

Beehive Peak Avalanche Fatality

1 skier caught, not buried, and killed

Custer Gallatin National Forest – 11 April 2015

Synopsis

On Saturday, April 11, 2015 four skiers entered the Hanging Garden Couloir on Beehive Peak north of Big Sky, Montana in the northern Madison Range. One skier triggered and was caught in a very small avalanche that carried him over cliffs about 300 feet tall. He was not buried in the avalanche debris but died of trauma. The avalanche happened at 11:58 a.m. at 10,400 feet and was 10-20 feet wide and one foot deep for about 6 feet of its width. The victim was carried approximately 700 vertical feet. The avalanche danger was rated LOW on the day of the accident. U.S. classification of the avalanche is SS-AS-R1-D1.

Description of the Hanging Garden Couloir

Beehive Peak is located at the north end of Beehive Basin, a popular area for backcountry skiers, cross country skiers, snowshoers, climbers, etc. In *Select Peaks of Greater Yellowstone*, Thomas Turiano describes the Hanging Garden Couloir as: "Dropping off the west ridge a short distance from the summit, this extreme route follows a steep ramp-like couloir for several hundred feet to the edge of a cliff. It then traverses east across a hanging snowfield to a large bowl above Beehive Lake. Mountaineer Terry Johnson first climbed this route on July 23, 1967 and named it *Hanging Garden*." This couloir is on the north side of Beehive Peak and generally faces east.



The black line shows the Hanging Garden couloir on the north side of Beehive Peak. Photo: T. Turiano

Weather

Weather data for this location come from the Timberline station at the Yellowstone Club approximately 8.5 miles to the SSW. Precipitation (both snow and water) and air temperature are recorded at 9400 feet and winds are recorded on a ridge at 9800 feet. Recent [snowfall](#) at this station was:

April 5 – 3.7 inches snow (0.38 inches water)

April 6 – 3.7 inches snow (0.22 inches water)

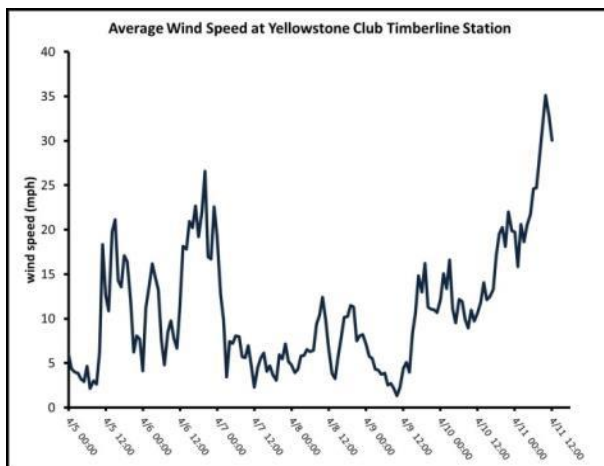
April 7 – 0 inches snow

April 8 – 0 inches snow

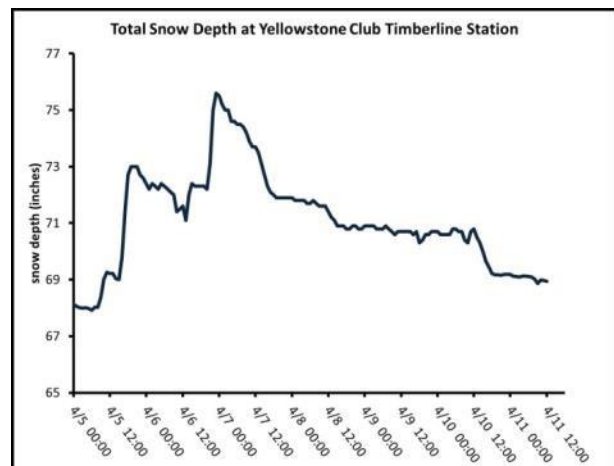
April 9 – trace of snow (0.02 inches water)

April 10 – 1 inch snow (0.01 inches water)

[Air temperatures](#) generally ranged from the upper 30's F to the teens and 20's F. [Winds](#) were averaging 10-25 mph from the SW and SSW on April 5 and 6. Much calmer winds on April 7, 8, 9, 10 from the N began increasing on the morning of April 11 from the SW and SSW reaching sustained winds speeds of 35 mph with gusts of 54 mph.



Graph showing average winds at 9800 feet at the Yellowstone Club, 8.5 miles SSW. Click on the image for a link the full size version.



Graph showing total snow depth at 9400 feet at the Yellowstone Club, 8.5 miles SSW. Changes in snow depth show snow fall amounts. Click on the image for a link to the full size version.

Snowpack

Members of the victim's party reported a very hard ice crust on south, east, and west aspects the morning of the accident. They found dry snow on the north side of Beehive Peak in the Hanging Garden Couloir. This snow was soft and did not appear to have been deposited or affected by wind. They noticed old ski tracks in the narrow, upper portion of the couloir, but these tracks were not visible near the location of the avalanche. In hindsight, they were presumably covered with wind-blown snow. Surface snow at the location of the avalanche was soft and not an obvious wind slab. A different group of skiers looked into this couloir (but did not ski it) on April 9 and observed fresh ski tracks indicating that another group had recently skied the couloir.



View from the top of the Hanging Garden Couloir on April 9. Photo: D. Lennon

At Lone Mountain on the morning of the accident, the Big Sky Ski Patrol observed southwest winds of 40-55 mph that “managed to move some snow around, primarily in the fans of gullies and couloirs and up underneath cliffs where spin drifting was ever present.” They triggered only one avalanche the day of the accident. It was six inches deep and 15 feet wide and located underneath cliffs on an east-northeast aspect near 10,200 feet. The only other reported [avalanche activity](#) in the backcountry had been near Cooke City, MT early in the week.

