

Mount Rainier

National Park Service  
U.S. Department of the Interior



# Disappointment Cleaver- Ingraham Glacier



NPS/Madsen photo

Official In-Depth Route Description



# Disappointment Cleaver- Ingraham Glacier

Stats	
Approximate Elevation Gain	9,000 ft, 2750 m
Approximate Length	8-9 miles, 13-15 km
Average Time to Climb Route	1-3 days
Typical Hazards	Navigation Errors, Lack of Physical Preparation, Crevasse Falls, Steep Icy Slopes
Attempts Per Year	7600 Climbers
Average Summit Success Rate	51%

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*Produced by Mount Rainier National Park  
Climbing Rangers, 2017*





NPS/Forrest Madsen photo

The Disappointment Cleaver-Ingraham Glacier Direct (DC) route is the most popular summit route on Mount Rainier. Seventy five percent of all summit attempts are made via “The DC”. It is also one of the most guided routes in North America. During the summer, climbers can expect a well-marked route but that comes at the expense of busy weekends during periods of good weather.



### History

The early climbing history of the Disappointment Cleaver is unclear. Even the genesis of the name of the route is mysterious. The term ‘cleaver’ is seldom used outside of the Pacific Northwest. On Washington volca-

noes it is used as a term for a rock ridge that separates, or cleaves, two glaciers.

In Dee Molenaar’s thorough book on the climbing history of Rainier, *The Challenge of Rainier*, there is no mention of how or why the cleaver was named ‘Disappointment’. The same is true for the two published guide books written for Mount Rainier (Gauthier 2005, VanSteen/Becky 1999). The first ascent of the Ingraham glacier was probably made by A.L. Brown and a group from the Yakima Tribe in 1885, although they “did not reach the highest pinnacle of the mountain” they ascended both the Cowlitz and Ingraham Glaciers and camped near the top of Gibraltar Rock.

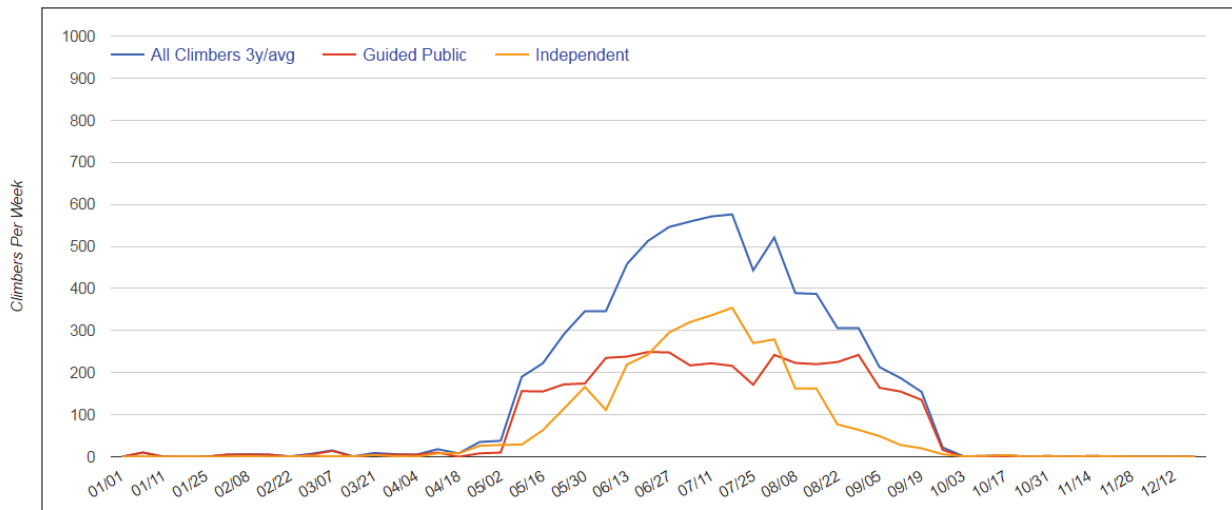
The DC steadily gained popularity in the years following the collapse of the traditional Gibraltar Ledges route in 1936. Notably a detachment of the 87th Mountain Infantry Regiment reached the summit on May 8, 1942, after establishing a high camp at the top of Disappointment Cleaver (12,300’). The first ski descent of Ingraham Glacier was made by John Ahern, Bill Briggs, Roger Brown, Gordie Butterfield, Joe Marillac, Roger Paris, Jim Whittaker and Lou Whittaker on June 18, 1961.

### Statistical Route Use

The main climbing season for the Disappointment Cleaver Route begins in mid-May when the guide services begin their summer operations. The high season lasts through the end of September when they typically cease operations and clean the route of markers and crevasses ladders. The popularity of the DC route is as much due to the proximity to the paved road to Paradise as it is to the fact that the route is marked and maintained by the guide services. This presents some unique advantages and hazards for recreational climbers. The maintained route allows climbers to test themselves in terms of both climbing skill and in dealing with adverse weather conditions, but it also can lead to climbing teams getting in “over their heads” and to be in need of climbing skills which they may not possess. Getting lost in low visibility conditions and losing the climbing route is one of the more common ways that inexperienced climbers get into trouble quickly.

The average summit success rate for all climbers is typically near 50%. The most common reason for an aborted summit climb is climber fatigue; this is almost always due to inadequate training prior to the climb. Climbers often underestimate the physical requirement needed to successfully and safely climb Mount Rainier. Bad weather is another major factor in turning climbing parties back. Climbing into poor weather leads to a majority of the accidents on Mount Rainier even though these conditions are easily forecasted. Inexperience with steep and glaciated terrain is also a contributing factor to aborted climbing attempts.

## Weekly Distribution of Climbing Types (Total, Guided, and Independent Public)



Route: Disappointment Cleaver

### Weather and Forecasts

Many climbers are preoccupied with the technical aspects of climbing Mount Rainier and forget the biggest factor in their safety—the weather! Mount Rainier is a lightning rod for weather. It is easy to forget about winter-like and blizzard conditions, especially in May, June, and July, when the weather lower down in the city is warm and summer-like.

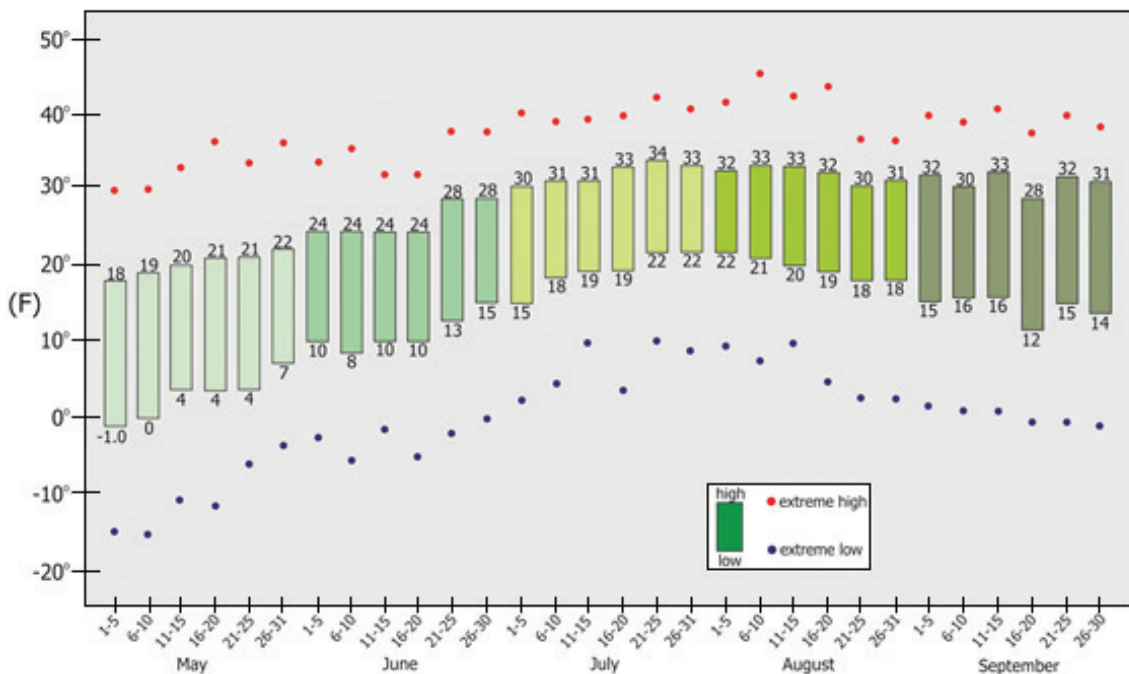
For a brief overview on expected temperatures, wind speeds, and precipitation, start here: [Mount Rainier](#)

### Recreational Forecast.

#### Windspeed

Using this [wind chill calculator](#), average wind-chill conditions on a summer trip up Mount Rainier ranges from -5F to 10F. Extremities (hands and feet) are the first to get cold and succumb to frost-bite/nip. Climbers often underestimate the cold in June and find that their toes and hands are so cold that they cannot continue their climb and must turn around. Extra warm boots (not single layer, thin leather boots) are a must before July 4th.

