

GNFAC Avalanche Advisory for Thu Mar 29, 2012

Good Morning. This is Mark Staples with the Gallatin National Forest Avalanche Advisory issued on Thursday, March 29 at 7:30 a.m. Gallatin County Search and Rescue, in cooperation with the Friends of the Avalanche Center, sponsors today's advisory. This advisory does not apply to operating ski areas.

Mountain Weather

Overnight 1-2 inches of snow fell and temperatures dropped into the high teens to low 20's F. This morning winds were blowing 5-10 mph from the SW with gusts of 20 mph. Today's weather will bring a mix of clouds and sun with some precipitation this afternoon and tonight. By afternoon winds will increase and blow 15-20 mph from the SW with gusts of 40 mph. Temperatures will climb into the high 30's and low 40's F. Another inch of snow should accumulate by tomorrow morning.

Snowpack and Avalanche Discussion

The Bridger Range:

One week ago a major cycle of big, dry snow avalanches ended and a cycle of wet snow avalanches began. Wet snow avalanches occur every year but usually they are much smaller point releases. This year they were large wet slabs that broke on depth hoar near the ground. This depth hoar was weakened by liquid water in the snowpack. Several avalanches occurred in the backcountry and five, big, wet slab avalanches were intentionally triggered at Bridger Bowl. See photos ([page1](#), [page2](#), [page3](#)) and videos ([Bridger Gully](#) and [Sluice Box](#)) documenting this activity.

Unfortunately last night's cold temperatures did not freeze the wet depth hoar near the ground, but melting at the snow surface (which supplies liquid water to lower layers) was stopped. Temperatures will climb above freezing again today and slowly melt the snow surface again. This process could accelerate and quickly raise the avalanche danger with intense sunshine this morning or rain this afternoon. Today the avalanche danger is CONSIDERABLE.

The Gallatin and Madison Ranges, the Lionhead area near West Yellowstone and the mountains around Cooke City:

This situation is not much different in other areas which have a similar layer of depth hoar near the ground and some liquid water in the snowpack. The difference is that most other areas have not had as much warm weather as the Bridger Range, thus less liquid water has percolated through the snowpack and weakened the depth hoar. However, the Yellowstone Club Ski Patrol triggered one large, wet slab avalanche on Tuesday on a slope receives strong solar radiation ([photo](#)). Near Cooke City the snowpack is especially deep on most slopes and the depth hoar has been insulated from warm temperatures and protected from melting snow. The exceptions are lower elevation slopes with a thin snowpack.

What happens next depends on the weather. Heavy snowfall could simply stress the depth hoar and produce avalanches. Strong sunshine with especially warm temperatures could increase snowmelt further weakening the depth hoar, and produce more avalanches. Heavy rain would do both. Prolonged cold temperatures could re-freeze the snowpack and make it as strong as concrete thus lowering the danger. None of these weather scenarios appears likely in the near term weather forecast and for now we wait to see what happens. For today the avalanche danger is MODERATE. If the sun appears more than expected and temperatures warm rapidly, the

avalanche danger will rise to CONSIDERABLE.

Additional thoughts on wet slab avalanches:

1. Skier or snowmobile compaction doesn't matter. Avalanches at Bridger ripped out some of the most skier compacted areas on the mountain.
2. We do not fully understand wet slab avalanches, thus we have a high degree of uncertainty. Also, the consequences of being caught in one of these wet slab avalanches would be fatal. The combination of high uncertainty with high consequences should weigh heavily in our decision making.
3. Wet slab avalanches are problematic this year because of the depth hoar near the ground. This layer produced many dry slab avalanches. Now it is moist and even weaker.
4. Small, inconsequential looking point release avalanches can trigger big slab avalanches.

I will issue the next advisory tomorrow morning at 7:30 a.m. If you have any snowpack or avalanche observations, drop us a line at mtavalanche@gmail.com or call us at 587-6984.

Avalanches: Decision-making and Psychology

On March 28 the GNFAC and Friends hosted a Professional Development Workshop on "Decision-making and Psychology". All six lectures are uploaded to YouTube. Making high consequence decisions in dynamic, dangerous environments is tricky stuff. These lectures are by an avalanche worker, forecaster, SEAL, airline pilot, and psychologist. Watch, listen and learn. You can view the lectures here:
http://www.youtube.com/playlist?list=PLEFAE2148A0027DF6&feature=view_all

Events

Big Sky

Free avalanche beacon instruction. Grizzly Outfitters, Saturday, March 31st, 3-5 p.m.