

# Mara River Flows

## Integrated Water Resource Management

... for people and for nature

October 2009

Greetings from the Mara River Basin, land of drought and dust in the middle of a country that is flooding. Yes, the rains have come...for some... The northeastern and western portions of Kenya are drowning in rains that exceed the typical levels for the season. But the Rift Valley continues to languish, waiting for the El Niño that everyone in the basin seems to be talking about. It has been a hard time for folks, with a more or less failed wheat harvest in July on the tail end of several failed rainy seasons. This past month, we drove through huge herds of cattle being driven out of Narok District and into relatively greener pastures of Trans Mara District by Maasai carrying nothing more



Picture 1: Driving through the Maasai cattle migration on our way to Trans Mara District.

than their weapons and a blanket and maybe a gourd of milk. We spoke with the Trans Mara District officials about the dire situation, and how they would deal with this influx of thousands of head of starving cattle, and they shook their heads, saying, "They are our people. We have no choice but to help them." Now the roads are littered with carcasses of cattle that just dropped dead, leaving too little meat for even the vultures to pick at. After hearing stories in July of farmers committing suicide after making too little money from the harvest to break even, we are now hearing stories of Maasai elders committing suicide because they are unable to feed their families. Times are tough in the Mara River Basin.

But I am going to take the optimist's position, because droughts can't last forever, right? The last few weeks of October saw several sporadic rainstorms, even in the dustbowl of Narok Town, and weather predictions are calling for average rainfall in the region this season. Perhaps not the deluge people have been hoping for, but a deluge on parched, over-grazed land is hardly a blessing anyway. Perhaps this gentle return to normal rains will be just what the basin needs...

### State of the River

Last month we reported that a few rains had been enough to raise the river above the almost critical low flows we saw in August. Things have carried on about the same this month, with just enough rain to keep the river at moderately low levels and to keep the water quality above the surprisingly low levels we saw in August. You can see in the pictures and table below that, although the levels are not much higher now, the DO and salinity levels are much closer to normal.



*New Mara Bridge – August 7<sup>th</sup>, 2009*



*New Mara Bridge – October 15<sup>th</sup>, 2009*

**Water quality parameters for the Mara River**

<i>Date</i> <i>M/D/Y</i>	<i>Time</i> <i>hh:mm:ss</i>	<i>Temp</i> <i>C</i>	<i>pH</i>	<i>DO%</i> <i>%</i>	<i>Salinity</i> <i>ppt</i>
<i>8/7/2009</i>	<i>9:08:09</i>	<i>23.11</i>	<i>7.65</i>	<i>30</i>	<i>0.18</i>
<i>10/15/2009</i>	<i>14:21:08</i>	<i>25.33</i>	<i>7.11</i>	<i>73.7</i>	<i>0.07</i>

**Research**

In preparation for the arrival of two new graduate students who are planning to do their research in the upper headwaters of the Mara, we made some scouting trips up the Mau Forest this month. This was a spectacular experience for us, as we had not had the opportunity to really get inside the Mau Forest before now. After hearing so much about this critical water tower for the Mara, most of our



*Picture 2: Edge of the Mau Forest*

previous visits to the area ended with distant glimpses of a dark canopy. But this month we traveled to the locations where major tributaries of the Mara actually exit the forest to look at how changing land use around the river changes the water quality.

Our first visit was to the Isei River, a tributary of the Amala River and one of the sites where WWF has been very actively engaged with stakeholders on the ground. You can see in the picture here the distinct contrast between the edge of the Mau Forest and the expanse of small-scale cultivation that approaches its border. This is not one of the gazetted areas in which the land titles are currently being hotly contested—this land was legally settled and farmed years ago—but it still impacts the catchment of the river, and the introduction of responsible conservation practices here is just as relevant as moving the illegal settlers out of the Mau.

We sampled the river just where it exited the dark, cool shade of the forest, as a small, clear stream. An elder from the community joined us and told us that people travel here to collect the water just as it leaves the forest, and they can drink it pure and untreated. We traveled downstream then several kilometers through small-scale farmland to an access point near the road where the stream had gotten muddier and more heavily used, and then several more kilometers further to a bridge. You can see in the table below how the water quality changed the



Picture 3: Isei River emerging from the Mau Forest

further we got from the forest. Although single samples taken on a clear day show minimal changes, one of the new students will be conducting some prolonged sampling at these sites that will capture rainfall events and should be much more illustrative of the differences in land use.