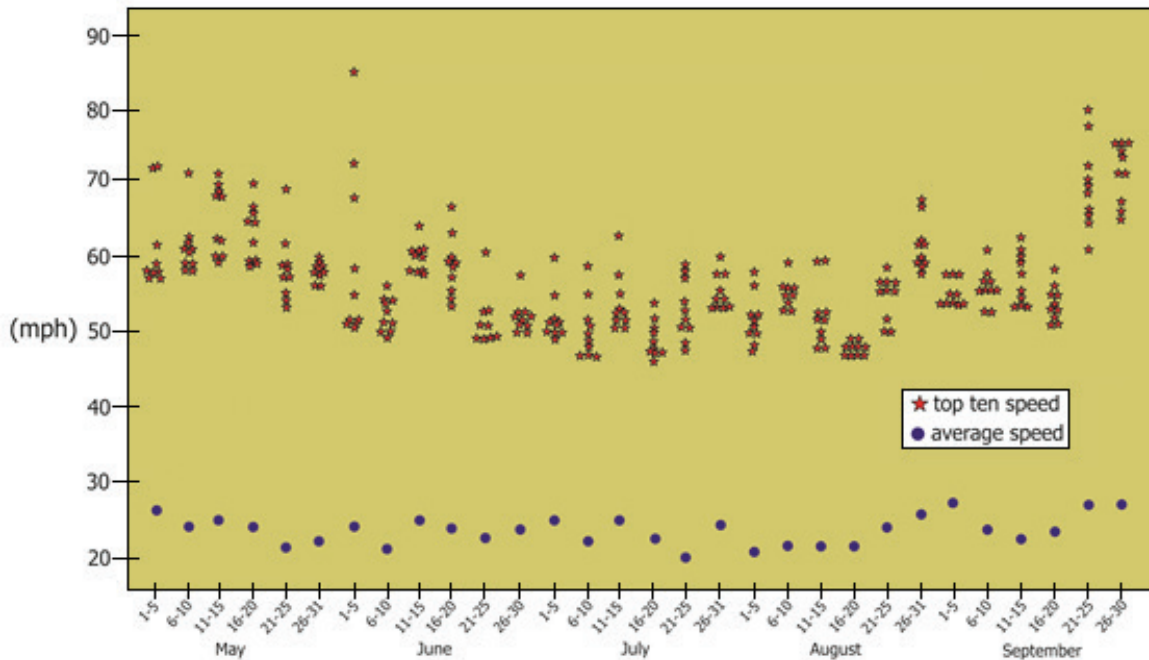
### Mount Rainier Air Temperatures: Near Summit



Averages and extremes in temperature during the summer season on Mount Rainier.



## Mount Rainier: Windspeeds Near the Summit



The above is a graph for May-September wind speeds. These graphs show climbers that they must be prepared for sub-zero temperatures and wind speeds averaging 20 miles per hour.

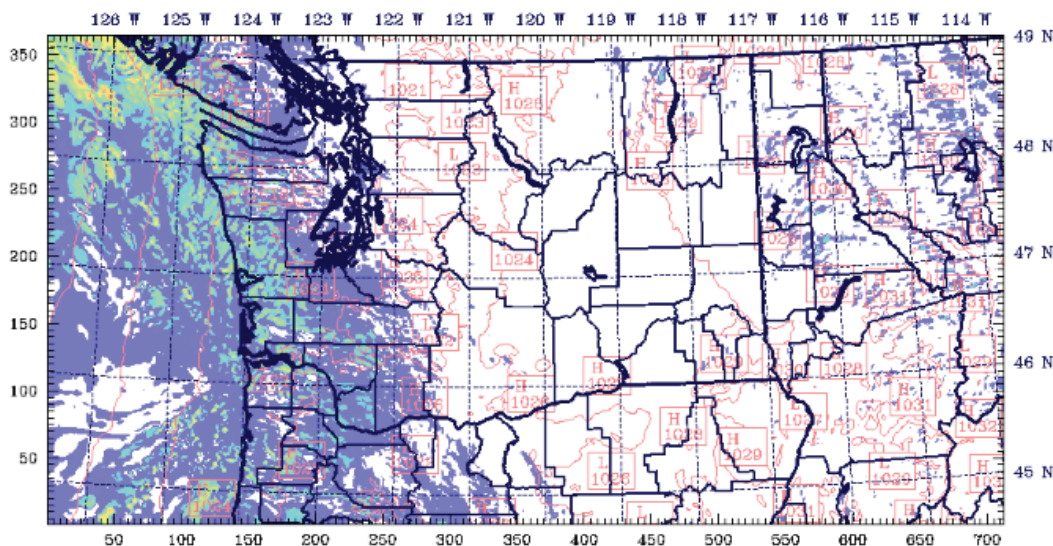
### Presence of moisture/condensation

The presence of condensed moisture (surface clouds/fog) in the alpine areas is a game-changer. Never underestimate the amount of information that is lost when visibility becomes restricted. Cold temperatures, high winds, and driving rain/snow can make the experience rather desperate, just because of the simple fact that you cannot see where to go. *The route* to the summit is often a thin corridor. If you stray just 10 feet this way or that way, you

may wind up on a path that has no exit and be trapped in life-threatening conditions. Even a well-established boot-pack can disappear in minutes with drifting snow.

View these models and learn to understand the information in them in order to understand the possibility for obscuring moisture during your climb:

- [UW MM5 4/3km Mount Rainier Atmospheric Profile](#)
- [UW MM5 4/3km Clouds 3-10K feet](#)



Presence of clouds from 3000 to 1000 feet elevation.

# • UW MM5 4/3km Clouds 10-20K feet

## The Go/No Go Matrix (Weather)

To assist in making a decision if one should climb based on the forecast, we have created this matrix. This go/no go matrix only takes weather into account for a given team experience level. Other factors such as avalanche conditions, equipment issues, other team dynamics, etc., need to be evaluated as well. The actual number output from the matrix can be a rough guide, but the important part of the exercise is to discuss conditions with your team and arrive at a consensus as to what the experience level of your team is and determine how prepared you are to deal with the forecasted weather. As always, one should choose to turn back if the weather looks to be deteriorating. The matrix was created with input from guides and rangers and represents cumulative knowledge of thousands of ascents.

Start by going down the gray column on the left. First assess the wind component at either 1, 2, or 3. Then proceed to the precipitation component, add 1, 2, or 4 to your running total. Continue down the list, summing all the factors from the four rows. Then place your score in the evaluator tool relative to your team's experience level. You can see from the matrix that precipitation and visibility can be show stoppers, certainly on a summit climb, but even for a trip to Camp Muir.

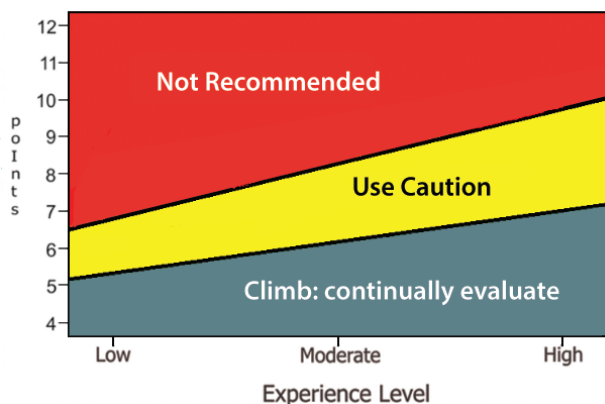
On the lower mountain below 10,000', these weather factors can often be mitigated by equipment and exceptional experience, however, there are far narrower margins of error. With the weather and navigational concerns, it can become all but impossible to reconnoiter your way and survive.

Go/No Go Weather Matrix

Points:	1	2	3
Wind	Low (<15 mph) +1	Moderate (15-25 mph) +2	High (>25 mph) +3
Precip	None +1	Light +2	Present +4
Visibility	Clear (unlimited) +1	Overcast or Scattered Clouds +2	Restricted +4
Summit Air Temp	Warmer (>30°F) +1	Moderate (20°-30° F) +2	Cold (<20°F) +3

- Wind, Precip and Visibility all as 3 or greater indicates that a climber should not attempt to climb

Weather Conditions and Team Experience Evaluator Tool



## Forecasts

There is no excuse to be uninformed of the weather. Cellular reception is available now at most places above 6,000 feet. Bring a phone, keep it in airplane mode or off until you need it. Bring a small portable charger as a backup. The rangers can also provide forecast information. Here are some online resources to help you develop an accurate forecast:

- [Mount Rainier Recreational Forecast](#) is a general overview updated twice daily
- [Northwest Avalanche Center \(NWAC\)](#) has a zone forecast for Mount Rainier
- [University of Washington](#) has a bunch of forecast models available to view online



## Case Study: Shakedown SAR

On Friday, January 13th 2012, two climbers registered for a backcountry permit at Longmire and set out to camp on the Muir Snowfield. Two other climbers also registered for a summit climb. The weather forecast was for substantially worsening storm activity later that day as a winter storm warning was in effect. Each party had been contacted on several occasions by rangers and warned of the rapidly approaching weather. At approximately 12:30 pm both parties were contacted by a ranger while they were underway and ascending above Paradise. They were advised, again, to discontinue their attempt. This was the last contact anyone would have with both parties. After several days of storm activity and the climbers failure to return on schedule, a large scale, multi-day search effort was conducted. A total of 136 individual search missions were conducted including 75 helicopter flights and the use of thermal imaging cameras. The search was suspended on January 22nd without locating any of the lost climbers. The bodies of all the individuals were found during the subsequent summer climbing season at two separate locations both well below Camp Muir.

### Assessing and Managing Risk

There is nothing “safe” about mountaineering, however we can manage and mitigate risks by equipping and training sufficiently as well as making reasonable decisions. Real advancements in mountaineering safety won’t come from more specialized equipment, it’s the study of human behavior and heuristics that offer more substantial gains for parties trying to manage their risk.

The US Coast Guard (USCG), often looked to as one of the United States’ most respected rescue resources, has developed a system of risk mitigation called Crew Resource Management (CRM). The National Park Service has recently adopted a very close derivative of this. The USCG identified the core common denominators of tragedies, injuries, and near-misses that occurred during rescue operations. In one of its applications, CRM asks you to compare and assess your intended action to these common denominators and see how well your plan of action stacks up, then asks you to either fill the gaps or refuse the risk and discontinue the activity.

If you have no other framework of risk assessment and management, then try this one. The climbing rangers use it and have had great success even conducting simple and mundane operations. Use this framework to have the conversation within your group the night before you climb.

#### (P) lanning:

What is the overall plan? Departure time? Turnaround time? Return time? Predict expected mountaineering methods. Contingency plan for a sick climber (even if it’s within yards of the summit)? Does someone outside the park know your plan?

#### (L) eadership:

What is the leadership structure in your group? Even on an independent summit attempt, we recommend identifying a leader. Many groups seem to be unwilling to do this, but this simple act can make the difference.

