious water issues in the region. Interestingly, some of the same culprits may be to blame in both the Mara and Lake Naivasha. Scientists in the region have suggested the Lake Naivasha fish kill is likely due to very low dissolved oxygen levels in the lake, as a result of high levels of sewage and fertilizer runoff leading to eutrophication. Further testing is being done to confirm this hypothesis, and there are still questions about whether excesses by the flower industry or land degradation by the upstream farmers are to blame.

There is also a long history of conservation work being done in Lake Naivasha, though, and there is a well-established community of Water Users Associations comprised of informed and concerned stakeholders. This month we had the opportunity to participate in a Water Security Workshop in Naivasha, hosted by the [Kenya Ministry of Water and Irrigation \(MoWI\)](#) and Worldwide Fund for Nature – Eastern and Southern African Regional Programme Office (WWF-ESARPO). The Water Security Initiative is aimed at developing necessary policy to support the maintenance of sufficient quantity and quality of water for both people and nature. The MoWI and WWF-ESARPO have chosen Lake Naivasha, Kenya, the Mara River, Kenya/Tanzania, and the Ruaha River, Tanzania, as the focal regions for this initiative, so we have been working with them since 2009 to design and implement the program. At this workshop, the MoWI proposed a gazette notice that would allow the Minister to declare the Lake Naivasha watershed a “protected area”, under Section 17 of the Kenya Water Act (2002), and to declare the lakeshore a “groundwater conservation area”, under Section 44, with subsequent restrictions on water use and permitting. It was encouraging to see support for this from a wide range of stakeholders who participated during the workshop in refining the gazettement for further review. We look forward to following the success of this initiative, and to working with them in the Mara River Basin in the near future.

### Partners on the Ground



*Picture 3: The headquarters for the MRWUA in Mulot, on the Amala River*

We also have a very active network of Water User Associations in the Mara Basin, and we work closely with them to conduct scientific studies and disseminate the findings. The Mara River Water User’s Association (MRWUA) was established in 2003, in line with the reformed water laws of Kenya (Kenya Water Act, 2002), to serve as a volunteer water resources management body at the community level. Since the organization began, there have been more than 1000 registered members, including both institutions and individuals throughout the basin. The primary

objectives of the MRWUA are to promote the protection and conservation of the Mara Catchment area; promote the sustainable and efficient use of water for approved purposes; assist relevant authorities with water resources management and issuance of water use permits; and negotiate conflict resolution.

Primary activities undertaken by the MRWUA, in partnership with local government authorities and WWF-ESARPO, include environmental education through establishment of tree nurseries at member schools (17 school nurseries with 500 seedlings each); demonstration and trainings in best practices for water and soil conservation (trained over 100 farmers to train other farmers in their respective sub-catchments); river bank protection through innovative use of high value fruit trees as riparian buffer strips (working with 205 farmers to protect 21 km of riverbank); promotion of energy efficient cookstoves through women's groups (2100 cookstoves distributed); implementation of rainwater harvesting systems (7 schools benefiting 3,355 children), water pans (40 benefiting 4,000 people) and protected springs (50 benefiting 10,000 people) to promote alternative sources of water; community reforestation initiatives within the Mara basin through development of tree nurseries and tree-planting events (development of 20 community tree nurseries); and support of community-based organizations through income generating activities that promote sustainable use of natural resources, such as beekeeping (distribution of 40 beehives). The MRWUA has been instrumental in teaching the rural poor communities in which they work about the value of conservation, both for biodiversity and socio-economic benefits, and their work provides numerous examples of innovative conservation practices that can be implemented even by those with limited resources.

This month we were pleased to nominate the MRWUA for the 2010 Equator Prize in recognition of their work in the Mara River Basin. The Equator Prize is awarded biennially by the United Nations Development Program's [Equator Initiative](#) for outstanding local, indigenous and community efforts to reduce poverty through the conservation and sustainable use of biodiversity. Good luck MRWUA!

We also wanted to take this opportunity to officially welcome Dr. Hamisi Seif Mutinda, the new Coordinator for the WWF Mara River Basin Management Initiative. Dr. Mutinda just joined the Mara program in January, 2010, from a project studying elephants in Amboseli. We are excited about all that Dr. Mutinda will bring to the project, and we have already been working hard with him to align the WWF and Florida International University work plans for the coming year. Welcome to the Mara, Dr. Mutinda!

### Other Interesting Happenings



Recently there has been an increasingly hot dispute in the Mara about the mushrooming of illegal camps and lodges inside the Reserve. This dispute has been largely inspired by the construction of a new lodge by Somak Holidays and Ashnil Hotels Ltd. right on the bank of the Mara River, in what some say is in direct violation of a moratorium on construction inside the Masai Mara issued in 2006 by the Minister for Tourism and Wildlife. The lodge has also raised significant concerns as it's being constructed in the largest

*Picture 4: Construction of Ashnil Emuny Mara Camp on the bank of the Mara River*

expanse of riparian forest that serves as crucial habitat for the survival of the Mara's indigenous black rhino population. There has been a huge public outcry against this lodge, and a petition is being circulated against it. You can read more about the background story and sign the petition [here](#).

Sadly, although this may be the largest and most grievous violation of the building moratorium, it is not the only one. We returned to one of our old sampling sites in February for the first time in 3 months only to discover a new tented camp in what used to be one of the most pristine areas of the Mara, right at the confluence of the Talek and Mara Rivers. We also noticed that, where we used to see a large number of hippos and crocodiles at this site, it was now largely empty of animals, and the hippo trails looked as though they hadn't been used in a while. Could increased human disturbance cause even relatively



Picture 5: New tented camp at the Mara-Talek confluence

tolerant species to re-locate? There are many unanswered questions about the impacts of these lodges on the river. Not only are they abstracting water either directly from the river or from groundwater linked to the river, but they are also often depositing their wastewater back into the river or its surroundings. The riparian forest, which is not very extensive in the Mara, is also heavily impacted by these camps. These patches of riparian forest harbor a number of unique species in comparison to the savanna, and they play a critical role in mediating the dynamics of the river. We sincerely hope that the relevant Ministries will take action soon to protect the remarkable Mara ecosystem from over-development.

### See you next month!

In February, 2009, the river had dropped to record low levels and fish were dying on the banks. This year, remarkably high rainfall has filled the river before the short rains were even expected to arrive. It's been amazing to watch how dynamic this river can be! In March, we will be participating in an exchange visit with other partners in the region implementing Payment for Ecosystem Services (PES) schemes, and we will be taking the next steps forward with the development of a PES scheme for the Mara River Basin. We'll also be spending time with a videographer documenting GLOWS' work in the Mara, and participating in a regional workshop on environmental flows. We look forward to updating you next month!

#### Who are we?

Christopher Dutton is the Coordinator of the Trans-boundary Water for Biodiversity and Human Health in the Mara River Basin (TWB-MRB) Project. Amanda Subalusky is the Research Coordinator – East Africa for Florida International University. We both work within the GLOWS consortium. Read more about us at <http://maraadventure.blogspot.com>

#### What is GLOWS?

GLOWS is a consortium financed by the United States Agency for International Development (USAID) working to increase social, economic, and environmental benefits to people of the developing world through clean water, healthy aquatic ecosystems and sustainable water resources management. Read more about it at [www.globalwaters.net](http://www.globalwaters.net)