



## August 2016 Landslide at Mantam, Dzongu, North Sikkim *Focus on Resurgence of Tree Ferns*

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13<sup>th</sup> August 2016, a date not easily erased from the memory of the Lepchas in their Dzongu heartland; an entire mountainside came crashing down into the Ringpai Chu / Tholung River sending debris surging up the opposite slope devastating its green cover, shredding standing trees, sending a thick cloud of dust, which hung for days thereafter. Prompt visits by government officials including NDRF (National Disaster Response Force) to the site of the natural calamity to assess the damage provided immediate relief. The Hon. Chief Minister Shri Pawan Chamling himself visited the site along with all senior government officials.

Almost half a km wide and around 800m high from crown to base, the landslide caused a huge lake about two km long to appear almost overnight, dammed in by the enormous boulders that crashed into the bed of the river. The only bridge linking the villages of Tingvong and above and two turnings of the road had got submerged under the surging waters. The road to Lingthem was also now cut off, apparently indefinitely.

The force of the river eventually caused the waters to overflow the boulders damming in the water, lending relief to thoughts of another



impending calamity, in the event of bursting of this temporary dam. So the river continues flowing, but the anxiety of downstream dwellers still needs to be addressed. According to the report at [http://www.nrsc.gov.in/sites/all/pdf/Sikkim\\_Landslide\\_17\\_08\\_2016.pdf](http://www.nrsc.gov.in/sites/all/pdf/Sikkim_Landslide_17_08_2016.pdf), this seems to be a kind of follow-up of the 18 September 2011 earthquake, with an old landslide near the ridge line forming the crown of this Mantam landslide becoming activated by ground water seepages from the exposed joint planes. Described as 'a wedge type failure near the crown of the landslide followed by translational type of failure in the main body of the landslide', it has been deduced that earlier monsoon rains caused aquifer induced pore pressure and escarpment stress condition due to the 2011 landslide could have caused this event.

During a visit on early September the scene was of a raw scarred landscape, the tops of a couple of roofs visible in the stilled waters,

the road ending into the 'lake', tops of Himalayan Alder 'Utis' *Alnus nepalensis* drowning in the water, and temporary sheds with NDRF personnel and local people awaiting their turn to go across. A few Common Peacock butterflies were seen mud-puddling for minerals in the rich damp exposed mud on the side we were walking. Bird life was not active and the scene was one of desolation. Up the slope on our side, we could see stumps of Tree Ferns still standing out of the mud. It was quite a dismal scene, a tiny inflatable boat ferrying passengers across, a few cicadas singing and almost no birds calling.

Exactly a month later in early October, the scene had already begun changing. The Tree Ferns had thrown out new fronds, Ferns had revived and so had the climber *Rhaphidophora* locally called 'Kanchirna'. The artificial lake was still unchanged. By the end of October during a third visit with Butterfly enthusiasts, we saw a great deal

more. A few Tiger Moths feasting on dung beside the path carved out by massive earthmovers were seen crushed by passing vehicles. Common Peacocks, Red Helens and other butterflies were busy sucking salts from the earth. The Kanchirna was more evident, Tree Ferns were splendid in their glorious outpouring of fronds. The landscape was healing itself, protecting the soft soils underneath. The JCBs were still at work, the path created had been more stabilized, vehicles were plying slightly further. However the rafts were as busy as usual, still the only way one could get across to reach village homes upstream.

Tree Ferns are Living Fossils. They were the same during the time of Dinosaurs and almost unchanged since. Seeing them thus rejuvenating themselves in this landscape puts faith back in Mother Nature's oft unrecognized resilience and healing abilities.



9<sup>th</sup> September, 2016



9<sup>th</sup> October, 2016



19<sup>th</sup> October, 2016