



Mara River Flows

Integrated Water Resource Management ... for people and for nature

June 2009

Greetings from the Mara River Basin! June has been an interesting month with lots of activities and research going on in the Basin. It has also now been one full year since Chris and Amanda first arrived in the Mara, so we are beginning to have our own benchmarks for the river.

State of the River

The long rains were delayed this year, and when they finally arrived in May (as opposed to March), they brought about half the amount of expected rainfall. As a result, the river rose to its highest levels in mid-late May, but has been steadily falling since then. You can see below a comparison of the river from the beginning to the end of the month.



New Mara Bridge – June 1st, 2009



New Mara Bridge – June 26th, 2009

Water quality levels aren't particularly low right now, but you can see the changes associated with falling water levels in the two tables below. As rains are not expected again until the short rains arrive in September-October, we are anticipating the river could reach critical levels again in August.

Water quality parameters in the Mara River Basin in late May-early June, 2009.

Date	Time	Site	Temp	DO	pH	Conductivity	Salinity	TDS
M/D/Y	hh:mm:ss		C	%		mS/cm	ppt	g/L
5/29/2009	13:56:03	Amala River	18.46	82.1	7.5	0.078	0.04	0.058

5/29/2009	13:55:31	Nyangores River	18.48	81.8	7.53	0.074	0.04	0.055
6/1/2009	14:03:50	Talek River	24.82	65	7.6	0.163	0.08	0.106
6/2/2009	14:31:12	Mara River	22.55	71.2	6.78	0.094	0.05	0.064

Water quality parameters in the Mara River Basin in late June, 2009.

Date M/D/Y	Time hh:mm:ss	Site	Temp C	DO %	pH	Conductivity mS/cm	Salinity ppt	TDS g/L
6/23/2009	16:47:31	Amala River	21.21	93.8	7.78	0.14	0.07	0.091
6/23/2009	12:49:48	Nyangores River	19.83	88	7.47	0.064	0.03	0.042
6/26/2009	14:22:17	Talek River	27.9	83.7	8.3	0.799	0.39	0.519
6/26/2009	10:05:19	Mara River	22.27	61.1	7.56	0.266	0.13	0.173

The tourism high season is also upon us, and as many of the lodges in the Masai Mara lack adequate wastewater treatment facilities, we anticipate associated changes in the water quality of the rivers. Many lodges are located along the Talek River, in particular, and we have been told by long-term researchers in the park that the river health has declined significantly over the past two decades. We have been monitoring the Talek River at three sites, Talek-Simba which is upstream of most of the lodges, Talek-Naibor which is downstream of most of the lodges, and the Talek-Mara confluence. In the table below you can see some of the changes we documented along the river in one day of sampling in late June.

Talek River water quality above and below tourism lodges

Date M/D/Y	Time hh:mm:ss	Site	Temp C	DO %	pH	Conductivity mS/cm	Salinity ppt	TDS g/L
6/26/2009	15:56:00	Talek - Simba	24.71	90.7	8.23	0.225	0.11	0.147
6/26/2009	14:22:17	Talek - Naibor	27.9	83.7	8.3	0.843	0.39	0.519
6/26/2009	13:11:46	Talek - Mara Confluence	30.03	153	8.63	1.093	0.49	0.648

With the falling water levels and the increasing tourism expected throughout the coming two months, we anticipate further declines in the Talek River.

Research

This month, Dr. Assefa Melesse's two graduate students from Florida International University completed their field research. Mengistu's erosion plots were very successful, and the preliminary data looks very interesting. He was fortunate to get adequate rainfall at two of his sites, but he was several rainfall events shy of a good sample size at his sampling plots near the Water Resource User's Association. Over the next few weeks, we will work with the WRUA employee and a local student to complete his sampling at this site. Shimelis also completed collecting secondary data to utilize in a water resource optimization model for the Mara River Basin. During his month in Kenya, he had the opportunity to meet with people at WWF, in the tourism industry in the Mara, at the Lake Victoria South Catchment Management Authority, Nile Basin initiative

and the Ministry of Water, among others. We are eagerly anticipating the results of these two theses.

Some of our local implementing partners on the ground have commented that, although the GLOWS theses help address pertinent issues in the Basin, they are difficult for them to access and understand. They would find it very helpful if each student prepared a single page summary of their findings and recommendations, in layman's terms, that could be attached to a copy of the thesis and submitted to the WRUA, which could then become a center for this kind of information. I thought this was a very good suggestion, and both Mengistu and Shimelis seemed interesting and willing to do this. Would the GLOWS advisors be willing to start asking this of their students?

This month we also began including diatom sampling in our research. We are working with a student from UNESCO-IHE, Aleksander Pavlov, who will be analyzing our samples. He also sent us the DARES protocol to follow in our collection and preservation methods, which is the standard protocol followed in Europe. We are sampling diatoms from boulders mid-stream at the same 5 sites at which we collect macroinvertebrate samples. We are looking forward to the way in which diatoms will inform us further about the quality of water in the rivers.

We have also been continuing to collect water samples, and we are beginning to run out of room in our little freezer in Narok. We have already utilized the storage space available at the National Museum, so we need to begin actively seeking a way to transport them to Delft. If anyone will be traveling here, or knows someone who will, in the next month or so, please let us know so we can plan accordingly.

