

**A brief report on the spate along the Gori river basin,
North Eastern Kumaon, Uttarakhand.
15th-17th June 2013
by Himal Prakriti**

It rained almost continuously from the 15th to the 17th of June in Munsiri, where we live. This is in the Gori basin, which is the second-largest tributary of the Mahakali river. The Mahakali river forms the boundary between India and Nepal as well. The IMD reports that 340 mm of rain fell in a single day, and 601 mm in 60 hours. The report quoting the IMD data did not specify where exactly this rainfall was recorded, but this is important to know. We are told by residents in the lower half of the Gori valley, that apart from being overcast, and intermittent drizzles, it did not rain much there during these days. Reports from the upper half of the Gori valley, most of which is high-altitude and alpine (above the tree-line), and a good deal of which is also in the 'rain-shadow', are that there was heavy and incessant rain there during these days. This is also attested to by the fact that all the steel bridges in the high altitude sections have been washed away.

The IMD also states alongside the rainfall data quoted by it, that this was a record not seen for five decades. This statement need to be approached with some caution. This may very well be the case, but considering the variable destruction caused by spates in different sub-basins, we would do well to pay attention to such variation, both sub-basin-wise, as well as along the length of the basin. In the 20 odd years that we have been in Munsiri, we have seen at least two other very major rainfall events that have been for 6 days and 5 days consecutively. On both these occasions in the past, we happened to be at the high altitude villages, where all the bridges got washed away too.

Having seen and experienced such heavy spates at high altitudes on two previous occasions, and also prompted by phone calls from a friend lower in the valley, we took a walk down the valley and along the river (on the 21st and 22nd of June) to see what had happened during this high rainfall event. On 18th June, the morning after the last night of rain, we also went down to Bhadeli to listen to the river in spate. The river was bank-to-bank, very dark with sediment, and actually thundering with the bed-load of boulders rolling and thudding underwater. The tea-shop owner remarked that what we were seeing then, the morning after, was only half the volume of what it was at maximum spate two nights ago. But more on our second visit:

First, some detail about what we know of the **damage at the high altitude villages** in the Gori basin:

Other than the Goenkha bridge near Milam, all the bridges across the Gori

river have been washed away. These are the ones at Burfu, Martoli, Laspagadi, Bugdiar. Not sure whether the suspension bridge at Rargari, the small wooden bridges between Milam and Panchu, and the one between Martoli and Lwa survived. The latter two, most unlikely to be intact.

The UREDA Suring gadh micro HEP of 800 KW has also got washed away on the 17th June. This is the only one that was there when we came to Munsiri 21 years ago, and tapped the water of a small cascade on the true right of the Gori. The powerhouse and living quarters were located right close to the river, and have just disappeared entirely. This station was currently not functional, so there has also been no loss of life there. In the two previous floods that I referred to, this station had been damaged, and was in danger of being washed away.

Loss of life reported at the high villages. Four people died, of which one body is still missing. Thought to be an accident enroute to collecting *cordyceps* near Suraj Kund, on the Milam glacier.

Some details in terms of what we saw damaged during our trip to the **lower half of the Gori basin** on the 21st and 22nd of June.

Roads are very badly damaged. This has happened before, but this year it seems to be worse than earlier seen. Here are some details.

There is a large swathe of road taken away soon after Bhadeli enroute to Madkot. The road after Madkot at Phagua bagad is badly damaged. The river has licked clean the bedrock on which the road had been made. We had to get waist-deep into a side-stream of the Gori to ford that section. The road and some shops are also damaged at Lumti.

We are told that about 103 households have been affected by the floods.

Umargada 14

Khinua 12

Mankot-Gharuri 21

Choribagad 15

Mori 16

Ghattabagad about 20

Lumti 5

Madkot a few shops and a school building.

There is very major damage at Ghingrani under Shiling village. There are many smaller bits of road washed away by the Gori river enroute and at Umargada and at the *kingcobra*-bend, and just before the Muwani bridge as well. The Muwani bridge has miraculously survived, despite abutments on both sides being lapped at by the river. Then very major sections have gone

at Choribagad and at Ghattabagad (the *kharia*/ talc mines). Then somewhat smaller ones right upto Chipaltara as well.

Homes and establishments damaged. Some shops at Madkot, and one school building. Homes and shops at Choribagad, and Lumti. There is damage to homes at Umargada, and 14 families now live in tents. There is some damage to homes at Ghatta bagad as well, and over a hundred meters' swathe of road has got washed away.

The Himalaya Hydro Tanga Phase I for 5 MW, located along the Paina gad, is badly damaged. The dam has got smashed by a deluge of huge boulders. One sluice gate is torn through. The metal filter-gates are all choked with boulder debris, and the remnant concrete and gate pulleys of the dam are now stranded mid-river, with both banks eroded and the river now running along the true-left bank. The UREDA 500 KW Motigadh microhydel on Moti gadh (a tributary of Paina gadh) at Tanga is also badly damaged. The water has broken through the wall, cut under the foundation, inundated the turbines with water and debris, and smashed the housing for the electrical distribution system. The 5.5' dia waterpipes taking water to the HH Phase II, located on the Gori opposite Seraghat, has also been damaged. The generator and housing for the HH Ph II has collapsed into the river. All this damage is said to have happened on the evening of 17th June. People working as non-skilled labour have been sent home for a few months, but welding work on the new pipes feeding the powerhouse is still underway!

Sadly, the cable-car that was built by us while in FES for Mankot village has also got washed away. The true-left abutment collapsed in the river.

Loss to life. One person, while trying to cross the Ghingrani landslide. This was active when we needed to cross, so we decided to take a very long detour, right under Shilling, and on to Umargada.

