Safety

Ski touring is relatively safe until enthusiasm or compulsiveness overrule judgement. Outright falling injuries are far less common than on developed downhill slopes. Cautious, controlled descents are fundamental to ski mountaineering. Snowplow and kick turns are standard procedure; straddling ski poles may be necessary along trails too narrow for maneuvering. The best and usually most enjoyable return route is in the ascent tracks. Hazards such as open water in streams, sharp turns, stumps, and snags should be marked during ascent by drawing an X in the snow.

Fatigue, cold, and lost bearings, followed by panic, misjudgement and physical collapse are tragic sequences to which many winter mountaineers have fallen victim. Paying attention to weather, route, ability and condition of each skier, and daylight hours remaining, will almost always prevent trouble. An over-tired skier may be unable to restore body heat and is prey to hypothermia (lowered body temperature). This is the killer known more commonly as "exposure" and can occur even under mild outdoor conditions. *One of the best ways to prevent fatigue and hypothermia is to drink plenty of liquid in small portions throughout the day.* Denying the body liquids while on the trail is an outdated principle.

A party overtaken by darkness should not continue unless the terrain is gentle, the return tracks clearly visible, and the remaining distance short. Nighttime snow illumination is extremely deceptive. Healthy adults can survive one night in the open under most conditions; down jackets and space blankets make the bivouac tolerable. Snow caves provide good shelter but digging them may sacrifice energy and dry clothes. With an avalanche shovel and tarp a covered trench shelter can be quickly built. Night temperatures a hundred feet or more up the valley sides are often warmer than on the valley floor where cold air currents flow.

An injured skier should be given first aid and made warm and comfortable. He should not attempt to travel with painful and undiagnosed injuries. The leader should formulate explicit plans for getting help and tending to the victim. Members sent for help should not depart from the ascent route and should exercise extreme caution in skiing, even at the expense of some lost time.

All accidents must be reported immediately to the Park Headquarters.

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Avalanches

Responsible ski mountaineers are informed about avalanche mechanics, safe travel, and rescue procedures. It is well known that *most avalanche victims trigger the slides in which they are caught.*

The general rules for traveling in avalanche terrain are to avoid steep open slopes, gullies, slopes below cornices, drifted slopes and other likely avalanche paths. Within the Park the chief avalanche areas are the headwalls and cirques along the Divide and adjacent ridges; some of these contain immense snow deposits blown from wind-exposed areas. Most valleys in the Park are safe, but even wooded slopes can slide. Small avalanches, running no more than 100 or 200 feet, kill more people annually than large, spectacular avalanches.

About 80% of all avalanches occur during and shortly after storms. Snow falling at one inch per hour or faster is a sign of possible slide activity. Be extra cautious during these periods. Snow remains unstable under cold temperatures but tends to stabilize close to or just above freezing temperatures. Prolonged clear, cold weather, common early in Colorado winters, is a frequent cause of later avalanches, especially on north slopes. There are no obvious signs of this danger. Check with a ranger for past weather conditions as well as current forecasts. Other precautions:

Look for old slide paths. Avalanches usually occur in the same areas each winter. Old slide paths are recognizable by pushed-over small trees, and trees with broken-off limbs. Above treeline, steep, open gullies and slopes are always suspect.

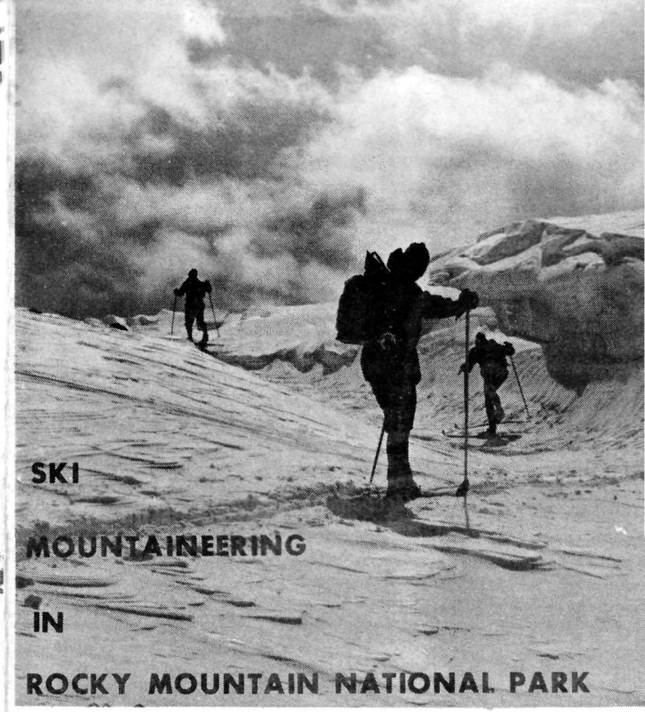
Listen for sounds. Hollow sounds in the snow, particularly on leeward slopes, indicate that conditions are probably dangerous. If the snow cracks and the cracks run, the danger of slab avalanches is high.

