

without overheating. Come to a break nicely warm from exercise, put a layer on during the break in order to avoid heat loss, and take the layer off before you leave again.

## PLANNED SHELTERS

After a long, hard day of ski touring, you have arrived at your camp. All went well and ideally you should still have some energy to build a nice camp. You carried your shelter with you, but which option did you choose? Shelters vary in efficiency and comfort, so choose one that meets your requirements for both.

### Bivy Bags

**Pros.** Bivy bags are light and compact. They have a small footprint and take up very little space in your pack. They are good in alpine applications where there might not be enough room to pitch a tent. In good weather they can be the lightest option and make for great star gazing.

**Cons.** A good bivy bag weighs nearly half as much as a modern two-person tent and does not deliver the same amount of protective space. Tents are also more breathable. We recommend a modern two-person tent, unless you're on your own or need to camp somewhere with small camp platforms.

### Lightweight Floorless Shelters

**Pros.** Floorless shelters (like Black Diamond's Mega Mid) are superlight, considering that they can accommodate three



*Fig. 8.1 A floorless shelter—surprising comfort for very little weight*

to four people in reasonable comfort (fig. 8.1). In conjunction with other group gear, this can mean a very light per person load. These shelters provide good headroom and can be dug out into small snow palaces. They're also cheaper than a fancy, light single-wall tent.

**Cons.** You saved energy carrying the light load, you arrived in camp, and . . . you have to keep working for a while. If the group is strong and the weather is decent, this is not that big of a deal, but if you have to set up camp in a storm, this extra exertion can be unpleasant. Floorless shelters can be quite strong and roomy, but all this takes some work.

### Tents

**Pros.** Modern two- and three-person tents offer a broad spectrum of benefits, from lightweight with moderate protection to heavy with excellent protection (fig. 8.2). A decent single-wall two-person tent can weigh barely 3 pounds, while some expedition-type tents can weigh well over 7 pounds. Vestibules are a key feature if the weather is raging.



Fig. 8.2 Expedition camp setting on Mount Logan, Canada (Photograph by Greg Allen)

**Cons.** Pick your battle—if you take a superlight tent, it will most likely not be as weather worthy, but if the tent is absolutely stormproof, it will be heavier. There are some good single-wall tents out there, but they tend to be less breathable. Consider the duration of your trip and the weather forecast.

### SNOW SHELTERS

Building a snow shelter is an option for winter camping. If you are venturing out into the more remote backcountry you should be able to build an emergency snow shelter (see chapter 10 for a discussion of emergency shelters). What follows are two nonemergency versions, should you have the time and inclination.

#### Side of a Snowbank: The Snow Cave

If the snowpack is sufficiently high, you could use the side of a snowbank to create a

nice cave in order to get out of the elements (fig. 8.3). If there is enough snow, make sure to use a cold trap in your entrance, meaning the top of the entrance is lower than the platform you are sleeping on.

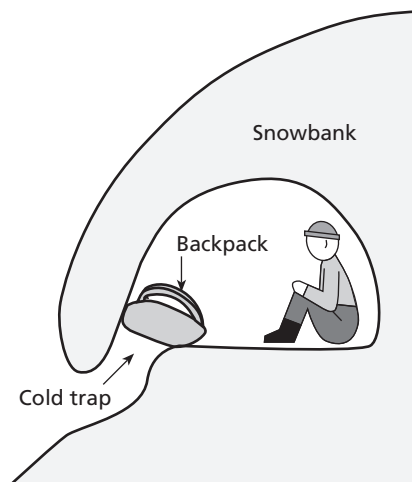


Fig. 8.3 Basic snow shelter on the side of a snowbank or hillside

It is impressive how much warmth you can create (relative to the outside) in a cave like this. Make sure you create a vent hole to keep the cave from dripping and to ensure proper ventilation.

Proper terrain selection is crucial. Please make sure that you are not building your snow cave below a cornice lip or in general avalanche terrain.

Building time for two- to three-person shelter: 1 hour.

### The Digloo

The digloo, as the name implies, is a combination between the well-known but seldom-built igloo and a snow cave that is formed out of a mound of snow.