#### (E) quipment:

Do you have the correct equipment (ex. 2 pulleys, 2 prussiks, 2 anchors / person for crevasse rescue), what

happens if a climber on your team loses their pack, their gloves, their sunglasses?

#### (T) raining:

Has everyone been trained to employ the skills needed for the activity? (Cramponing, team arrest, belaying, crevasse rescue)

#### (T) eam fitness:

Are the right team members present? Do all feel up to the task? Is everyone in a healthy mental and physical state? Don’t ascend with signs of AMS.

#### (C) ommunication

How shall we communicate? What if the party must split up? (not recommended!) Do we have cell phones, group radios, PLB’s, or SPOT devices? How’s the communication comfort level in the group? Are the less-experienced climbers able to share their concerns? Are the experienced climbers listening and providing valid reassurance?

#### (C) onditions:

What are the (snow and weather) conditions now? What is the forecast? Do we have reasonable margins of safety? Are we within our skill and equipment levels? What are the weather trigger points for turning around? Is your team able to assess avalanche conditions, and if not will you attempt to climb anyways?

#### (C) omplexity:

Are we trying to do “too much” with the resources (gear, training, skill) we have? What are our trigger points (weather, team, snow conditions, leadership, equipment) for turning back?

We recommend performing this risk management activity at natural breaks during the course of your trip, for example, 1) at the initial planning phases on the phone with your friends a few days before your climb, 2) at the trailhead before your packs are on, 3) at high camps the night before your climb, and 4) before you head down the mountain. Encourage group participation. Lesser experienced team members may be silent in front of experienced and respected individuals. Reach out specifically to these silent team members. The discussion will pay off in spades.

## Suggested Previous Climbs

Mount Rainier is the tallest and most heavily glaciated of all the Cascade Volcanoes. We suggest that you have made ascents of some of the more challenging routes on the smaller volcanoes or have significant experience in technical terrain. Due to the complex glaciation and high elevation of Mount Rainier it is difficult to approximate the challenge on other mountains. Some similar routes would be:

1. Hotlum Glacier, Mt. Shasta
2. Easton Glacier, Mt. Baker
3. Leuthold Couloir, Mt. Hood

If you are new to this style of climbing, one *possible* progression of climbs to complete, **at a minimum** before attempting the DC route on Mount Rainier would be:

1. Mt. St. Helens, Monitor Ridge or Worm Flows
2. Mt. Hood, Hogback Glacier
3. Mt. Adams, South Side Climb
4. Mt. Shasta, Avalanche Gulch
5. Mt. Baker, Easton Glacier

## Current Conditions

Online resources to help you gather the most recent route conditions and trip reports:

- [Climbing Conditions Blog](#) maintained by Mount Rainier National Park climbing rangers
- [Cascade Climbers Trip Reports](#) details recent climbs by the public

Webcams around the mountain to view current weather and snow coverage:

- [Mount Rainier Webcams](#) provides a full list of cameras, some are seasonal
- [Northwest Avalanche Center](#) provides links to telemetry sites with current data

## What to Bring

There is no list of *required* gear to bring. The list of gear can vary based on the climbing party's skill and experience level. However, we can generally say there are common denominators to any climber's gear choices for this route.

Climbing rangers are often frustrated by the lack of crucial gear items they see in parties at Camp Muir. Parties with only one or two pickets, no pulleys, no prussiks, lack of leash for their ice axe, etc. . . are occasionally observed. In rare cases, extremely experienced climbers have developed systems and techniques to mitigate weight, but for the vast majority of climbers, the lack of gear is a strong indicator of lack of experience. Be aware that a climbing permit can be denied to climbers lacking crucial gear items who also do not have substantial experience.

To perform realistic crevasse rescue, it is standard for **each climber** to possess at least two small pulleys, two prussiks (or mechanical traction devices), several carabiners, and at least two anchors (usually pickets). This is especially true in parties of three or less.

### Clothes:

- |  |
|--|
| <input type="checkbox"/> Fleece Hat                        |
| <input type="checkbox"/> Balaclava/Bandana (winter/summer) |
| <input type="checkbox"/> Sunglasses                        |
| <input type="checkbox"/> Goggles (winter)                  |
| <input type="checkbox"/> Dexterous Thinner Gloves          |
| <input type="checkbox"/> Insulated Warmer Gloves/Mittens   |
| <input type="checkbox"/> Hooded Base Layer                 |
| <input type="checkbox"/> Softshell/Fleece Mid Layer        |
| <input type="checkbox"/> Waterproof Hooded Shell           |
| <input type="checkbox"/> Insulated Jacket w/ Hood          |
| <input type="checkbox"/> Softshell Pants                   |
| <input type="checkbox"/> Waterproof Pants                  |
| <input type="checkbox"/> Insulated Pants                   |
| <input type="checkbox"/> 2 x Socks (non-cotton)            |
| <input type="checkbox"/> Mountaineering Boots              |

### Personal Gear:

- |  |
|--|
| <input type="checkbox"/> Ice Axe w/ Leash          |
| <input type="checkbox"/> Crampons                  |
| <input type="checkbox"/> Helmet                    |
| <input type="checkbox"/> Pickets                   |
| <input type="checkbox"/> Ice Screw                 |
| <input type="checkbox"/> Harness                   |
| <input type="checkbox"/> Belay & Rappel Device     |
| <input type="checkbox"/> Pulleys                   |
| <input type="checkbox"/> Carabiners                |
| <input type="checkbox"/> Cordelette                |
| <input type="checkbox"/> Prussiks                  |
| <input type="checkbox"/> Water Bottles             |
| <input type="checkbox"/> Food                      |
| <input type="checkbox"/> Multi-tool                |
| <input type="checkbox"/> Headlamp (full charge)    |
| <input type="checkbox"/> GPS w/ Topo Map Loaded    |
| <input type="checkbox"/> Sleeping Pad              |
| <input type="checkbox"/> Sleeping Bag              |
| <input type="checkbox"/> Prescriptions/Medications |
| <input type="checkbox"/> Sunscreen                 |
| <input type="checkbox"/> Backpack                  |

### Group Gear:

- |   |
|---|
| <input type="checkbox"/> Shovel               |
| <input type="checkbox"/> Stove, Lighter, Fuel |
| <input type="checkbox"/> Tent                 |
| <input type="checkbox"/> Med Kit              |
| <input type="checkbox"/> Stove, Lighter, Fuel |



## Search and Rescue

The Disappointment Cleaver averages three major Search and Rescue (SAR) events and one fatality per year. Accidents occur due to a wide range of reasons on this route. Acute Mountain Sickness (AMS), High Altitude pulmonary edema (HAPE), other respiratory issues, and cold exposure injuries are the most prevalent, but falling on icy terrain as well as contact with rock (whether from falling into or being hit from above) are also common. Often poor decision making and overconfidence in climber's ability to handle poor weather are major contributing factors to climbing accidents on this route as well.

The NPS does not charge for search and rescue services. However, if private ambulances and air ambulances are required, fees are rapidly accrued. A large portion of the climbing cost recovery fee goes toward preparing for search and rescue incidents by hiring, equipping, and training climbing rangers. Rescues that result in a cost of more than five hundred dollars in overtime for personnel or in helicopter costs are not paid for by Mount Rainier funds. The National Park Service maintains a contingency account held regionally to pay for unprogrammed costs such as SAR.

## SAR Helicopter

The park has a staffed contract exclusive use helicopter on duty each day between May 15 and September 15. However, due to funding and other cost saving measures, the helicopter must be assigned out on regional wildfires and other incidents and projects. Nevertheless, since the inception of this exclusive use contract, the time it takes to get the helicopter to the incident base has decreased from 2-4 hours to 1-3 hours, depending on the location of the helicopter at the time of the incident. In addition, this exclusive use helicopter also has a dedicated crew who know the capabilities of the helicopter and thus operate it more safely.

## Resource Protection

### Blue Bags

On Mount Rainier climbers must pack out all human waste unless they use a toilet facility. Before leaving a ranger station, pick up a few blue bags for your trip. How many? Well, for the DC route, you won't need many, unless you are planning on camping at Ingraham Flats. Many climbers suffer from gastrointestinal distress from either altitude or a change in diet. For a three day trip, bring at least two per person. There are blue bag barrels at Camp Muir and Paradise.

### Wands

Wands are the main source of trash climbing rangers collect during the summer. Climbers believe they are 'helping' others out by leaving the wands they placed on their ascent. **Please do not do this.** You could actually be sending other climbers into harm's way because the route may have changed. Rangers and guides end up picking up all the stray wands. We encourage the use of wands if

you need them for navigation, but only if you agree to pull them. The modern standard for navigation is the GPS. Practice using it and don't forget an extra set of batteries.

## Rocky Fellfields

Areas above treeline where certain freeze/thaw and winds conditions allow for plant growth are called fellfields. This is an extremely fragile environment. Social trails can rapidly develop and new campsites (rock rings) are always popping up. Plants in this micro-habitat depend on rocks for protection from wind and ice. Climbing rangers survey these campsites as the years go by and deconstruct the new ones when they develop. Please camp on snow and perform all your camp activity on snow.

## Wilderness

The Mount Rainier Wilderness Area is part of the National Wilderness Preservation System. The five qualities of wilderness are: Natural, Undeveloped, Untrammeled, Solitude, and Primitive and Unconfined. We strive to protect these qualities in our wilderness while at the same time providing a climbing experience for the people who want to climb Mount Rainier. Not all five qualities can be protected to the highest standard at the same time.

## Leave No Trace

The five qualities of wilderness can be most fully protected by practicing Leave No Trace techniques.

- Plan Ahead and Prepare
- Travel and Camp on Durable Surfaces
- Dispose of Waste Properly (Pack It In, Pack It Out)
- Leave What You Find
- Minimize Campfire Impacts
- Respect Wildlife
- Be Considerate of Other Visitors

For more on Leave No Trace, please visit [www.lnt.org](http://www.lnt.org).