Watch for new avalanches. Avalanches in the vicinity indicate generally dangerous conditions. Beware when snowballs or "cartwheels" roll down the slope.

If you must cross an avalanche slope, remove wrist loops and footstraps, loosen bindings and knapsack straps, put on hat, mittens, and hood. Cross the slope one at a time, trailing a bright nylon avalanche cord. Watch each member to plot his course if he is swept away. Use natural safety islands such as tree clumps and rock outcroppings. Do not assume the slope is safe after the first member has crossed.

If you are caught in a slide, call out loudly, dump poles, skis and knapsack. Use a swimming motion to stay on the surface, working to one side. If you start to go under, cover face with mittens to keep snow out of nose and mouth and to create breathing space. Try to dig yourself upward and out, avoiding panic. Mental training as a ski mountaineer is required to make these procedures more than just hypothetical if they are ever needed.

If you are a survivor, check for further slide danger, then locate the victim's avalanche cord and trace it to him. Otherwise, mark the last point where he was seen and search below that point by probing with the heel of a ski or an inverted ski pole. Make a careful search before going for help: chances for the victim's survival drop rapidly after one hour. When the victim is found, clear nose and mouth and give artifical respiration. Keep him warm and treat for shock.



SKI MOUNTAINEERING IN ROCKY MOUNTAIN NATIONAL PARK

The glacially carved terrain of Rocky Mountain National Park offers excellent and varied ski mountaineering for seasoned skiers familiar with Colorado snow and weather conditions. Moderate to heavy snow cover fills most valleys from late December into May. Many slopes above the treeline are swept bare during the coldest months, but spring snows adhere to the tundra, allowing high tours in late April and May. Dry powder snow is usual in the valleys through March, but open areas may be crusted by wind and sun. Many winter days are clear.

The widespread surge of interest in ski mountaineering reaffirms public concern for enjoyment and preservation of nature in its primitive state. Most ski mountaineers are informed conservationists who respect animal and plant habitats and leave recreational environments unchanged. The sport conveys its own ethics.

This brochure advises tourers of RMNP policies concerning winter travel in the Park, and provides brief information about terrain, equipment, weather, safety, and avalanches. Further information is available at the Park Headquarters, near the Beaver Meadows Entrance, or the West District Office near Grand Lake.

Text by: Ronald Cox Photos by: Sue O'Brien

Restrictions

Ski mountaineers are requested to sign in and out at the bright orange boxes found at most trailheads.

Skiers who plan to combine their tours with technical mountaineering ascents ***must register*** with a Park ranger; likewise, ***all overnight tourers must obtain a Backcountry Use Permit*** which specifies the exact camp area. Telephone inquiries or registration can be made by calling 586-4425 or 586-3259 for tours on the east side of the Park and 627-3471 for tours on the west side. The following special restrictions apply to all winter use of the Park:

Campsites must be more than one mile from any road and out of sight of both roads and trails.

No camping is permitted at Bear, Nymph, Dream, Emerald, or Gem Lakes.

Wood fires are prohibited; tourers must carry stoves and fuel for cooking, snow melting, and emergency.

Cutting of limbs or boughs for beds, lean-tos or other purposes is prohibited.

Toilet sites must be away from streams, lakes, or natural drainages evident in the terrain or snowpack; they must also be away from trails or natural ski routes.

All trash must be carried out.

Official regulations pertaining to preservation of the Park's natural features apply during all seasons.

Skiers returning from overnight or technical mountaineering tours ***must check out.***

Solo touring should never be undertaken. (Ideal party size is four to five. Smaller parties have inadequate manpower for trailbreaking and emergencies; larger parties are unwieldy and should be split into fast and slow groups.) Parties should begin and end their tours early to allow several hours of daylight for a safety margin.

Terrain and Routes

The most popular trips begin at Bear Lake, Glacier Gorge Horseshoe Park, and Wild Basin. Tours in the northern and western parts of the Park are less common because of relative inaccessibility to cars.