July promises to be an exciting month for research in the Basin, as we have two new researchers coming in for several weeks. Carla Atkinson, who recently finished a MSc in Stream Ecology at UGA and is about to begin a PhD at University of Oklahoma, will be spending several weeks with us working in the river. We are excited to talk with Carla about our research ideas and get some fresh ideas from her, in particular in regard to studying basal food resource dynamics in the river. In late July, Jeffrey Onsted and his wife Kiki will be visiting from FIU. Jeff will be looking for historical maps and photos of the Mara River Basin to add to our historical understanding of the river.

Politics

In June, WWF began working on developing a proposal for a Water Security Project in Kenya and Tanzania. The project would aim to ensure adequate quantity and quality of water for the poor and the environment, with a particular focus in the Mara, Lake Naivasha and the Great Ruaha. As such, this project is essentially aimed at implementing environmental flows, from the level of policy to practice on the ground. Amanda was invited to serve as the EFA expert on the Water Security Board, offering technical guidance and advice. Other members of the board included representatives from the

Lake Victoria Basin Commission, the Ministry of Water and the Water Resource Management Authority. These meetings offered an exciting opportunity to educate more people about the science behind environmental flows and to discuss in a collaborative effort the path towards implementation. The project is planned to begin within the next few months and to continue for one year, with the aim of securing funding for an additional two years.

There are a number of political challenges currently facing the Mara, which do not bode well for effective conservation in the region. The primary issue which has been at the forefront recently is an ongoing conflict between the Transmara Country Council and the Mara Conservancy. The conflict has been led by MP Gideon Konchela, and he has charged the Mara Conservancy, and Director Brian Heath in particular, with a number of things, including stealing and selling wildlife, improper management of the reserve and impropriety with funds. These charges have been investigated by the Kenya Wildlife Service among others and found to be false. However, the Transmara Country Council continues to push their agenda to annul the contract with the Mara Conservancy and take over management of the reserve. It is very likely this transfer of management, if it were to occur, would result in a large increase in lodge construction in order to bring in greater profits. This would be accompanied, though, by a number of conservation challenges, like those currently being observed on the Talek River.

Another challenge of which we have learned recently is increasing conflicts between the protected areas and the local Maasai communities surrounding the Reserve. Camping on the banks of the Talek River one night, just over the boundary of the park, we were kept awake all night by cow bells crossing into the park. When we asked the camp hosts about it, they informed us that Maasai from the local communities bring their cattle into the Reserve by the thousands to graze at night. Indeed, the savanna just over the border has been grazed very low. As we inquired further, we learned that, although official policy says it is illegal to graze cattle inside the protected areas, the practice has been rapidly increasing, and increasingly ignored by park authorities, over the last few years as human and cattle populations have grown and droughts have been more severe. There are some sections of the park which are mostly dominated by cattle now, and in which they are grazed throughout the day. There have also been increasing human-wildlife conflicts associated with this practice, as Maasai have killed or poisoned predators, including lions and hyenas, which have killed their cattle while grazing inside the Reserve. Hyena researchers inside the Reserve, working on a project which has been tracking the Masai Mara hyenas for over 20 years, informed us that they have begun to see distinct habitat shifts in the home range and denning sites of hyenas, which are increasingly avoiding the cattle grazing areas inside the park. With the Narok County Council tolerating this practice, the population surrounding the protected areas growing and severe land degradation outside the Reserve, growing contention between the local community and the conservation of the protected areas is likely to worsen before it improves.

Other Interesting Happenings

As part of an initiative to encourage tourism facilities to install wastewater treatment wetlands, we had the opportunity to present the EFA and current water quality findings from the Mara to a group of lodge managers. The very low flows of Feb. and March, and the associated low DO levels and fish die-off, provided an effective example to present to the audience of the possible dangers of polluting the rivers with excess waste. Surely, hotel guests aren't interested in seeing dead fish along the banks of the river! We also had the opportunity to meet several interesting new people, including a representative from the Ecotourism Society of Kenya. ESOK is a great group that visits and ranks lodges on their ecological sensitivity, by request of the lodge. Depending on the number of environmentally conscious improvements that lodge has installed, they may receive a gold, silver or bronze ranking, or none at all. ESOK will then advertise those ranked lodges on their website, thus giving sustainability-minded tourists some good options. They were very interested in our research on the Mara and invited us to submit an article to the monthly newsletter, as well as to present at a conference they are hosting in October. We are very excited to continue to work with this organization.

In addition to our primary focus on environmental flows in the Mara River, we also spent some time this month working on a water supply and sanitation project being funded through GLOWS by USAID and Coca-Cola. The project is working through the Mara River Water User's Association to fund spring protection and water reticulation in two communities/schools. This is not only an exciting opportunity to greatly assist local communities to fulfill their greatest need—clean water—but also to empower and capacity-build the MRWUA, which we hope will continue to play an increasingly large role in conservation within the Mara River Basin. The project is still in the early stages, but we visited several potential spring sites and met with local communities. There are some remarkable springs in the mountains above Mulot Center, which the local communities reported became an increasingly important water source during the very low flows in Feb. and March of this year. People who normally rely on the Amala River for drinking and domestic water were hit with a typhoid outbreak from very poor water quality in the rivers, and they began traveling up to 5 km per day to collect water from the springs instead of the river. This was a very powerful example of the importance of sustaining environmental flows for people in the Mara River Basin.

See you next month!

June was a great month, in which we stayed very engaged in research and politics in the region. However, we also documented some trends suggesting the river is headed for another critical time in the upcoming two months. We look forward to seeing what will happen to the river in July and to welcoming new researchers to the Basin who will help us to further develop our understanding of the river. See you in July!