Climbing rangers land the park's exclusive use helicopter at Camp Muir to shuttle supplies in and carry waste out.

## Fees and Permits

For current information on ranger station locations and open hours please visit the [park facilities page](#). For climbing permit, climbing fee, and reservation information please visit the [park climbing page](#).

There are four terms we use in relation to fees and permits (required by 36 CFR 7.5):

### Climbing Cost Recovery Fee

- Purchase at home online, at the Climbing Information Center at Paradise, or the White River Wilderness Information Center.
  - Beginning in 2017, you can pay the cost recovery fee online before you come to the park on [PAY.GOV](#). Current information can be found on the [NPS Climbing](#) web page.
  - In order to speed the registration process, we recommend paying the climbing cost recovery fee before you come to the park.

- Revenue goes toward the National Park Service Climbing Program
- Valid for unlimited climbs in the calendar year purchased
- Required by each individual climbing team member
- Climbers must pay the climbing cost recovery fee before they register to obtain a permit

### Climbing Permit

- Only one permit per party is required
- The permit is free and required for climbing and camping
- Can be issued as a walk-up on the day of the climb or up to 24 hours ahead of the climb.
- Print your [climbing permit](#) out and pre-fill this form to save time.

Remember to do one thing when you get back to the trail head. **Turn in your climbing permit.** You are required to check out of your climb by U.S. Code 36 CFR 7.5. We also track specifics including what route you actually climbed and how many of your party made it to the summit.

Permit # _____ Entered In Access Database? _____ <b>Special Use Permit for Travel on Glaciers and Climbing above 10,000 feet on Mt. Rainier</b> # in party _____ (maximum 12) <b>LEADER INFO:</b> Name _____ Age: _____ Address _____ City _____ State _____ Zip _____ HomePhone: (____) _____ Work Phone (____) _____ Emergency Contact and Phone _____ # of previous Mt. Rainier climbs _____ Routes Summited: _____ <b>VEHICLE INFO:</b> Make _____ Color _____ License _____ State _____ Make _____ Color _____ License _____ State _____ Location(s) vehicle(s) parked at: _____ <b>CLIMBING ROUTE INFO:</b> Route Ascending _____ Route Descending _____ Departure Date _____ Return Date _____ <b>TEAM EQUIPMENT:</b> Crampons _____ Map/Compass _____ Stoves _____ Ice Axes _____ GPS _____ Fuel (#days) _____ Ropes (#) _____ Altimeter _____ Food (#days) _____ Ascenders/Prussiks _____ Radio (type) _____ Wands (#) _____ Pickets (#) _____ Skis/Snowboards _____ Avy Beacons _____ Ice Screws (#) _____ Cell phone number (____) _____ Helmets (#) _____ Tents (# and color) _____  I have read, understand, and will comply with the regulations on the back of this card  Leader Signature _____ Date _____	Permit # _____ # in party _____ <b>CLIMBERS SPECIAL USE PERMIT</b> (Party leader completes & carries this portion) Leader's Name _____ <b>ITINERARY</b> <table border="1"><thead><tr><th>NIGHT</th><th>DATE</th><th>CAMP</th></tr></thead><tbody><tr><td>1<sup>st</sup> night</td><td></td><td></td></tr><tr><td>2<sup>nd</sup> night</td><td></td><td></td></tr><tr><td>3<sup>rd</sup> night</td><td></td><td></td></tr><tr><td>4<sup>th</sup> night</td><td></td><td></td></tr><tr><td>5<sup>th</sup> night</td><td></td><td></td></tr></tbody></table> <b>IMPORTANT:</b> Complete this section upon return to <b>CHECK OUT</b> Number Out: _____ Number to Summit: _____ Route: _____ Date Actually Returned: _____ Comments: _____	NIGHT	DATE	CAMP	1 <sup>st</sup> night			2 <sup>nd</sup> night			3 <sup>rd</sup> night			4 <sup>th</sup> night			5 <sup>th</sup> night		
NIGHT	DATE	CAMP																	
1 <sup>st</sup> night																			
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3 <sup>rd</sup> night																			
4 <sup>th</sup> night																			
5 <sup>th</sup> night																			

**Climbing Permit (front).**  
Be sure to completely fill this out. It will be used as reference if your party ends up needing help.

<b>Regulations</b>  When climbing above 10,000 feet or on glaciers: ♦ Registration (this card) is required. ♦ Solo climbing is prohibited without written permission from the Park Superintendent. ♦ You must be at least 18 years of age or have written permission from a parent or guardian. ♦ Leading or participating in an unauthorized guided climb of Mt. Rainier is illegal. ♦ Camp on snow. Avoid rock or bare ground where plants struggle for life. ♦ Where toilets are not available, use "Blue bag" carryout system. ♦ Climbers may be required to pay for search, rescue or recovery costs. ♦ Leave no trace – Pack it all out.  When camping on the Muir Snowfield: ♦ <b>CAMP ON SNOW ONLY</b> ♦ <b>100% OF ACTIVITY ON SNOW</b> ♦ Camp between 7,600 AND 9,600 ft.  Violations may result in fines and/or forfeiture of climbing privileges.  Registered by (initials): _____	Fee Envelope # _____  <b>LIST ALL ADDITIONAL PARTY MEMBERS</b> (Maximum party size: 12) <table border="1"><thead><tr><th>Name</th><th>Emergency #</th><th>Rainier Summits / Routes</th><th>Climbing Pass #</th></tr></thead><tbody><tr><td>2.</td><td></td><td></td><td></td></tr><tr><td>3.</td><td></td><td></td><td></td></tr><tr><td>4.</td><td></td><td></td><td></td></tr><tr><td>5.</td><td></td><td></td><td></td></tr><tr><td>6.</td><td></td><td></td><td></td></tr><tr><td>7.</td><td></td><td></td><td></td></tr><tr><td>8.</td><td></td><td></td><td></td></tr><tr><td>9.</td><td></td><td></td><td></td></tr><tr><td>10.</td><td></td><td></td><td></td></tr><tr><td>11.</td><td></td><td></td><td></td></tr><tr><td>12.</td><td></td><td></td><td></td></tr></tbody></table> OFFICE USE ONLY <table border="1"><tr><td>Date</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Camp</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> Registered by (initials): _____ Office/Station _____	Name	Emergency #	Rainier Summits / Routes	Climbing Pass #	2.				3.				4.				5.				6.				7.				8.				9.				10.				11.				12.				Date							Camp						
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**Climbing Permit (back).**  
Be sure to add all of your other party member's names on the backside and an emergency contact number for them if it's different from the party leader's which is written on the front side.



## Reservation

- a. Reserve your permit so that you can be assured there is space for your climbing team for specific dates
- b. A convenience fee of \$20.00 is charged per reservation (not individual)
- c. Though not required, reservations are recommended for larger climbing parties especially if the intended dates include a weekend.

## Solo Permit

- a. Climbing solo is prohibited unless granted special permission
- b. The superintendent delegates the issuance of solo permits to the climbing rangers
- c. Beginning in 2017 the solo permit application process will need to be completed online. Check the [Mount Rainier climbing page](#) for more information.
- d. The application is either declined or approved based a combination of experience, skill, the plan, the weather, proposed route and dates, and the applicants equipment list relative to these factors
- e. It can take up to two weeks for the approval process, so plan ahead
- f. Requesting a Solo Permit is free, and if issued, good for the calendar year

## The Climbing Cost Recovery Fee: An Explanation

Registration with the superintendent is required by law (U.S. Code 36 CFR 7.5) before climbing Mount Rainier. It is considered a special park use. NPS management policies provide the definition and the framework on how to manage special park uses. A special park use is defined as any use that:

- a) provides a benefit to an individual, group, or organization rather than the public at large (so a small overall user group compared to the total number of park visitors);
- b) requires written authorization and some degree of management control in order to protect park resources and the public interest;
- c) is not prohibited by law or regulation;
- d) is not initiated, sponsored, or conducted by the Service;

- e) and is not managed under a concession contract, a recreation activity for which the NPS charges a fee, or a lease.

The climbing cost recovery fee pays for the majority of the climbing program, its rangers, their equipment, training, and supervision, as well as several resource protection measures such as the collection and processing of human waste, the construction and maintenance of high camp toilets, and other minor resource protection efforts. Overall it's a fee to help the NPS facilitate and mitigate the impact that 10,000 climbers have on Mount Rainier every year.

## Required Skill: Navigation

Navigation is a critical skill all year long on Mount Rainier. Snow and blizzard-like conditions can occur any day of the year. Of the 72 Search and Rescue Operations conducted for climbers on the Muir Snowfield or Disappointment Cleaver Route since 2012, 38 have had navigation errors as the root or significant contributing cause.

A solid foundation in map and compass navigation should be part of every mountaineer's repertoire of skills along with the use of a GPS device for precision navigation. The lower snowfields (especially below Camp Muir) should not be underestimated in terms of their navigation difficulty in white out conditions as they are often the site of fatalities and rescues.

Map and compass navigation can be used for ascending/ descending the Muir Snowfield in limited visibility, but cannot be relied upon for navigating the heavily crevassed terrain above Camp Muir. It also cannot be initiated in a white out once the climbing party has lost their current position. If map and compass is the primary means for a parties' navigation plan then their position must be known and tracked constantly by having physical landmarks to help identify their location.

GPS navigation is the modern standard and has many advantages over map and compass. The limitations of battery life and exposure of electronics to weather are possibly the only risks associated with relying on a GPS unit as a primary form of navigation, so always take an extra set of batteries. Know at least these functions: how to record waypoints and track logs, and how to navigate to waypoints and follow track logs back. Practice before you need the skill.