Reports from the upper parts of the valley: Many sheep and goats of Sai and Quiri-Jimia hav died. Nahar devi is damaged. Many school-kids who had gone to collect cordyceps are unable to return to school on time. On the 26th 16 people were air-lifted from Milam and dropped off either at Munsuari or Pithoragarh. These were just 'medical emergency' evacuations (and the usual influential people getting a ride), and not 'saving' people and so on.

The high new Jauljibi suspension bridge across the Kali river, connecting India and Nepal, as well as the old one next to it have also got washed away. Again, abutment collapse.

The news of the situation above Jauljibi towards Darma and Byans is as follows. This is from second-hand accounts.

There has been major damage at Khalanga bazar (Darchula) across the river in Nepal. Many buildings built on Bungabagad, close to the riverbank have collapsed into the river. 128 families are said to be affected. The NHPC campus at Gothi has been damaged. Some ITBP camps are said to be affected, at Dharchula and above. Sobala is said to be entirely washed away. Shops have been washed away in Tsela. All the bridges in Darma are said to also be washed away, people may face food shortage in some time. No news of Byans, but the river is relatively small there, and there are no habitations close to the river.

People at Dharchula also believe that much of the damage caused there was caused due to sudden release of dam waters from the Chirkila Dhauliganga HEP. It would be important to confirm this.

It would be very useful to get flow data from NTPC/NHPC for the days in questions. People at Jauljibi said that the flood levels this year seem to be the highest for many years. It would also be very useful to get Met. data from the ITBP posts at Milam and at Darma, from the sets we had given them. Was this another 10 year peak-flood level, a 50 year peak or a 100 year peak? What would happen if we witnessed a 1000 year peak-flood level? Be good to get reliable data on rainfall and on flow-volumes in the various tributaries.

No clear news from Ralam, but that all the bridges are washed away.

We met Brijesh Dharamsaktu, resident of Madkot, while we going to Tanga to see the damaged Hydro projects. He was returning from cordyceps collection in the Panchachuli basin and he spoke of terrific rainstorms for days. Said he had not seen such heavy rain along with high winds. You normally have one or the other.

Lower down in the terai, there is news of major flooding in the Nepal sections of Dodhra and Chandni.

Some thoughts:

1. As widespread as the rainfall was reported to be in Uttarakhand, we see that this is a generalization. It seems to have fallen very unevenly and the damage has also been very sub-basin specific. For example the Madkani (which is known to be a river frequently in spate), was entirely quiet this time. It flows from the Uttari balati glacier, on the east face of the Panchachuli. Just next to it, and just separated by the ridge, on the very same east face of the Panchachuli itself, flows the Paina gad (from the glacier a little south of the others). Paina seems to have

- gone into serious spate this time.
2. While we are not sure of the actual flow-volumes of the rivers during this time, it is clear that their **erosive force** was much more than usual. The crashing thunderous sound of boulders rolling under the water in slightly steeper parts is to be heard to be believed. Giant boulders that have been moved lie right on top of heaps where the river has subsided and one can see them. Manohar Mahar, resident of Khinuwa village, tells us of a house-sized rock near the river that he has played and basked on as a child and has always seen at that location. There are no signs of that huge boulder now after the river subsided. It has just disappeared. While this could be a longer-term river flood-pulse, it is clear that the erosive force was multiplied by the sediment load and the masses of boulders and debris that flowed down. Two factors seem to have exacerbated this. One, very heavy commercial sand mining along the riverbanks, leaving them bare and without a cushion, and two, the enormous amount of debris that has been dumped along the riverbanks from road-building (for hydro companies) and from tunneling and dumping of muck during the construction of tunnels for hydropower projects.
 3. While our visit was soon after the flood event, people had rushed to shops and bought off whatever rice and aata they could. The shops are now empty, and food will last most families (other than those whose homes have got washed away) for at least two weeks. After that, food shortage may be a problem. For those villages close to either end of the spectrum of road accessibility (Munsiari bazaar and Jauljibi bazaar), people will walk to the markets and replenish. This is also where most of the 'food-aid' is being dumped. There will be a problem for the villages in the middle section, for whom either bazaar is very far. They will need to be prioritized for by us.
 4. This year again, there are reports of dead fish, which people collected by the quintal. Such reports of come in from the East Ramganga, and from Jauljibi. They were all snow-trout. This was also reported during the spate of 1995, and Mahseer were not reported in the Gori till about 3 years later. The already depleted fish populations, due to greatly reduced and degraded habitats due to hydro-power construction, would have taken a big hit. Would be interesting to investigate. It strikes home that this is why long-term research on such matters is critically important.
 5. We need to get our act together on setting up at least 3 Met. stations. Our past experience with them make it clear that we need reliable automated ones. The need to hire someone to collect data twice a day costs from the manual ones will be too expensive. We also need to get down to collecting deeper research-based data on the aquatic biodiversity of each tributary of the Mahakali, to be able to say something about the criticality of the smaller streams as refugia for fish populations

during such spates. Without them, populations would be at great peril. This is in the context of the smaller hydro-power projects not needing environmental clearance, and the narrative that they are not damaging and so on. It is also time now to try the RTI route to getting flow data, especially on peak flood pulses during this spate.



Choribagad- road and fields eroded- along the Gori river



Ghattabagad road destroyed along the Gori river.



Road collapse at Bhadeli, along the Gori river.



Himalaya Hydro 5 MW- Dam collapse, along the Paina Gad



UREDA- Motigad 400KW- Power house destroyed, along the Paina gad



UREDA- Motigad 400KW- Electrical room- destroyed along the Paina gad.



Remains of UREDA Suring gad Microhydel 800KW, in the Gori river.



Madkot bazaar street washed away- school damaged, along the Gori river

All photos taken by E.Theophilus on the 19-20th of June and of Suring gad on the 28th of June 2013.

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