### Water quality parameters for the Isei River

(Each subsequent sample is further out of the Mau Forest than the previous)

Date M/D/Y	Time hh:mm:ss	Temp C	pH	DO% %	Salinity ppt	<u>Turbidity</u> NTU
10/23/2009	11:13:24	18.08	7.43	96.1	0.05	13.6
10/23/2009	12:31:14	21.77	7.29	77.3	0.06	24.6
10/23/2009	13:04:22	21.05	7.37	94.3	0.07	35.5



Picture 4: Tea belt bordering the Mau Forest

A few days later we traveled to the upper catchment of the Nyangores River and met with Mr Mutai, Chair of the Nyangores Community Forest Association (CFA). The CFA is one of the initiatives started by the WWF Mara River Basin Management Initiative, with funding from BMZ-Germany, and it was an inspiring experience. After only about six months, this volunteer organization has established an expansive tree nursery with almost 20,000 seedlings, rooted from seeds collected inside the forest and being grown to eventually re-plant degraded areas. The CFA members were incredibly gracious and excited to have visitors to their region, and they led us on an incredible hike inside the forest.

About 70% of the country's protected forest reserves are surrounded by government-owned tea belts, as a creative way of establishing a buffer between the community farms and the forest. It makes quite a striking picture to see this belt of bright golden-green, cleanly cropped and orderly, abutting the wild tangle of the Mau. We hiked down this hill, over the next, and into the Nyangores River valley. Once we arrived at the river, we rolled up our pants and hiked up-river to get a better view of the inside of the forest. The Mau is really a tropical forest, with huge, stately trees rising above a thicket of lush green vegetation and long vines dangling down into the clear, cold rushing water.

We took a water sample from several hundred meters inside the forest. Then we hiked back downstream about 2 km, passing through small-scale cultivation on incredibly steep hillsides, before taking another sample. WWF has been working with the CFA to implement some soil and water conservation measures in this landscape, and we hope some of the students' research can elucidate how successful these have been at reducing runoff and erosion. Finally, we drove several more km downstream to a bridge in a very high-use zone, where we took a final sample. You can see how the water quality changes as the river leaves the forest in the table below. We are really excited about the research by these three new graduate students, and we look forward to bringing you more information on their work in next month's newsletter.



Picture 5: Hiking through the Nyangores River in the Mau Forest

#### Water quality parameters for the Upper Nyangores River

<i>Date</i> <i>M/D/Y</i>	<i>Time</i> <i>hh:mm:ss</i>	<i>Site</i>	<i>Temp</i> <i>C</i>	<i>pH</i>	<i>DO%</i> <i>%</i>	<i>Salinity</i> <i>ppt</i>	<u><i>Turbidity</i></u> <i>NTU</i>
10/26/2009	14:53:47	Upper Nyangores 1	18.11	7.44	92.9	0.02	12
10/26/2009	15:56:54	Upper Nyangores 2	18.65	7.17	91	0.02	12
10/26/2009	17:21:57	Silibwet	19.93	7.35	82.7	0.02	17.6

At the end of October, we headed back down to the Masai Mara to do some of the 24-hour sampling on the Talek and Mara Rivers that we wrote about last month. It was a fascinating experience, and we recorded some very interesting data, with great help from our friends at Rekeru Camp and the Mara Conservancy. We look forward to writing more about this next month after we have finished going through the data.

#### Governance

We have been working with WWF-ESARPO (World Wide Fund for Nature Eastern and Southern Africa Regional Programme Office) on several important reports for the Mara River Basin, including a Biodiversity Action Plan (BAP) and the Environmental Flow Assessment (EFA) Final Report. After the reports received approval from the Lake Victoria Basin Commission (LVBC) Council of Ministers of the East African Community, LVBC took ownership of the reports and has been assisting with final editing. The EFA report was completed in October and has now gone to the printer. The BAP report is expected to be completed and sent to the printer this month. Once these reports are printed, the LVBC will officially release these reports to relevant Ministries in both Kenya and Tanzania and recommend the implementation of their findings. With new financial backing from USAID/EA to the LVBC to assist with implementation of these reports, there are a lot of exciting initiatives planned for the basin.

Another initiative on which we have been working with WWF-ESARPO is an Equitable Payment for Watershed Services (EPWS) scheme that would unite downstream service users with upstream service providers in a business relationship. In early October, we took part in an EPWS workshop hosted by WWF-ESARPO in Narok, and led by Julio Tresierra of the WWF-CARE Global Partnership for EPWS. It

was an excellent and inspiring workshop attended by a diverse and committed group of stakeholders. A team was selected to start the first phase of implementation, and members include personnel from WWF, the Nile Equatorial Lakes Subsidiary Action Program (NELSAP), Florida International University (FIU), the Water Resource Management Authority (WRMA), and District and National officials. This is a fairly novel approach to watershed management in Eastern Africa, although it has a long and successful history in the Americas (North, Central and South), so we look forward to being a part of this initiative.

