

Bara Shigri Glacier: High Point on a Wonder Adventure Circuit – A USI Sponsored Study cum Adventure Trek*

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General

Bara Shigri glacier was the last on the list covering the USI's initiative on monitoring of the five big glaciers in northwestern Himalayas through 'Adventure cum Study Ventures'. Initially the plan was to cover the Baspa and the Bara Shigri glaciers in one go, however, on completion of our venture to the Baspa glacier in July 2012, the route to Bara Shigri glacier through Trans-Himalaya Kinnaur and Spiti was found to be in a bad state due to landslides. Considering the uncertain conditions, it was decided to cover the Bara Shigri glacier after the monsoons in October via Manali. Accordingly, the trek to Bara Shigri glacier was undertaken from 03-07 Oct 2012.

This was a disappointment as we would miss experiencing a part of the drive through Trans-Himalayan Kinnaur and Spiti. The world famous adventure trail takes one from Shimla along the Sutlej river, through Kinnaur to the famous Sangla valley, across the Great Himalayan Range. It carries on along the Spiti river through tribal and Buddhist belt, over the Kunzum La (Pass). A side trek/drive to Chandra Tal (moon lake) takes a day to the boulders covered Bara Shigri glacier snout across the wind swept Rohtang Pass to Manali, over the Jalori pass through Himalaya's finest conifer forests, via Narkanda back to Shimla. Please refer to the **Map** and **Photographs P1-P3** with the narrative.

Startling Observations-Contradictions

The Geological Survey of India's report on the sponsored expedition as part of the International Geophysical Year 1956-57¹ to the Bara

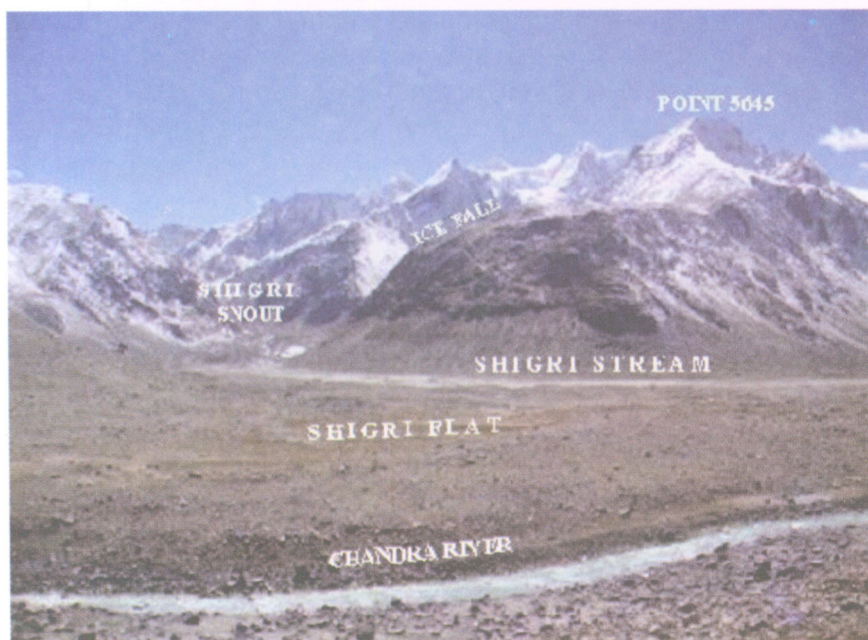
*This article is based on personal observations of the author on the ground and his earlier travels to this area.

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Map – Route to Bara Shigri Glacier



P 1 – Chandra River-Bara Shigri Glacier

Shigri glacier surprisingly does not mention the coordinates of the snout though coordinates of the point where the Bara Shigri stream joins the Chandra River are given. However, there is one very useful information that we could work on. The report states of a picturesque 'icefall' (hanging glacier) entering the Bara Shigri glacier about 1.6 km south-west of the Ice cave (Bara Shigri snout 1956-57). This would mean that if we could now fix the location of the present glacier snout in relation to the icefall one could work out the melting rate from 1957 to date. This is what we (my guide Tenzin and I) did and more. The next monitoring of the glacier by the GSI was done in 1964.² *This, seven years after the last report, gives the same distance between the snout and the ice fall (1.6 km), yet stating that the glacier was retreating rapidly ?*