Ranger-guided ski and snowshoe walks, conducted on some weekdays and weekends, introduce visitors to snow travel and winter aspects of the high Rockies. Look for schedules at Park Headquarters and at Bear Lake.

A description of routes, from easy half-day to rigorous full-day trips, is available on request. Terrain features, landmarks, hazards, and round-trip times are indicated.

Since the snow above treeline is often unskiable, alpine touring, with long downhill runs, is less appropriate than nordic touring--a new appearance on the American scene.

Some tours follow summer trails, especially through dense forest. Though most trails are gentle, they often pass through harsh terrain, making shortcuts unprofitable or risky. Trails are, however, difficult to follow in winter, and independent ski routes are often better.

North-facing slopes offer the most reliable snow; south-facing slopes grow sticky in the sun and crusty in the shade. Traverses between drainages are difficult because most valleys have steep glacier-cut walls. Rock outcroppings sometimes require detours, even along valley floors.

By midwinter most stream courses are buried and provide relatively unobstructed travel. Some open pools still remain, and steep creekbanks may slough. Small gorges and cascades, though ice-jammed and sometimes passable, should be avoided since the snow structure can collapse.

Despite the hard freeze of midwinter, lake crossings can be hazardous, particularly near inlets and outlets where ice is thin. Caution and constant testing by observation and prodding with ski poles, are necessary. Rescue procedures should be determined before a crossing is begun.

All areas of the Park are mapped on standard U.S. Geological Survey 7-1/2 min. quadrangles. These include: Fall River Pass, Trail Ridge, Estes Park, Grand Lake, McHenry's Peak, Long's Peak, Shadow Mountain, Isolation Peak, and Allenspark.

Equipment

Light, but not fragile, wooden skis are best for most tours. The binding should allow easy heel lift but should hold the foot firm for descent and should release or yield under heavy tension. Safety cords should be attached to prevent runaway skis. Steel edges are an asset for hard snow and essential on windpack or late spring crust. Poles should be long enough to prevent arm fatigue and should have large baskets. A spare ski tip and binding repair equipment should be carried for each three to four skiers.

Crosscountry waxes have become preferable to "seal skin" climbers through technical improvements and greater familiarity in their use. For most conditions the hard waxes (green, blue, purple, red) suffice; klister waxes provide better purchase on crust but can clog badly if snow conditions change. Fish-scale skis, requiring no wax, are also effective for touring.

Clothing should include wool sweaters and trousers, wind parka with hood, gaiters over boottops, extra mittens and socks, face mask, goggles. Several layers of light, insulating clothing, removable according to conditions, are preferable to one heavy garment. A down jacket can be indispensable in emergency but is too warm for trail travel. Keeping the head and neck warm preserves valuable body heat. Heavier, multi-layered boots are necessary for overnight trips or trips to remote areas.

Other knapsack items for day tours: food, water, emergency rations, map, compass, whistle, flashlight, matches, first aid, avalanche cord. Many tourers carry an avalanche shovel and a light-weight nylon or plastic tarp for improvising a simple but adequate emergency shelter.

Weather

Unpredictability is the key word for all mountain weather and is proverbial in the Rockies. The experienced Colorado mountaineer has shed all arrogance toward the weather.

The Continental Divide, jutting into the prevailing west winds, is often capped by a turbulent and wet storm cloud. The Bear Lake - Glacier Gorge region, in particular, is often afflicted by poor weather when skies are clear a few miles to the east. Statewide weather trends announced in forecasts are nevertheless a valuable general guide to Park weather, particularly for skiers planning extended tours.

Usual day temperatures vary from the low teens to the mid or high 20s; night temperatures from the teens to well below zero. Cold fronts may lower temperatures to -30 degrees F and wind chill on exposed flesh can easily lower the effective temperature to -80 degrees F. Day tourers to open areas and all overnight tourers must be equipped to handle these polar conditions.

High winds, sometimes exceeding 100 mph, are perhaps the greatest single weather danger in the Park. Above treeline, skiers may be blown off their feet and experience zero visibility with a total loss of orientation. A skier enveloped in "white-out" may be moving downhill when he thinks he is standing still, or standing still when he thinks he is moving. The brittle, corrugated snow crust can snap ski tips unexpectedly. Skiers should stick closely together and retreat immediately to below treeline, cautiously probing for cornices, drop-offs, etc.