NPS/Forrest Madsen photo



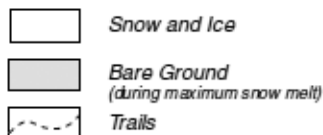
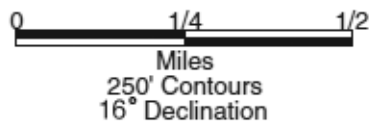
## GET YOUR BEARINGS

Mistakes in navigation while traveling to or from Camp Muir during storms and "white-outs" have resulted in lost climbers and hikers and fatalities. To decrease the possibility of this happening to your party, this map shows compass bearings to and from Camp Muir (true and magnetic north) as well as the coordinates (latitude/longitude) of landmarks along the route. This map will not substitute for a USGS topographic map.

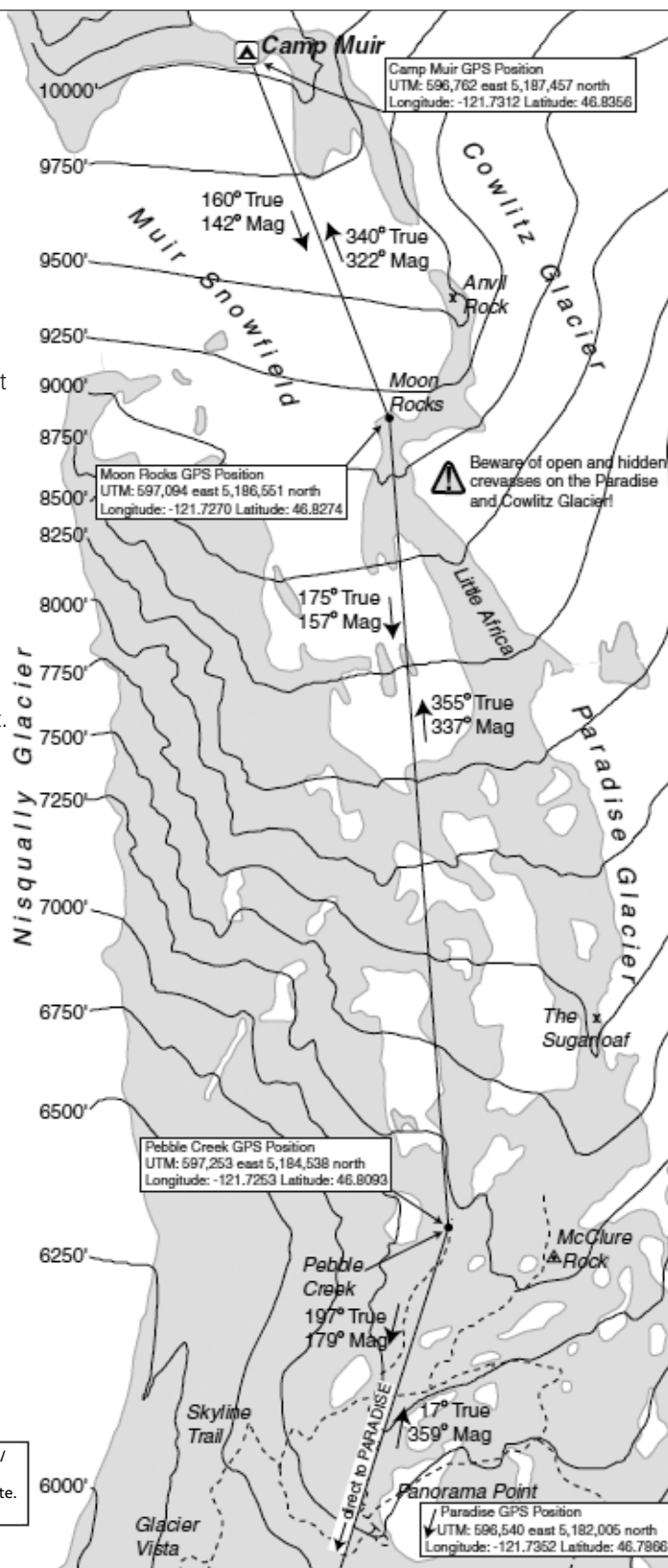
Proper bearings alone will not ensure a safe trip. Camp Muir and the Muir Snowfield are nearly surrounded by glaciers: the Nisqually Glacier to the west, the Cowlitz Glacier to the north and east, and the Paradise Glacier to the south and east. A minor error in navigation may lead you onto these glaciers where there are numerous crevasses and other hazards. Stay on course. You may have to correct your direction of travel to the windward due to strong winds, usually out of the west or southwest.

Always beware of steep cliffs to the east of Camp Muir and Anvil Rock and to the east of McClure Rock. These cliffs, obscured by snow and cornices in the winter, have been the sites of mountaineering tragedies. Panorama Point is a dangerous avalanche area.

While traversing the Muir Snowfield, approach rock islands with care because of holes which form around rocks as snow melts. Crevasses occasionally open up on the snowfield in the vicinity of Anvil Rock in late summer and may be hidden by snow.



GPS coordinates (latitude/longitude) are provided in degrees/minutes/seconds (DMS) and use WGS84 datum. GPS units must use correct configuration, including projection and datum, for results to be accurate. Serious errors will occur if GPS units are not configured correctly!





## Route Description

### Approach to Camp Muir

The Disappointment Cleaver Route begins at the Paradise Ranger Station (5,420 feet) and ascends to Columbia Crest (14,410 feet) via the Muir Snowfield and the Cowlitz, Ingraham, and Emmons glaciers. Primary difficulties include reduced availability of oxygen at high altitude, steep snow (40-50 degrees in places), crevasse crossings, and complex glacier travel.

The first section of the route follows the Skyline Trail (2.5 miles) to Pebble Creek and the base of the Muir Snowfield at 7,200 feet. Most of the trail is above treeline and thus there is little protection from the elements on the approach. In inclement weather you can expect increasing winds and precipitation as you gain elevation. Also, due to the lack of shade, an early start is advised in warm and sunny weather.

From Pebble Creek the route ascends the Muir Snowfield in a leftward arc. This area is the scene of the majority of SAR activity as white-out conditions are common and navigation is problematic due to the uniformity of the terrain. Climbers attempting to travel on the snowfield in limited visibility should be prepared to navigate by both GPS and map + compass.

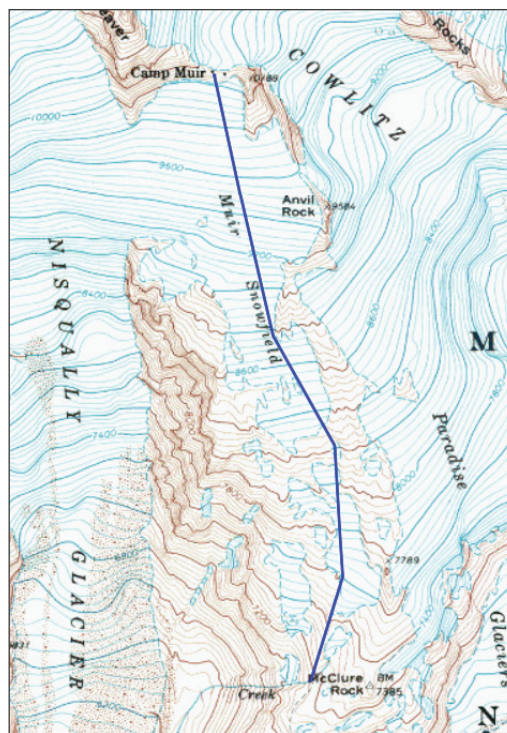
### Camp Muir

Camp Muir has nine permanent structures including the Public Shelter, the ranger hut and bathrooms. Climbers typically camp on the north side of Muir Ridge on the Cowlitz Glacier and dig platforms into the snow for tents. There is a 110 person limit at Camp Muir each night. Sixty six spaces are reservable per night leaving 44 for walk up reservations. The Public Shelter is open year round and has bunk space for approximately 20 people. There are no reservations for the public shelter so climbers should not count on using the hut during peak season. We generally do not recommend the public shelter as a place to stay for climbers. It may be impossible to get much sleep. With stoves always blazing away, it is a noisy, lively, and a noxious environment for much of the 24-hour day. It is also a red flag for us when climbers decide to ditch the tent in order to save weight. This is especially alarming when conditions are unreliable. What are you going to use for an emergency camp or shelter during your climb?

### Tents

Most climbers will stay in tents during peak season. There are many options for tent sites on the Cowlitz Glacier directly next to the Camp Muir Ridge. The flat area next to the Public Shelter is the preferred location for tents as it provides the best protection from wind and easy access to the bathrooms at camp.

Tent sites are not assigned and climbers must flatten and otherwise improve their own site. Shovels are not supplied at the camp and climbers are expected to travel with their own. A saw for constructing snow walls may also be needed during high wind events.



Approximate Route from Pebble Creek to Camp Muir

The tents should be oriented so that the back of the tent is facing the windward direction. Tents are strongest in this orientation and weakest in a cross-wind. Snow walls will also protect your tent from high wind. The wind is most often from the southwest, however east wind events occur (and are forecasted).

