GNFAC Season Snowpack Summary 2021-22

by Alex Marienthal

June 9, 2022

Snow began to accumulate in our forecast area in early October. On October 12 there was enough snow on the ground for us to issue our first early season bulletin. Warm, dry weather through October eliminated much of the snowpack at low elevations and on sunny slopes. We issued our second early season bulletin a month later, on November 7. That day we had the first reported avalanche of the season which was a skier triggered dry loose avalanche in a steep couloir. The skier was caught, but un-injured. Through November we issued snowpack updates 2-3 times per week as snow slowly stacked up. Small storms added no more than 6-12" each week, and warm temperatures slowed the growth of the mountain snowpack.

Avalanche activity in November and early December was limited to small wind slabs and wet loose avalanches. There were a couple avalanches on persistent weak layers near Cooke City where it was cold enough to grow weak facets at the ground and have enough snow to drift into a slab.

We issued our first daily forecast with danger ratings on December 10, with a moderate danger throughout the area. Through December, steady snowfall and wind kept danger at moderate to considerable. We issued two consecutive avalanche warnings for the mountains near Island Park when they were favored with heavy snowfall in mid-December. These would become the only warnings we issued this season.

Crown of the avalanche that killed two snowmobilers near Cooke City on December 27, 2022.

On December 27 two snowmobilers were killed in an avalanche on Scotch Bonnet Mountain near Cooke City. The avalanche broke 3-5 feet deep under a slab of wind-drifted snow on a

layer of facets 1.5 feet off the ground. The area had received 7-9 feet of snow equal to 8.9" snow water equivalent (SWE) from December 6 through 27.

Surface hoar that grew during extended dry weather in January.

January started with the season's first forecasted low danger in parts of our area. On January 6, danger was elevated to at least moderate through the entire area before extended dry weather allowed danger to drop to low throughout the area from January 15-20. During this period, the January drought Layer began to form. We anticipated avalanches to fail on this layer with each storm that followed its formation, but snowfall amounts were underwhelming with almost every storm. Danger bounced between low and moderate through late February, and slabs of new snow and wind-drifted snow seemed to quickly facet into another weak layer on top of a weak snowpack.

Crown of the avalanche that killed a snowmobiler on Lionhead Ridge on February 6, 2022.

On February 6 a snowmobiler was killed in an avalanche on Lionhead Ridge near west Yellowstone. Danger was rated low in that area for the 23rd day in a row, and the area had received only 1" of SWE over that time. The avalanche was a slab of snow that formed after steady strong westerly winds drifted a few inches of recent new snow. It broke 4-12" deep and 75 feet wide, failing on weak facets or surface hoar that formed during dry weather in mid-January.

Dry weather persisted through February, and most of the area had low danger when there was no new snow. Cooke City was the exception, where enough snow piled on top of the January and early February drought layers to maintain a heightened danger for a persistent slab avalanche problem. In Cooke City danger was moderate or higher every day except one from February 5 through March 30.

On February 19 a snow biker was killed in a large avalanche on Miller Mtn. near Cooke City. Two snow bikers were high on a slope, one stopped on a small ridge while the other climbed higher and triggered the avalanche. He was carried through a gully and over a cliff where he was partially buried with his arm and airbag visible and head 1 foot under the surface. Danger was moderate and the area had received about a foot of snow equal to 1" SWE over the previous week along with strong westerly winds. The avalanche likely broke on facets that formed in January in an area that was thinly covered and recently wind-loaded.

Burial location and debris of slide that killed a rider near Cooke City on February 19, 2022.

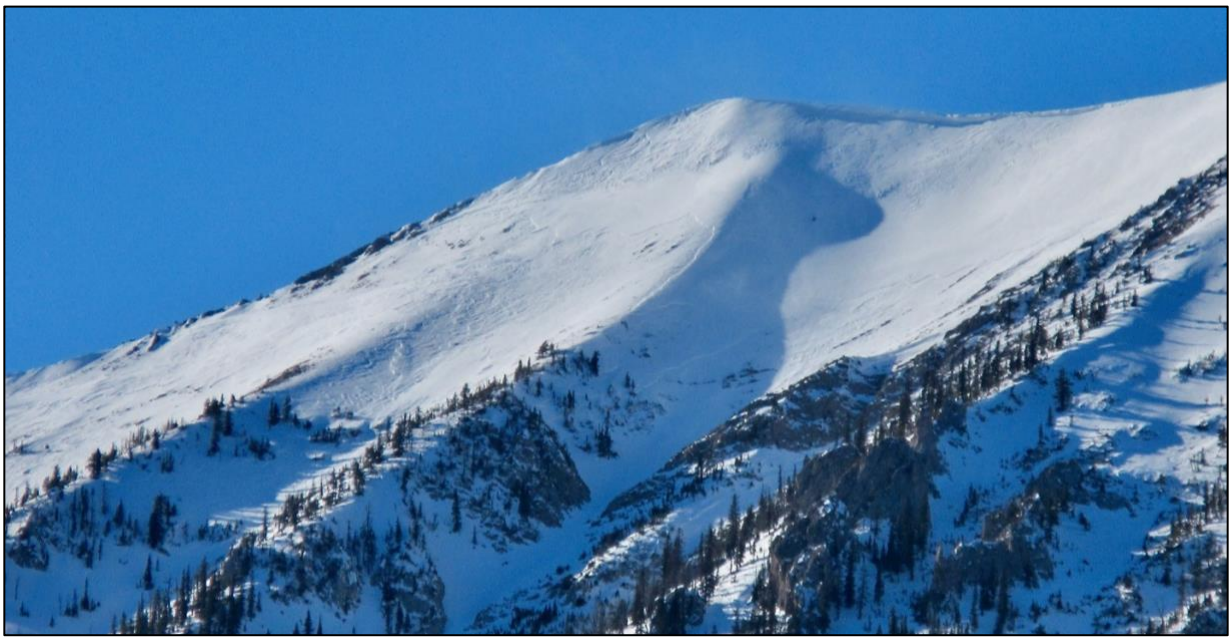
Through March we dealt with the standard mix of spring avalanche problems. Enough new snow and warm, sunny days warranted moderate danger most days. A few storms were large enough to bump danger to considerable. At the end of March, the snowpack was hit with above freezing temperatures for seven days in a row and not freezing most nights. Danger quickly rose to considerable for wet snow avalanches and eventually was rated high for a day on March 28. Due to a shallow snowpack we did not see huge wet slides, but activity was widespread during this period with many D2 wet loose avalanches and a few large wet slabs.

Following the late March warmup, cold temperatures froze the snowpack and danger quickly dropped to low to start April. A few spring storms the week of April 5 created a period of dangerous avalanche conditions. Danger subsided to low for our last forecast on April 10.

Through the end of April we issued avalanche and weather bulletins every Monday and Friday. After we culminated daily forecasts, there were frequent wet, cool storms through May that were the biggest of the season. These storms created dangerous late season avalanche conditions and provided a much-needed increase to our snowpack.

Despite having frequent low danger and few days with high danger, we still had an average number of accidents, fatalities, and close calls. The nature of avalanche activity was relatively smaller slides in higher consequence terrain or less frequently traveled areas. It was a mellow winter in terms of snow, but enough snow fell for an average number of people to be out in the mountains near avalanche terrain.

We are thankful for the support from our partners in the community to help keep everyone safe. We could not succeed without the hundreds of observations submitted by the public, volunteers that join us in the field, and donations from individuals and sponsors.



Shallow, wide avalanche on Saddle Peak that occurred during low avalanche danger on approximately January 25, 2022.