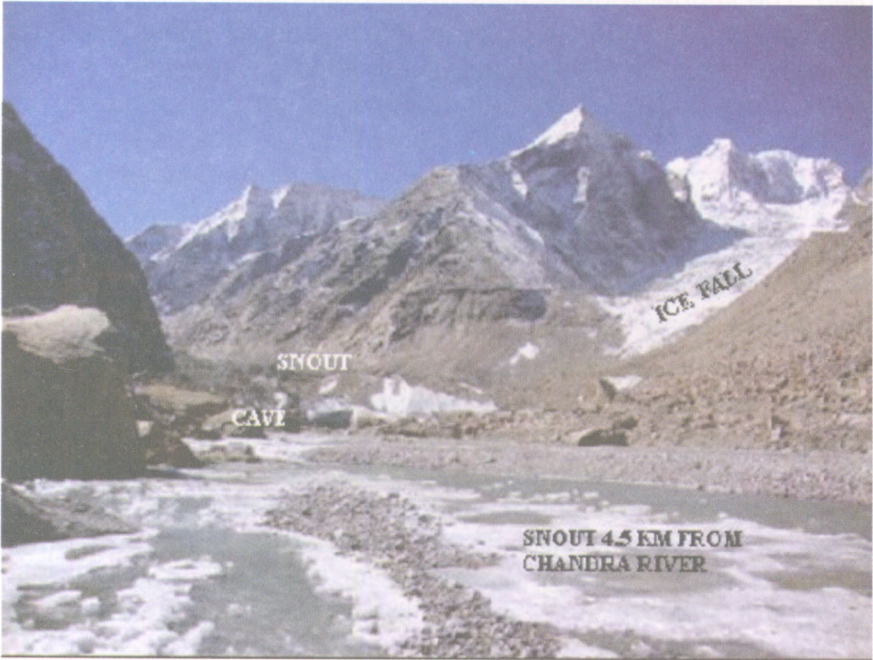
Approach to Bara Shigri Glacier

The Bara Shigri glacier, amongst the big Himalayan glaciers, is located in Lahaul. It is a major source of water for the Chenab river. The glacier is a little distance from the road connecting Lahaul to the Spiti valley. From Manali the route takes one over the famous Rohtang Pass down to the Chandra river valley to a point Gramphu from where one road goes West to Keylong-Leh and the other to Kaza in the East to Spiti. The road is difficult going. From Gramphu it is completely unmetalled and at places over rocky surfaces. One can also come via Simla through Kinnaur and Spiti – starting from Chandigarh and returning via Manali. From the acclimatisation point of view it is better to go via Shimla.

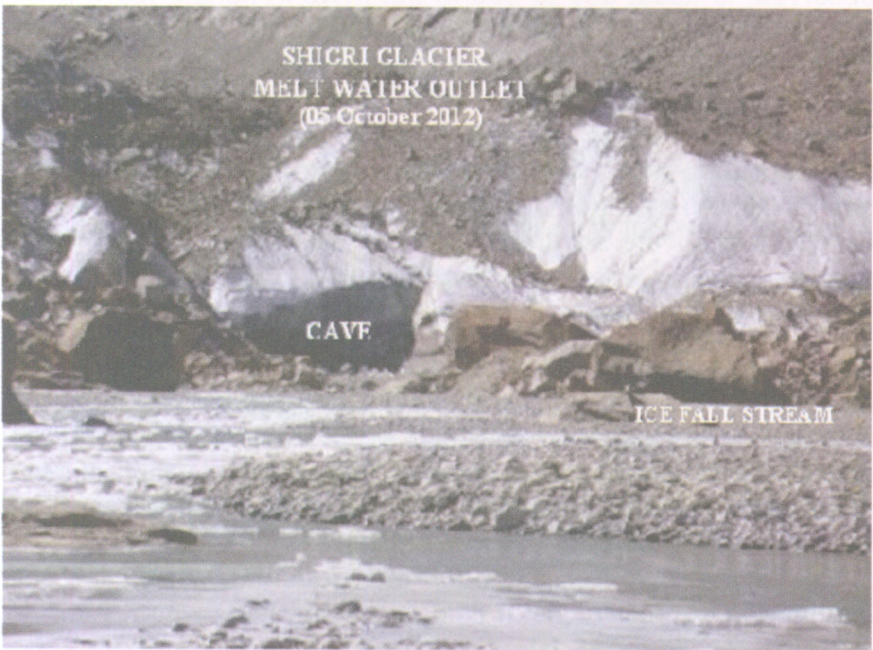
Except for seasonal *dhabas* there is absolutely no habitation and the mountain sides are completely barren. The road head for the glacier is Batal. My guide's parents run the only *dhaba* in Batal and are doing a flourishing business—a satellite phone in their *dhaba* is the only communication with the outside world. PWD rest houses are at Chota Dhara and Batal. Some basic food items are available at Chatra and Batal. There is no tyre repair facility between Kaza in Spiti and Khoksar – 5 km from Gramphu. During the trekking season tourist operators set-up tented accommodation at Chandra Tal (moon lake), 14 km from Batal, Himachal's popular tourist attraction.