A digloo takes some time to build and is most suitable if there are multiple people involved. Digloos also have great base-camp applications if a storm might last for days. Staying in a tent that is constantly rattled by the wind for days on end, or having to cook in stormy conditions, can be rather demoralizing.

1. Simply start by mounding up snow (this works for shelters built to accommodate up to four people). The resulting cone should be about 8 feet in diameter at the base and about 5–6 feet tall at its highest point (fig. 8.4).
2. Then start hollowing out the inside of the cone from below. Make sure to incorporate a cold trap into the entrance—the top of the entrance should be lower than the platform you’ll be sleeping on.
3. In the meantime, have someone stomp out an area of about 25 square

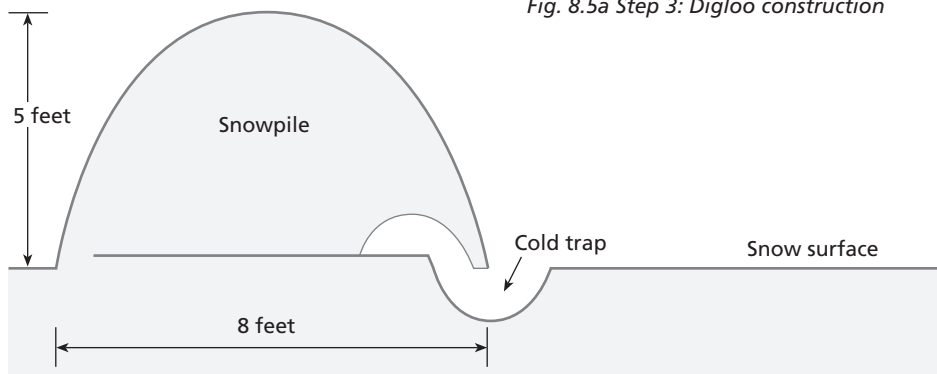


Fig. 8.4 Step 1: Digloo construction

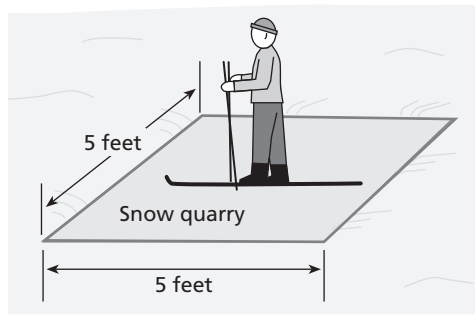


Fig. 8.5a Step 3: Digloo construction

feet with skis on. Let the snow of the stomped area settle a bit. This will be your block material (the snow quarry; see fig. 8.5a).

4. One person climbs to the top of the cone and starts digging down from the top. You want to dig down about 3 feet or so and have the top hole be about 2 feet in diameter (fig. 8.5b).

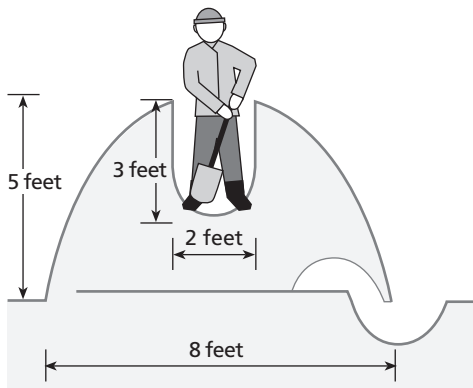


Fig. 8.5b Step 4: Digloo construction

5. The person who was digging below comes out and starts handing cut snow blocks from the snow quarry to the person standing on top of the cone. These snow blocks can be cut with a snow saw, a shovel, or, in a pinch, with a ski.
6. The person on top of the cone builds a small igloo around herself with these snow blocks (fig. 8.6). This is accomplished by cutting the bottom and one side of each snow block at a bit of an angle so that the blocks lean slightly forward and each successive block fits neatly next to the previous one. Make sure you offset the blocks of the next round so that the block seams of the various rounds don't overlap. The snow blocks will start supporting themselves. After a couple of rounds, the remaining hole should be small enough that one more block placed on top should complete the

