

CHEAT SHEET

IS YOUR SLOPE SAFE?

Fifty-four people died in avalanches in the U.S. and Canada last season. But backcountry skiing doesn't have to be dangerous. It begins with education, decent ski skills, and humility. Beyond that, the more you go, the more you'll learn. **BY DEVON O'NEIL**

10 THINGS YOU NEED TO KNOW

1. A recent study found that the person most likely to be caught in a slide is a 25- to 29-year-old male. The good news: Being accompanied by a woman slightly reduces the risk. For real.
2. Your instincts should play a 50 percent role in determining whether a slope is safe; the other half should come from gathered information. Don't confuse instinct with ego.

Andy Rosenberg redlines his oh-shit meter in Haines, Alaska.

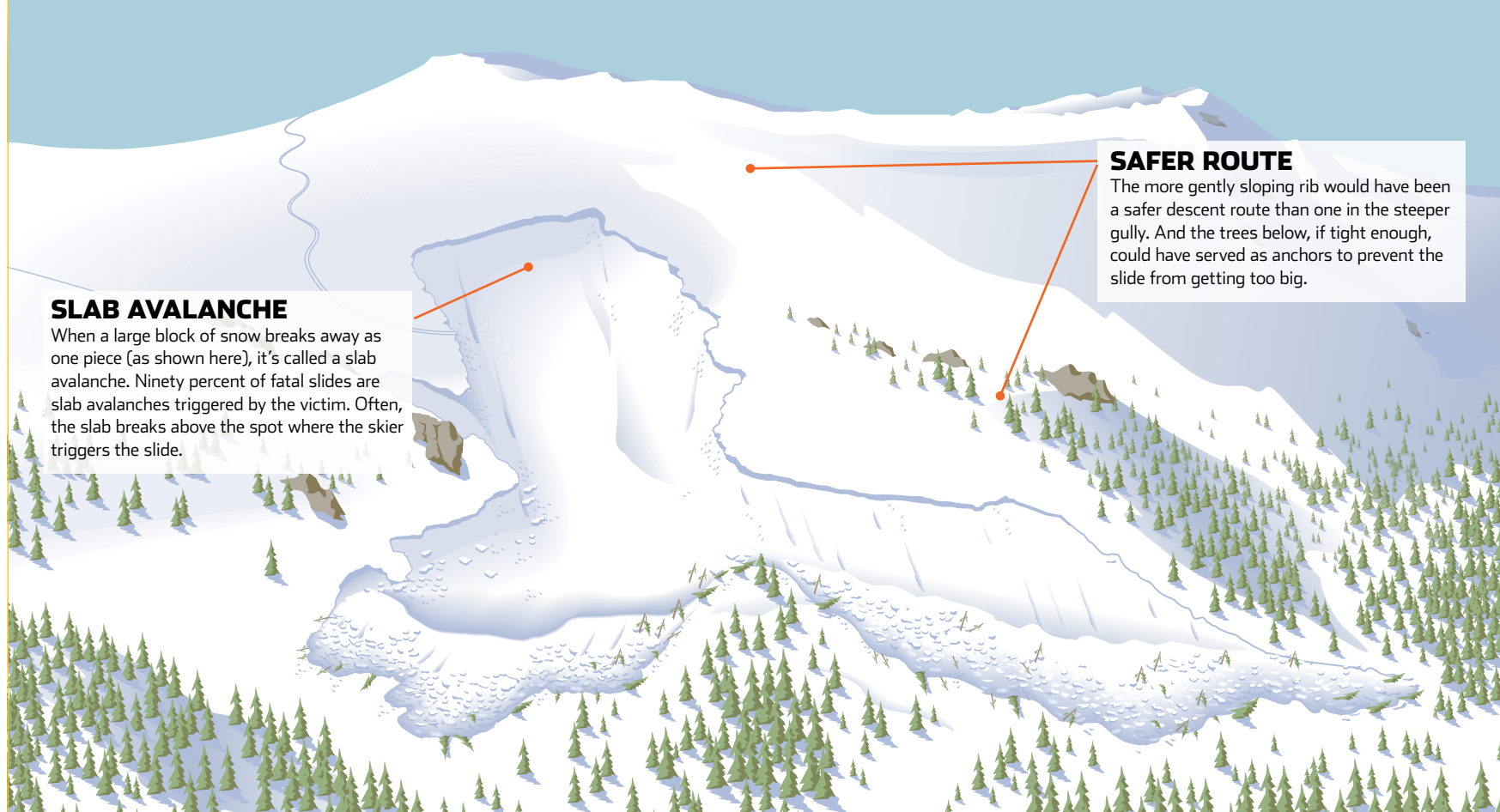
RULE #1: OBEY THE SIGNS

On a bluebird day last March, I was halfway down a 1,500-foot ribbon of snow that plunged off the south face of Mount Helen, a 13,164-foot peak outside Breckenridge, Colorado. By 11 A.M., the couloir we'd planned to ski was already far too warm and soft. So we retreated. Kind of. We scoped a 38-degree strip that traced alpine tundra to the valley floor. It felt firmer, so we dropped in. One at a time we arced turns, making sure to stay close to the tundra just in case.