Avalanche

The group climbed Beehive Peak via the Southwest Couloir popularly known as the 4th of July Couloir and entered the Hanging Garden Couloir from the top. Their main concern was the wind which had just started to increase as they neared the top. They did not observe any wind loading in the couloir. Winds appeared to be “swirly” rather than from a constant direction. They descended the couloir a very short distance on foot to assess snow and avalanche conditions, then returned to the top to start their ski descent.



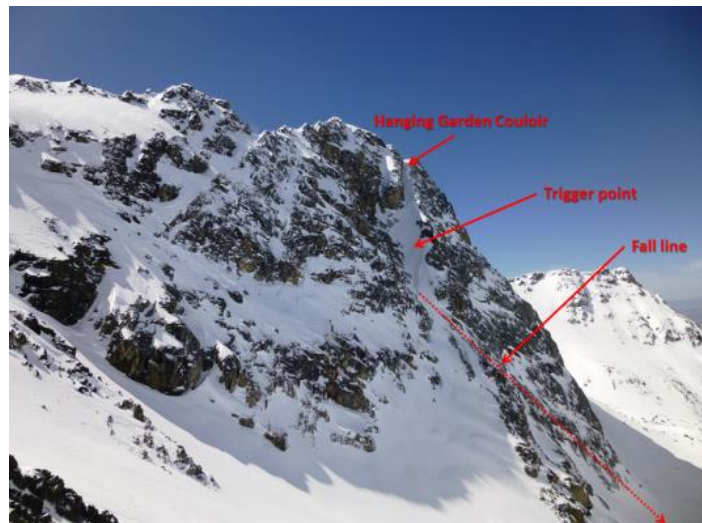
Arrows indicate the ascent route on the south face of Beehive Peak used to access the Hanging Garden Couloir.

They descended the upper, very narrow section one at a time and regrouped under a rock face on skier’s right where the couloir widens. The victim began skiing the next section first, intending to pull into a small notch in the rocks from where he could take pictures of others skiing the couloir. As he neared the notch he triggered the avalanche in the middle of his turn with his skis pointed downhill. He was a very strong skier, and members of his group felt that if the avalanche had broken at any other moment he might have skied off it or self arrested.

He was quickly swept down the couloir, out of sight and over a rock face about 300 vertical feet tall. He came to rest several hundred vertical feet above Beehive Lake. His partners descended to him in a minute’s time. He was not buried but was not breathing and had no pulse. Based on this information and the mechanism of injury, they determined that he was deceased. After about 15 minutes, they climbed a slope to the east of the couloir. At the ridge top, they called 911 before descending into Beehive Basin towards the trailhead.



Avalanche crown seen on Monday, April 13. Click on photo for full size image.



Overview of accident scene. Click on photo for full size image.



The problem with this terrain is that an avalanche or a fall carries you over this cliff face. Click on photo for full size image.

Search and Rescue

Gallatin County Search and Rescue (GCSAR) was notified at 13:30 and recovered the victim with a helicopter at 16:00.

Conclusion

In many accidents there are often one or several things that stand out in hindsight as errors or obvious missed clues. In this accident there is nothing. The issues in this accident are a matter of balancing different risks. The terrain does not allow for anything to go wrong, whether an avalanche, binding failure, or losing control.

This accident could easily have been a ski mountaineering accident instead of an avalanche accident had something else gone wrong. The difficulty in ski mountaineering is choosing a day when the snow surface is soft to limit fall potential yet safe in terms of avalanches. It is easier to make a controlled descent in soft snow versus hard, icy snow. This group carefully evaluated conditions and reduced their risk of avalanches to the lowest possible level, but some amount of residual avalanche risk always remains. The only way to reduce the avalanche risk to zero would be to wait until the snow is hard and icy, but those conditions present another set of problems in such steep terrain. This couloir is a dangerous ski descent for many reasons besides avalanches.

This group did everything right and the only thing they could have done differently was to not go there in the first place.

- They had been watching the weather and reading the avalanche advisory for weeks prior to this accident.
- They noted increased winds but the snow on all other aspects was capped by a hard ice crust which limited the snow available for winds to transport.
- They descended the couloir a very short distance on foot to determine if the couloir had been affected by the wind or had received wind-blown snow and it appeared free of wind affect.
- Even while skiing they continued watching for fresh wind slabs and there did not appear to be one present until the avalanche was triggered.
- They skied one at a time and chose appropriate safe zones.

Video from the accident site:

https://youtu.be/L7FPSY6fZLY?list=PLXu5151nmAvRs_cO_yoHbvaXfyOqzrzjK

Avalanche Advisory from 4-11-2015:

<http://www.mtavalanche.com/advisory/15/04/11>

Photos:

<http://www.mtavalanche.com/images/15/hanging-garden-beehive-peak>

<http://www.mtavalanche.com/images/15/view-top-couloir>

<http://www.mtavalanche.com/images/15/ascent-route>

<http://www.mtavalanche.com/images/15/hanging-garden-crown>

<http://www.mtavalanche.com/images/15/hanging-garden-beehive-peak-0>

<http://www.mtavalanche.com/images/15/hanging-garden-avalanche>

Mark Staples, Eric Knoff and Doug Chabot of the Gallatin National Forest Avalanche Center obtained information for this report at the scene on the day of the accident and the following two days, April 12 and 13. Additional information was obtained from an interview by Mark Staples with two members of the group.

Please direct any questions regarding this report to mstaples@fs.fed.us or 406-587-6984

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