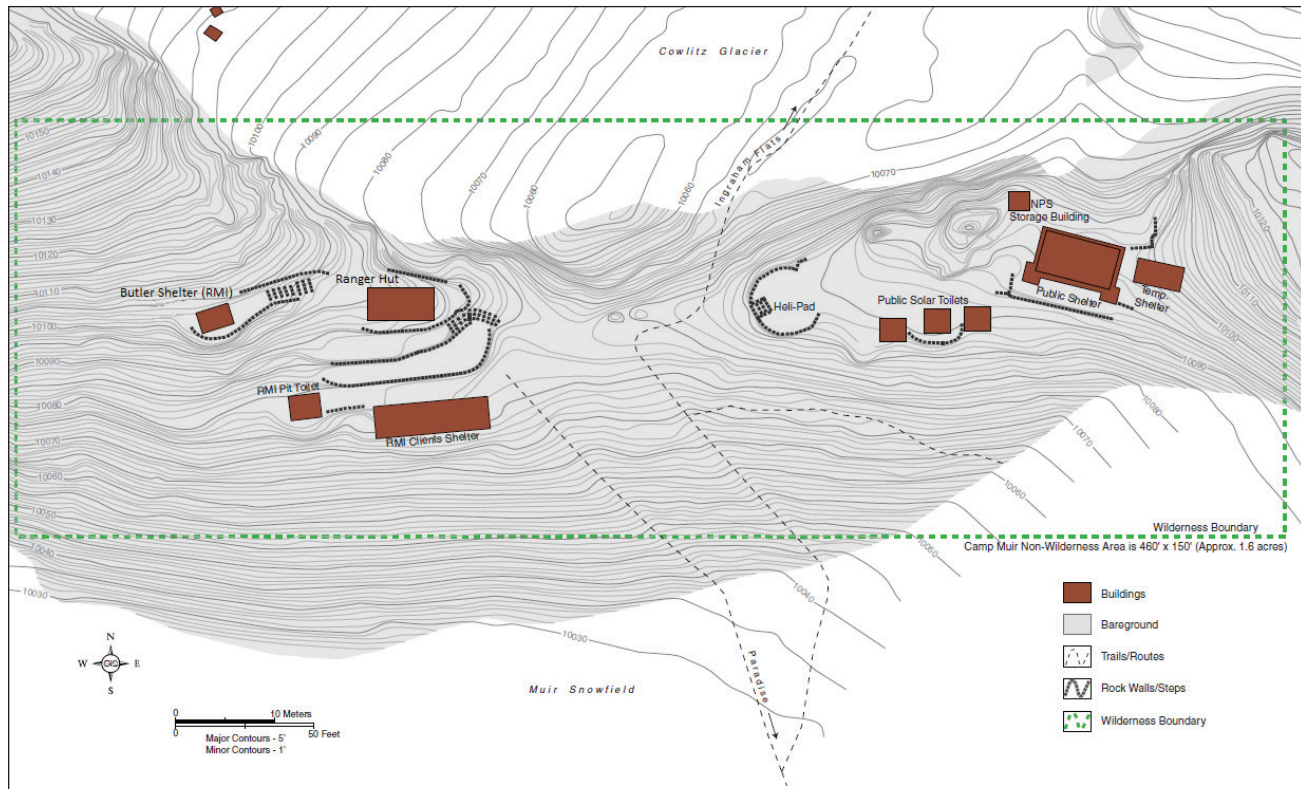
Proper tent anchoring is imperative while camping on Mount Rainier. Every year several climbing teams do not properly secure their tents and, upon completing their summit attempt, return to an empty camp with no tent. Wallets, car keys, and expensive climbing gear have all been blown out of camp and into the crevasses on the Cowlitz Glacier.

The tent guy-lines should be the primary anchor points. They should be attached to deadman (or otherwise suitable) anchors. Consider pulling the tent poles out of the holes or grommets at the base and 'deflating' and weighting the tent down with ice block while you are gone if you suspect high winds. Wait, why are you climbing when the winds are that high?

Pack a stove for cooking meals and melting snow. Snow is the only source of water at Camp Muir. There is no running water source. Snow should be gathered from the north side of the Muir Ridge as the toilets at camp have urine drain fields that run into the Muir Snowfield.

The toilets at Camp Muir are a constant work in progress. There are typically four toilets open at any time. Two near the guide service huts and two near the public shelter. A

## Camp Muir



significant portion of the cost recovery fee (from purchase of climbing passes) goes toward funding the upkeep of the toilets and the transportation of feces off the mountain. As of 2017, the toilets are being reconstructed and replaced by larger, more easily maintained, architecturally consistent, and odor reducing structures.

All human waste must go in the toilets. While it can be tempting to urinate on the snow while camping keep in mind that the snow is the only water source for the camp. A better option is to carry a 'pee bottle' and urinate in that in your tent and then deposit the urine in the toilets.

Blue bag barrels are also located next to the toilets. The barrels are for blue bags only, all trash must be carried down.

Frequently rangers are asked if there is a place to leave uneaten food and unused stove fuel. This is considered trash and should be carried down by your team. Unattended food is an attraction for scavengers and pests and collections of half use propane canisters are often removed from the public shelter and taken off the mountain by climbing rangers. Carry all unused items down and dispose of them properly. Consider that Camp Muir sees more than 20,000 people during the summer. If everyone left a little gift, the piles of offerings would be waist deep.

### Timing and Self-Assessment

How long does it take to get to Camp Muir? This is one of the most common questions that climbers have when they

first embark on a summit attempt. There is no set answer for everyone and every team. There are several methods for estimating travel times with the most popular being the Munter Method for time planning. This calculation gives a time estimate of 5-6 hours from Paradise to Camp Muir in average conditions. Consider this to be the bare minimum for a benchmark on fitness. Many guide teams will not allow a climber to attempt the summit if it takes longer than six and a half hours to make it to Camp Muir.

When further assessing yourself for fitness and competence there are three main factors to consider:

- **Climbing in Balance:** Are you able to safely and securely climb under your own power or are you struggling to maintain a steady rate of ascent? Are you stumbling and tripping over the terrain? An honest assessment can prevent a serious accident.
- **Take care of yourself:** Are you able to eat, drink, change clothing, etc., on your own or are your teammates assisting with this basic skill? If you are having trouble with these minor mental and motor functions, can you successfully self-arrest, team arrest? Can you help rescue an injured partner?
- **Pacing:** How long have you been out? Are you maintaining a steady and effective rate of ascent? Redo your time calculation. Are you setting yourself up for a 12 hour day, 14 hours, longer?



## Climber's Briefing

Climbing rangers routinely make “evening rounds” at high camps during the summer at about 5:30. Each ranger has developed their own system of key points to relay and how to talk about them, but here we give a few examples of what’s important.

### Stefan's Key Points of Alpine Physiology

#### Breathing

Breathing has the most immediate effect on how you feel. A climber who is breathing appropriately can stave off headaches, stomach aches, dizziness, nausea, vomiting, and other symptoms of acute mountain sickness. To breathe effectively, inhale deeply. Suddenly and forcefully breathe out through tightened lips—almost creating a whistling sound. Just as you think you’ve exhaled completely, force more out. Let the air rapidly refill your lungs. This is called a ‘pressure breath’. Do this often, even every breath, as you ascend higher during your climb.

#### Pace

Let your breathing rhythm control your pace. Too often, climbers will sprint and stop, sprint and stop. This exacerbates symptoms of AMS and can lead to a worsening condition. It also increases fatigue rapidly. Slow Down. Go at a pace that you can sustain without break, pause, or stopping for at least 45 minutes at a time. As the route gets flatter, you can increase your speed to maintain your breathing rhythm. As the route gets steeper, you must slow down to maintain your breathing rhythm.

#### Hydration

A properly hydrated body will perform better in the cold by providing better perfusion to tissues. It will keep you warmer when it is cold because there is more volume in your system. When it gets hot, sufficient hydration will keep

you cooler and allow you to sweat. Being well hydrated also helps you metabolize what you eat and get it into your system. Drink, then eat. Water is the most important thing so only supplement slightly with electrolytes. Warm liquids are always nice. Bladder bags (with tube insulators!) make drinking more accessible and convenient.

#### Be Early

Leave early to return early. During the summer season, the afternoon heat is a surprising contrast between nighttime chill. Anyone who has worked on Mount Rainier as a guide or ranger knows that the longer one is out on the upper mountain, the more fatigue plays a factor in the likelihood of becoming injured and making significant errors in judgement. Twelve hours is a LONG time to be out above high camp—for anyone. If you are descending on a glacier at 4:00 pm after a long time, the chances of rockfall, crevasse fall, slips, trips, falls, and other things going wrong increase. Should a rescue be needed, it is likely to go all night and into the next day, which will lead to a very prolonged period of unpleasantness!

#### Thomas's Evening Rounds Key Points:

- **DON'T SPLIT UP.** That means stick together. Don't send one person back down because they're not feeling well. Don't leave someone on route in a sleeping bag and try to find them on the descent.
- Keep rope team spacing to 10 meters or less between climbers. Using an entire 60 meter rope will make communication between climbers nearly impossible and also allow climbers to develop dangerous amounts of slack in the rope. It also makes passing other rope teams inefficient and dangerous. If there's more than five people on a rope team, consider forming an additional rope team.
- Have a turn-around time and stick to it.





## Guided Parties

The guide services maintain the climbing route on a daily basis and their efforts should not go unappreciated by all climbers. They will place wands to mark the current route and install ladders as needed. They also chop, shovel, and install fixed protection. This is one of the most heavily guided routes in North America and the work of the guides increases the margin of safety for everyone that climbs it.

The fact that it is well maintained is one of the main reasons that it is popular with climbers of all skill levels. This can lead to use issues especially on busy summer weekends.

Guided parties should be expected to be encountered. For the safety of the guides they operate in tight groups that appear to be rather large when spread out on the glaciers. It can be intimidating and even frustrating to encounter a large group whether or not it is a guided party. Good, clear communication and the ability to anticipate bottlenecks while climbing will go a long way to alleviate most problems.

The guide services typically do not have a fixed departure time from the high camps but generally they will leave the between midnight and 2:00 a.m. depending on weather. They are easily observed and can be avoided by selecting a starting time 15-20 minutes before or after theirs.

It is often thought that the guides go very slowly. While this may be true relative to advanced or extremely fit climbers, the guides operate on a conservative time plan and thus maintain a very steady pace. They do not typically take longer than 10-11 hours round trip from Camp Muir. Many climbers will begin their climb by racing ahead of the guided parties only to “flame out” and decrease their speed considerably. This is typically when passing issues occur.

Passing is often frustrating but it is very poor form to hold up teams who wish to climb at a faster pace. If it is safe for your team, simply stepping to the side of the trail and allowing other teams to pass is a simple and quick solution to a large traffic jam on the mountain. A rest break is also a good time for groups to communicate between each other and an effective team leader will monitor other groups on the mountain to judge their speed relative to his/her own. Taking a break while standing in the trail is also frowned upon, climbers should move completely out of the trail, and either coil in their rope or move it off the trail.