Bara Shigri Glacier

The Bara Shigri glacier snout is about 4.5 km from the Chandra river. The area nearer to the Chandra river is a vast plain called the 'Shigri flat'. There are two trek routes to the Glacier from the



P2 – Bara Shigri Glacier Icefall



P3 – Bara Shigri Snout–Icefall Stream Confluence

road. The shorter route is from Chota Dhara along which one has to cross the Chandra river by a *Jhula* (bridge) constructed for convenience of the Geological Survey of India. Quite often access to the *Jhula* bridge, as we found, is locked and the caretaker not available. The other route via Batal, which we took, is longer but the trail is over level ground. The 14 km route from Batal is along the West (left) bank of the Chandra river over gravel, stones and rocks; and nearer to the glacier, over boulders involving moving across some streams.

The Snout Zone

The snout of the glacier has receded to a point where the icefall stream now meets the Bara Shigri stream right in front of the main cave-like water outlet. As per the GSI report mentioned above, this point was 1.6 km from the snout in 1956. This fact is also stated in the Geological Survey of India 1964 report. The retreat, according to this data, from 1956 to date works out to 28 metres a year. Considering most part of the glacier being over a km in width up to the meeting point with the icefall stream and covered by boulders this is quite possible.

From the present location of the snout the width, to the extent observed, is about 300 to 500 m but more in height. Ice is seen only in the snout face near the cave from where the melted water flows out. Rest of the area including the ablation zone is all covered by surface moraines (stones, boulders) with a layer of black soot. The close-up pictures have been taken from the Eastern part of the snout zone which is melting slower than the Western side that gets maximum heat from the Sun. Remains of the snowfall on 3rd October night were still there.

The Race Back

With the job done, it was time to race back to Batal. The last three km to the snout over rocks and boulders had been tough for me; so I told Tenzin that we will have a race – he would go by the route we had taken; and I will move down over the pebble strewn river bed, criss-crossing the streams. With shoes on, staff in hand to check depth and for maintaining balance, I stepped into the stream covered with a thin layer of ice sheet. I felt the chilling of my feet at the initial crossing; but in subsequent crossings, through fast flowing but luckily just a little over knee level water, I felt no cold. We met at a pre-determined point, almost to a photo finish and then hurried on to Batal. On the streams en route he would

look for places to jump across or stepping over stones while I would just wade through. We reached Batal at about 2.30 p.m. and then moved on to Manali. With fingers crossed, because with a punctured tyre, it would have been a nightmare to be stranded, worse still, if it snowed like on 3rd October night. At Koksar, we got the tyre repaired then went over the Rohtang Pass. Luckily there were no traffic jams and we had clear weather – reaching Manali at 9.30 p.m.

Future State

In the years to come, the receding rate of a glacier can be very accurately calculated with reference to the confluence of the Bara Shigri glacier and the Chandra river stream – a perfect reference point. Presently, based on GSI reports one can conclude that the glacier has been retreating about 28 metres yearly, faster in the last 10 years. The snout face is retreating, like in the case of other big glaciers, due to 'toe cutting' inwards that forms cave like outlets /arches during summer snow melting. With no support, the top and sides shear and crumble in huge blocks of ice that break-up and melt/float away in small streams. Beside loss of ice due to receding of the glacier snout, far greater loss of ice (as in all glaciers) occurs from melting in the ablation zone, where melted water flows out from cave/arch like opening in the snout.

Endnotes

1. (http://www.igsoc.org/journal.old/3/30/igs_journal_vol03_issue030_pg1007-1015.pdf) and GSI web site, details under published reports.
2. The coordinates of the glacier mentioned above, as given in the GSI journal of 1957, were checked at the Survey of India in Chandigarh and were found to be off by 9 km longitudinally (probably an error). Further cross checking with Google showed a difference of about 2 km only. We could not get the required number of satellites in view /use to get an accurate reading on the GPS due to the mountains interference. I contacted Director, Glacial Division, GSI Lucknow to clarify details. He e-mailed back, stating that he could not comment on old publications. However, he downloaded and sent me the 1964 report on the Bara Shigri glacier. The ground observations, photograph and the point of entry of the icefall leave no doubt as to its present melting state and physical location of the Bara Shigri glacier snout that can be used for future reference.