## Partners on the Ground

In October the WWF - Mara River Basin Management Initiative (MRBMI) had an evaluation conducted on the work they have accomplished under a seven-year grant from [NORAD \(Norwegian Agency for Development Cooperation\)](#). This was an exciting opportunity for one of our partners in the basin to show some of their achievements and to seek some new ideas for the way forward, and we were honored to participate in the evaluation as observers and partners. Spending the day in the field with Doris Ombara, Project Executant of the MRBMI on the Kenyan side, and the rest of the evaluation team, I was inspired to learn about all of the amazing things they have accomplished implementing conservation at the grassroots level. I also realized how little awareness there can be of these activities by our partners on the ground, so we decided to start a new section of the newsletter devoted to showcasing some of the exciting things happening in the basin.



*Picture 6: NORAD evaluation team on the bank of the Isei River*

Because of our recent trip to the Isei River (discussed above), this month I want to highlight the impressive achievements made by WWF and the local communities along that river. WWF has been working since 2006 to establish a Technical Advisory Committee (TAC) for the Mara River Basin that would bring together representatives from all the relevant District Offices (Agriculture, Livestock, Water, National Environmental Management Authority, County Councils, etc.) to harmonize approaches and policies regarding conservation in the basin. In 2007, the TAC took up a project promoting riverbank protection in the Amala Sub-Catchment of the Mara River Basin, and decided to work with a community group located

along the Isei River. The Isei River is only a few meters wide, so the TAC lobbied for at least 10 m of the riverbank to be protected on both sides. The communities along this river are fairly poor, and they rely on grazing livestock and small-scale subsistence agriculture for their survival, so convincing them to stop farming on part of their land to protect the river seemed a daunting challenge. But over time and through exceptional local leadership by the District and Provincial Chief and residents in the community, they have now protected 32 km of the riverbank, in bands that vary from 10-100 meters wide!

Some of the community members have completely let their land along the river go uncultivated. Others who couldn't afford to do that have switched to growing dense forage crops that reduce runoff and erosion, and they use these crops to feed their livestock. Many have gone to having fewer numbers of no-grazing livestock, which reduces pressure on the land and riverbank. And they have cut down the water-thirsty eucalyptus trees they had planted along the bank and replaced those with high

value fruit trees, such as avocados, thus improving water conservation while offsetting some of the costs of lost cultivation. In fact, the community members with whom we spoke have seen increased income from these changes. However, they told us, they are mostly driven by a true desire to see the river return to its old state—higher and cleaner—and to lessen their impacts on the people living downstream.

Now that they are educated on conservation, the mindset of this community has really shifted, and certain practices such as planting eucalyptus have almost taken on a sense of taboo. We met a local evangelist who had somehow figured out how to broadcast very short-distance messages to the radio over his cellphone, and now he preaches the gospel of conservation. The community uses this as a way to communicate meeting times, talk about new conservation initiatives, or expose community members engaging in bad practices, such as bathing in the river. Our visit to this community was really an exceptional experience, and it reminded me how much difference a few truly committed people can make.

### **Other Interesting Happenings**

In the middle of October, Chris was hired as the overall Coordinator for the Transboundary Water for Biodiversity and Human Health Project in the Mara River Basin (TWB-MRB). This is the project that I have been working for as the FIU Research Coordinator and that we have been conducting research for over the past 20 months. Chris' position is only a part-time position but this will enable us to be much more intimately involved with all aspects of this project including the work of our other partners: CARE Tanzania, World Vision Kenya, and WWF-ESARPO.

As we gained someone on the project, we also lost someone. Fred Mngube, the Coordinator for the WWF-MRBMI under the TWB-MRB Project, has moved up to work with our partners at the [Lake Victoria Basin Commission \(LVBC\)](#). Although we are sad to see Fred leave, we are very pleased he will still be our partner in conservation in the Mara.

And finally, all those trips in the Land Rover up through the Mau Forest took their toll. We decided to take some preventative action and install a new oil pressure relief valve. Little did we know that this small step would lead to us rebuilding the engine over 7 days. When we dropped the oil sump to replace the valve we found small shards of metal within the oil. Apparently, one of our bearings had failed and began to disintegrate. Thankfully, we caught the problem before it became a major problem and got it fixed up, and we were back on the road to the Mara the next day!



*Picture 7: Seven men helping us lift the engine block out of our Land Rover in our front yard*

### **See you next month!**

In October, we covered a lot of the Kenyan side of the Mara Basin, from the Mau Forest to the Masai Mara. Next month, we plan to visit some of our partners in Tanzania, and we look forward to bringing you stories from south of the border!