When attempting to pass a guided climb it suffices to ask the team leader of the first rope team you encounter for an opportunity to pass. The guides will all carry radio communication and he/she can radio the lead guide and they will advise on a possible opportunity for your team to pass.

## Camp Muir to Columbia Crest

Above Camp Muir the terrain increases in both steepness and severity. Crevasse fall, objective hazard, avalanche conditions, and high altitude all become factors for the climber. Climbing skills and honest self-evaluation are necessary for a safe ascent.

### Required Skill: Rope Travel and Crevasse Rescue

Climbers on Mount Rainier are expected to be self-sufficient in terms of risk assessment, navigation, camp craft, and self-rescue.

At an absolute minimum climbers should be practiced in the techniques of self and team arrest, use of the rope for glacier travel, belayed climbing, crevasse rescue, and crevasse self-extraction. Rangers often observe first time climbers practicing these techniques the night before their



Climbers traverse through the 'bowling alley and ice box' at the bottom of the Disappointment Cleaver

summit attempt. While practice is encouraged it should be more of a refreshing of previously learned skills rather than being the introduction of new skills. It is highly unlikely that a complicated crevasse rescue extraction will be completed by a person who learned to build a pulley system less than 24 hours prior.

Climbers are also observed misapplying the rope quite often. For example using long rope intervals in rocky terrain or carrying large loops of slack on the glacier. By misusing the rope climbers are introducing unnecessary risk for themselves and climbing parties around them. They also perceive that they have mitigated some danger by “roping up” but by using it improperly there is no reduction of risk, they may actually be taking on more risk than if they were to climb unroped.

Climbers may also encounter fixed equipment on the mountain. This can include ladders, anchors, and fixed ropes. No piece of equipment should be considered absolutely safe to use unless it is placed by your team. All too often climbers happen upon a fixed rope and immediately attach themselves to the rope. This is not advised, all fixed gear should be carefully inspected prior to use.

Most fixed ropes on the DC are short and are meant to be used as “hand lines” to assist in balance while moving through a tricky section. Longer sections could be clipped into with a carabiner on a personal tether but they should

never be prusiked onto as this is an antiquated and highly inefficient technique.

Rope interval (distance between climbers) is a common issue on the DC. There are several transitions from glaciated terrain to non-glaciated snow or rock and back again. Dragging long sections of rope through rocky terrain is considered poor form and can dislodge rocks and endanger climbers below you. For this reason it is suggested that climbers familiarize themselves with techniques for shortening the rope interval while not on a glacier. This is called short-roping.

The upper mountain climbing route varies as crevasses open and snow bridges form throughout the year. Most years it ascends directly out of Camp Muir in a rising traverse across the Cowlitz Glacier before climbing to the top of Cathedral Gap (10,800 feet). The route may pass directly below Cathedral Rocks and climbers should be alert for the possibility of rockfall here as well as in Cathedral Gap itself. The climbing rope should be shortened and pulled up and out of the rocks while climbing into Cathedral Gap in order to avoid knocking rocks down on parties below.

At the top of Cathedral Gap the route turns to the west and gains the Ingraham Glacier at 11,200' the route enters the Ingraham Flats Camp. There is room for 36 people to camp per night at Ingraham Flats. There are no toilet facilities at this camp. All human waste must be blue-bagged and carried down.



A rope team set for glacier travel with Ingraham Flats and Disappointment Cleaver in the background.





Climbing rangers practice suspending a litter over a crevasse during a mock rescue off the Disappointment Cleaver.

Most parties stop for a short break at Ingraham Flats before ascending either the Ingraham Direct or the Disappointment Cleaver. Up from the Flats the route is considerably steeper and more severe. The standard route from the Flats ascends straight uphill in order to pass a large crevasse system that typically forms above the camp. There may be a ladder crossing required to manage this crevasse system. The route will then turn to the climber's right and traverse onto Disappointment Cleaver. Climbers will be exposed to two areas of considerable objective hazard along this traverse.

The first of the high hazard areas has been dubbed the Icebox. The primary hazard here is from the large seracs on the Ingraham Glacier located at around 12,000'. They are prone to collapse and the debris does reach the climbing route often. In fact, the Icebox is the location of the single worst mountaineering accident in North American history. On Father's Day 1981 eleven people were swept to their death by a large serac collapse here. They are interred in the glacier to this day.

Immediately upon exiting the Icebox climbers enter an area known as the Bowling Alley. This area can be recognized by the presence of rock debris on the surface of the glacier. The hazard here is the result of spontaneous rock fall from the cliffs directly above the climbing route as well as from human triggered rockfall caused by climbers on Disappointment Cleaver. Climbers are encouraged to move

rapidly through both sections and never stop in either the Icebox or Bowling Alley. Total exposure time here should be less than 10 minutes. Stop at either side of this hazard-prone area and wait for climbers, but not in the middle!

Once the bowling alley is passed climbers are on the Disappointment Cleaver proper. The route here may be snow covered but there is no longer any crevasse hazard. Because there is no crevasse hazard the climbing rope should be shortened to reduce the risk of it triggering rockfall on climbers below and to increase the efficiency and communication of the climbing team.

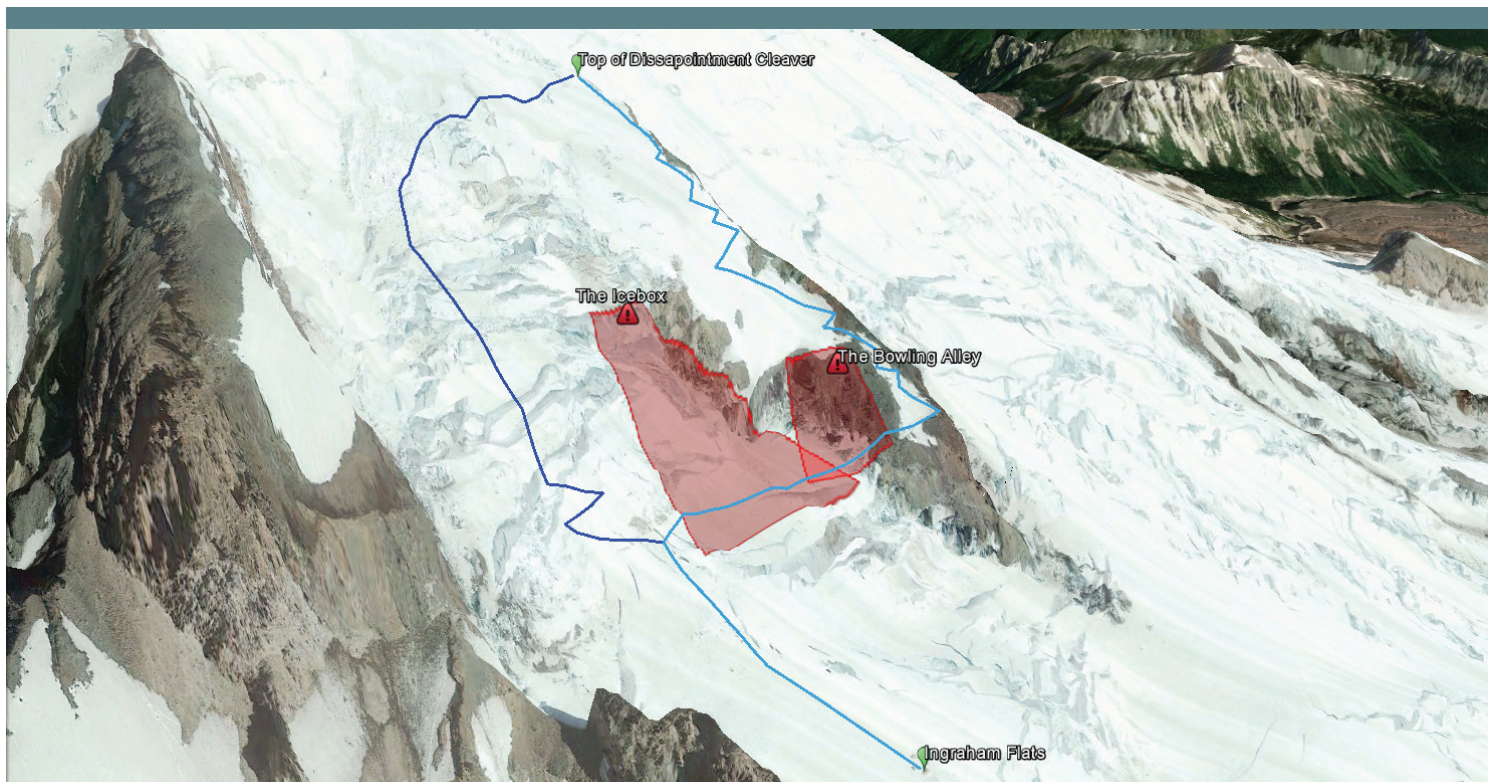
The next 1200' is what many climbers refer to as the crux of the climb. The cleaver challenges climbers with some of the steepest slopes on the entire route as well as possible route-finding difficulties. In the darkness of the early morning, tired climbers often make wrong turns in the twisty rock maze on the lower slopes of the cleaver. The guides generally mark the route with wands and the main climbing route is 3rd or 4th class at most. If it's any harder than that, you are off route. In snowy conditions the climb will be more straightforward but also more treacherous due to falling and slipping hazards.

The top of Disappointment Cleaver (12,300') is typically a major decision point for guided and unguided climbers alike. Timing, weather, altitude sickness, physical reserves, and equipment issues must all be taken into account in order to decide on whether or not continuing on to the summit is a prudent decision. Typically climbing teams can estimate that it will take them, at a minimum, the same amount of time from the top of the DC to the summit as it took them to get from Camp Muir to the top of the DC.



Climber crosses a ladder of a crevasse above Ingraham Flats, Mt. Adams and Cadaver Gap in the background.





## Short Roping

Short Roping is probably the skill most overlooked by novice climbers on Mount Rainier. Rangers often observe climbers spread out in a full glacier interval while ascending non-glaciated terrain and, astoundingly, in rock terrain. Climbing through the loose rocks of Disappointment Cleaver while dragging a rope on the ground will almost surely guarantee that rocks will be knocked down on climbers below. Teams witnessing this behavior in other climbing parties should take it upon themselves to speak out and correct this dangerous practice.