I set my edge above a pile of rocks, and suddenly my ski broke through the wet surface, as if dropping through a trapdoor. Hollow. Two cautious turns later, to my horror, the slope released below me. It propagated out to the sides and went from zero to 60 in an instant. The slide gutted the slope, ripping out trees and triggering two deeper avalanches before rumbling over a cliff and piling up far below in a massive debris mound as hard as concrete. I glanced down at my skis teetering above the initial two-foot-high fracture. I'd never felt so mortal. Or stupid.

Scott Toepfer, the senior forecaster at the Colorado Avalanche Information Center, once told me the key to safe backcountry skiing is to look for reasons why you *shouldn't* ski a certain line—then heed them. The reasons were there that day on Mount Helen, but we discounted them in favor of the bliss we thought awaited us—a mindset Toepfer says is a backcountry skier's biggest hurdle. "You have to be able to turn it down a notch and take low-angle terrain if the conditions warrant," Toepfer says. "You can still have a great day, and you'll still drink a beer afterwards."

In hindsight, the natural avalanche activity we saw from the summit—maybe a day old and on a similar aspect—should have alerted us to the slope's fragility. We also underestimated exactly how much sun the high-elevation snow at 12,300 feet had absorbed during our ascent, softening it to a dangerous state. If we'd truly been looking for reasons *not* to ski the slope, as Toepfer suggests, we would've found them.



SLAB AVALANCHE

When a large block of snow breaks away as one piece (as shown here), it's called a slab avalanche. Ninety percent of fatal slides are slab avalanches triggered by the victim. Often, the slab breaks above the spot where the skier triggers the slide.

SAFER ROUTE

The more gently sloping rib would have been a safer descent route than one in the steeper gully. And the trees below, if tight enough, could have served as anchors to prevent the slide from getting too big.

HINT: DON'T SKI HERE

A PREVIOUS SLIDE IS THE MOST OBVIOUS RED FLAG.

MEASURE YOUR SLOPE ANGLE

"Any slope steeper than 30 degrees is risky. If you want to charge, go to a slope where you *know* it's safe. Dig multiple pits, keep track of the layers, and remember, trees or previous tracks don't make a slope safe." —Jeannie Wall, five-time North American ski-mountaineering champion

GO CONCAVE

Convex slopes—ones that roll over like a bulge—tend to be higher risk for slides, especially at the top of the rollover. Concave slopes—ones that curve like the insides of a cup—are generally safer, but they can collect sketchy windblown snow and don't provide many exit opportunities.

EXIT THIS WAY

Always have an exit plan. During the ascent and descent, locate islands of safety (on ridgetops, on spines, below cliffs) to aim for if the slope rips.

CHECK THE ASPECT

In midwinter, north-facing slopes tend to have greater avalanche danger, due to deeper snow and increased layering from wind and a lack of sunlight. In late springtime, it's reversed: South-facing aspects get nuked by the sun and are more prone to wet slides. But know this: Three-quarters of fatal avalanches occur on slopes facing northwest, north, or east.

FOLLOW THE FORECAST

If The Weather Channel is reporting snowfall of several inches of accumulation per hour, high winds, and cold and rapidly changing temperatures, stay inbounds. The more rapidly it's snowing, the higher the risk of a slide.

GEORGE RETSECK

WHERE TO LEARN

EXUM MOUNTAIN GUIDES; JACKSON, WYOMING

On Saturdays from mid-December through March, Exum guides teach an intro backcountry course at Teton Pass or Grand Teton National Park. Learn everything from kick-turns to important snow-safety decisions. Book your spot at least 24 hours in advance. [from \$100; [exumguides.com](#)]

CALIFORNIA ALPINE GUIDES; MAMMOTH LAKES, CALIFORNIA

During a three-day introductory backcountry tour in Lassen or Sequoia National Park, you'll learn the basics of traveling in avalanche terrain and navigating with a map, compass, and GPS—and you'll do it while winter camping. [\$525; [californiaalpineguides.com](#)]