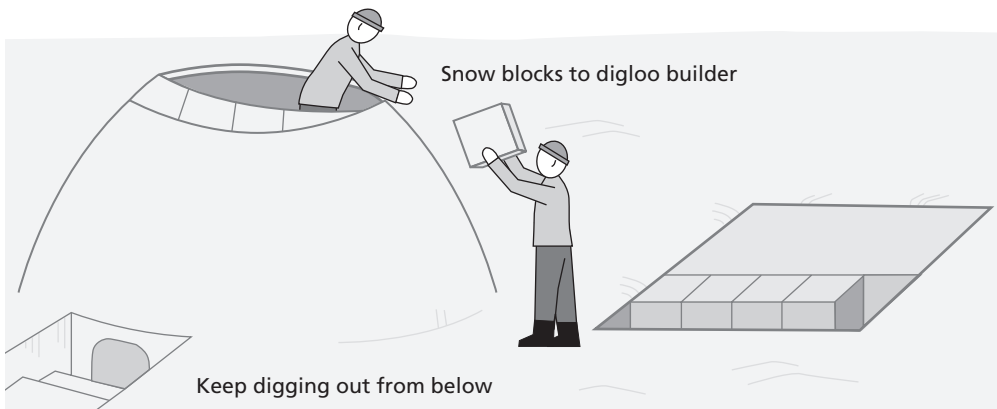


Fig. 8.6 Step 6: Digloo construction

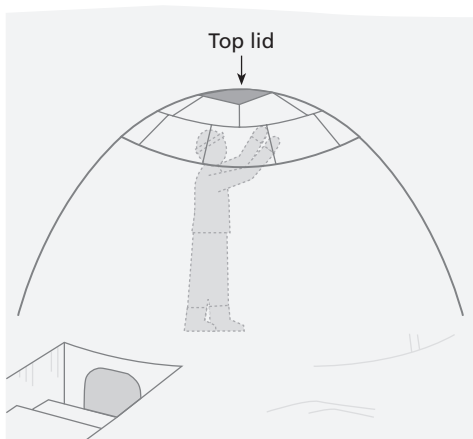


Fig. 8.7 Step 6: Digloo construction

simple roof structure. If timed properly, the person digging from below will be close enough to the middle of the cone so that the person on top will end up popping through the ceiling of the lower hole (fig. 8.7). The digloo can then be improved, refined, and enlarged as much as you want.

Building time for three-person shelter:  
1.5–2 hours.

## NUTRITION ON A SKI TOUR

In an endurance sport like backcountry skiing, where you carry your own food, planning for good nutrition is important not only for staying fueled and hydrated, but for managing the weight you carry in your pack. Much has been written about exercise

nutrition, and we recommend *Conditioning for Outdoor Fitness* by David Musnick and Mark Pierce as a good place to start. Always keep in mind any of your own health problems that might trump particular recommendations.

Getting the fuel you need on a tour starts with your overall at-home diet. Shoot for 60 percent calories from carbohydrates, 15 percent from protein, and 25 percent from fat. Choose unprocessed carbs (legumes, whole grains, a variety of fruits and vegetables), eat foods low to midrange on the glycemic index, and choose healthy fats (avocados, seeds, nuts). The glycemic index measures the rate at which carbs increase blood-glucose levels—higher-glycemic carbs (honey, fruit juices, fruit) spike blood-sugar levels, while lower-rated carbs (like brown rice) cause a more gentle change in blood sugar.

Your muscles need glycogen to fire, and glycogen is generally replenished with glucose from your bloodstream. Glycogen reserves vary person to person, but you can expect anywhere from 1.5 to 6 hours of fuel before you work through your reserves and you need to replenish. If you don't replenish muscle glycogen, your body seeks fuel by burning fat or protein. Energy from burning fat is hard to access, resulting in significantly decreased performance (the all-too-familiar “bonk”). For longer-duration or higher-intensity activities, like backcountry skiing, you need to start off with high glycogen reserves, replenish them throughout a tour, and completely replenish them after you're done.