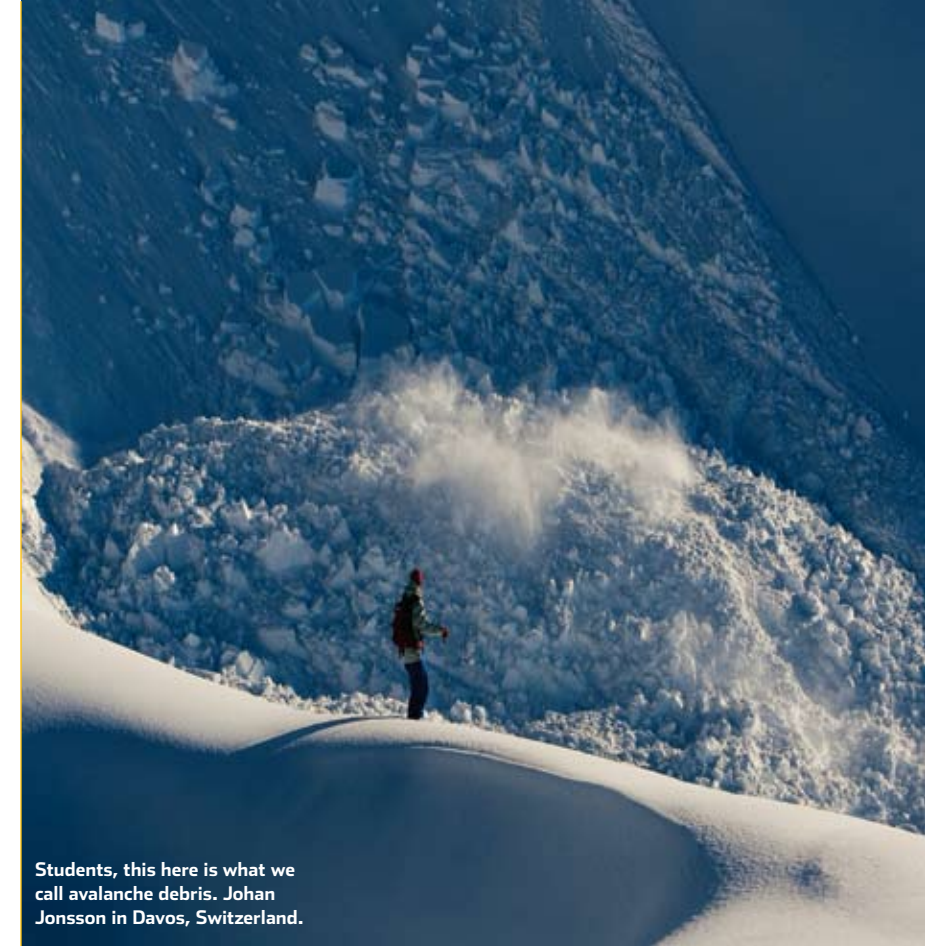
EASTERN MOUNTAIN SPORTS; NORTH CONWAY, NEW HAMPSHIRE

This one-day backcountry primer takes place at the base of 6,288-foot Mount Washington, but you won't ski the peak right away. Instead, learn how to skin efficiently, use avalanche transceivers, and bring the right gear. EMS also offers advanced backcountry tours throughout New England and the Adirondacks. [from \$160; [emsski.com](#)]

UTAH MOUNTAIN ADVENTURES; SALT LAKE CITY, UTAH

After spending the first day of a two-day seminar perfecting uphill technique and route selection, you'll spend the second day on a longer tour to a Wasatch summit, where you'll learn how to read snow stability. [\$280; [utahmountainadventures.com](#)]

OSKAR ENANDER (TOP), CHARLIE BASER



Students, this here is what we call avalanche debris. Johan Jonsson in Davos, Switzerland.

GEAR FOR THE BACKCOUNTRY

BLACK DIAMOND AGENT AVALUNG PACK

This 20-liter pack weighs less than three pounds. Plus, there's a sling for your helmet, a cable diagonal ski-carry system, and, most important, an Avalung that could save your life. [\$200; [blackdiamondequipment.com](#)]

LEATHERMAN SKELETOOL

The full-size, stainless-steel Skeletool delivers all the crucial tools you need and nothing more. At just five ounces, it weighs less than a bag of peanuts. [\$72; [leatherman.com](#)]

MAMMUT ALUGATOR LIGHT SHOVEL AND AVALANCHE PROBE LIGHT

Three things you must have at all times when skiing in the backcountry: beacon, shovel, and probe. For the last two, try this lightweight but sturdy aluminum shovel and easy-to-assemble six-piece aluminum probe. [shovel, \$45; probe, \$40; [mammut.ch](#)]

ORTOVOX S1

According to a recent study, nearly two thirds of all avalanche accidents involve multiple burials. This transceiver is designed to make it easier for you to locate more than one victim. It also comes with a temperature gauge and compass. [\$499; [ortovox.com](#)]



3. "Check your local avalanche forecast website every day, even if you're not skiing. It'll tell you about wind, snow accumulation, and temperature changes." —Seth Morrison, pro skier

4. Invest in a slope meter (\$30; [backcountryaccess.com](#)). It's light and easy to carry, and it'll show if your slope is over 30 degrees and therefore a higher risk.

5. Avalanches are most likely to occur within 24 hours of a storm. Other red flags: slough and natural slides, temperature changes, *whumphing* noises, and wind.

6. "Stick the grip of your pole into the snow. Feel how the snow layers are stacked. If you feel heavy on top of soft, that's not good." —Kirsten Kremer, heli-ski guide

7. When organizing your pack, keep your shovel and probe in an easy-to-access spot, like an exterior sleeve. And always bring plenty of food, water, and extra layers.

8. The bible of backcountry travel is a book by Swedish mountain guide Jimmy Odén called *Freeskiing: How to Adapt to the Mountain* (\$65; [freeskiingthebook.com](#)).

9. "The cliché 'safety in numbers' is not applicable to backcountry skiing. Pick two or three trustworthy people." —Chris Davenport, pro skier and author of *Ski the 14ers*

10. At the American Avalanche Association's website ([avalanche.org](#)), you can check forecasts and an accident database, find avalanche courses, and follow a safety tutorial.