So how do you get the rope shortened up and off the ground safely? Short Roping is a huge topic that is beyond the scope of this document. It is more appropriately addressed in a climbing instruction text or a professional lesson. Simply put, you want to get the rope up and off the ground and the distance between climbers reduced. You also do not want to just “carry coils” as this amounts to carrying large loops of slack in your hands. That is a dangerous situation and should be avoided. The coils need to be tied off or secured in some other manner so that proper rope tension can be maintained.

Difficult route-finding, trail breaking and high winds can all increase the amount of time and effort required to reach the summit.

Assess your team and your time plan. How is everyone doing? Is everyone an asset to the team or is someone on the team creating a liability for themselves and the rest of the team? Make an honest assessment before continuing on. The top of Disappointment Cleaver should be treated as a clear decision point for your team. Little is likely to *improve* as you ascend from here. It is likely to get colder, windier, the air will get thinner, your nausea isn't likely to go away, and you're probably not going to get a sudden burst of energy if you've been struggling with your energy level.

Stop here and use the checklist, “Timing and Self Assessment” listed on page 14. Or use an abbreviated version of the GAR model as on page 7. Whatever the case, from the top of the cleaver on up, it gets real. This a good chance to

check in with your team, feel everyone out, look at how the weather will affect you, and make a decision about whether or not to continue.

## Top of the DC to the Crater Rim

The area of the mountain, from the top of the DC to the crater rim, is the accumulation zone for all of the glaciers that start at the summit. Thus the mountain here is an uninterrupted maze of large crevasses and steep slopes. Avalanche hazard, crevasse fall hazard, and steep icy slopes can exist any time of year. Simply “stretching the rope out” is not always the appropriate technique to maximize the safety of your party. Belaying across crevasses or on steep slopes, or other methods for increasing your security should be in the repertoire of your climbing team. It is common for climbing parties to take one or two breaks between the top of the DC and the crater rim. There are no permanent features or landmarks along this stretch as the route is 100% glaciated.

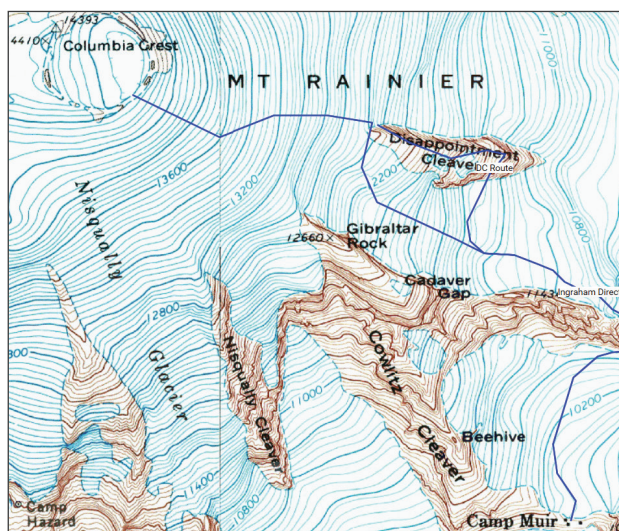


The route from the top of the DC to the crater rim is highly variable and may change several times throughout the summer. The general pattern is for it to be direct from the DC to the crater rim in early season and then to bend towards the north (the Emmons Shoulder) as the season progresses.

The route typically enters the crater at its southernmost point next to an outcropping known as Guide Rock. The elevation here is approximately 14,150'. It is common for climbers to enter the crater over a snow bridge covering one of the many ice caves in the crater. Once climbers are inside the crater they will usually unrope before continuing on to Columbia Crest. Columbia Crest, the snow dome on the crater rim and the true summit of Mount Rainier, can be reached by traversing directly across the crater rim to its high point on the northwest side. Along the way climbers may pass a snow free zone with several active fumaroles and a large rock. This is known as Register Rock and the summit register is stored there inside a large metal box.

When walking on or near the crater rim extreme caution is advised. There are large caves that may be covered by thin snow bridges. Several climbers have been injured by falling into the caves.

Travelling to Columbia Crest and back will take most climbers about 45 minutes round trip from Guide Rock. Enjoy your time on the summit, Mount Rainier is a unique and amazing place and on clear days the views are truly wonderful, but be careful not to delay too long. About an hour is the normal time to spend in the crater.



The descent from Columbia Crest back to Camp Muir typically takes parties two thirds the time it took to ascend the route. Climbers often underestimate the time and physical effort that is required to descend Mount Rainier. Statistically most climbing accidents happen on descent. This is often attributed to climber fatigue and an accompanying reduction in situational awareness.

Mount Rainier has some unique features that make decent even more tricky. The upper mountain has very few distinguishing landmarks in any of the cardinal directions. Even experienced climbers have descended in the opposite direction from the way they came in only to realize their mistake hundreds or more feet below. At that point there is no recourse but to return to the top and descend on the proper heading. **A track log captured by GPS on the ascent is always prudent.** Visibility can be reduced without warning as well. Cloud caps form on the summit quickly and often without warning. Several parties have been trapped on or around the summit after becoming disoriented while attempting to descend in a storm.

Climbers typically descend from the crater rim to the top of Disappointment Cleaver in a single push. After a break and reconfiguring the rope for the non-glaciated terrain on the cleaver, another long push to Ingham Flats is advised. Rockfall in the Bowling Alley generally increases with the warmth of the day so no stops should be made there. After Ingham Flats most of the objective hazard of the route is done and climbers can relax a bit as they make the last segment of the climb back to Camp Muir.

Once back at Camp Muir remember to pack out all trash, unused supplies, and food. Double check tent platforms and camping areas for micro trash and pack it out. Only human waste in blue bags deposited in the barrels outside the bathrooms can be left.



Climbers cross crevasse about 13,000 feet on the upper Disappointment Cleaver route.



## Case Study: Tops SAR

On May 11, 2013 at approximately 2:00 p.m., rangers were notified of the activation of a SPOT Emergency Locator Beacon in the vicinity of the summit of Mount Rainier although specific coordinates could not be obtained. After interviewing parties at Camp Muir rangers were able to identify a male party member who had stayed behind while his teammates attempted to climb to the summit. It was determined that the two minimally experienced climbers had joined up with two other climbers and left for the summit at 2:30 a.m. At this time the SPOT dispatch received a cancellation notice from the activated device and the rangers stood down from the emergency. At 4:00 p.m. the device was again activated and rangers decided to activate a SAR response. At 6:30 p.m. rangers were able to make contact with a seemingly off route party in a heavily crevassed area of Ingraham Glacier. It was confirmed that this was the party who had activated their emergency beacon.

The climbers were uninjured and descended to Camp Muir under their own power, arriving in camp by 8:00 p.m. Upon being interviewed by the rangers it was discovered that the climbers had activated their SPOT beacon due to disorientation and dehydration. They had taken upwards of seven and a half hours to ascend from Camp Muir, consumed all of their water, carried no stove to melt snow, and finally were not able to follow their own tracks back down due to a cloud cap that diminished visibility. It was determined that the party was not in need of an actual rescue when they activated their SPOT beacon, they simply had underestimated the difficulty of their objective and overestimated their ability to deal with the challenges they faced.

## Ingraham Direct

The Ingraham Glacier can be climbed directly to the top of Disappointment Cleaver and is generally preferred to the Cleaver itself. For many years the ID would be the primary climbing route for winter ascents as well and many spring climbs well into June. In recent times however the glacier has broken up earlier in the year and more dramatically than it has in the past; so much so that the ID route has not lasted into June since the 2005 climbing season. The guide companies have typically been starting their climbing

seasons in mid-May by climbing the Ingraham Direct for one or two trips before moving to the Disappointment Cleaver for the remainder of the climbing season. That said, the ID is a viable option for climbers who are trying a winter or early spring attempt.

To ascend the Ingraham Direct, proceed up the glacier from Ingraham Flats following the same path as the approach to the Disappointment Cleaver. Where the DC route typically turns to the climber's right and traverses to



NPS/Seth Waterfall photo

Climbers traversing to the Emmons Shoulder



the Cleaver (~11,500') the glacier pitches up in steepness substantially. This is referred to as the Lower Ingraham Headwall. There is often avalanche hazard both on this slope itself and from steep slopes above on the upper reaches of the Ingraham. The typical route switchbacks a few times up the steep bulge on the lower headwall and trends to the south. In some years the route has gone into the 'Icebox' but this area should be avoided as it is an active ice fall area.

After ascending the lower headwall the slope angle kicks back a bit and then enters a heavily crevassed region. A viable path through the crevasses in this area is generally what determines whether or not the route is climbable. They can run across the entire width of the glacier, or they can force climbers to go very close to the active rockfall zones under the northern flanks of Gibraltar Rock. Careful route-finding is required especially after snowstorms cover the open crevasses. There is also icefall hazard present from seracs in the upper Ingraham Headwall so stopping or taking breaks on this stretch is considered a bad idea.

At approximately 12,000' the route trends to the climber's right and navigates a heavily crevassed area. It then meets up with the standard DC route at the top of the cleaver, 12,300'.

### **Ski Mountaineering**

Disappointment Cleaver is not Mount Rainier's most aesthetic ski route yet it sees a handful of ski descents every season. The circuitous nature of the route and off fall-line nature of the cleaver itself do not make for the best skiing, its main attraction is in the ease of route-finding. The Ingraham Glacier Direct is a fairly popular ski descent when it's in good condition, but in recent times, the Ingraham Glacier route becomes too crevasse riddled to be climbed by late May.

A ski descent on Mount Rainier requires more technical skill and expertise than skiing black diamond runs at a ski area and/or skiing in the backcountry at lower elevations. Committing and remote terrain along with severe consequences for errors in judgement or skill combine to increase the risk of skiing on the mountain. Rescue, if possible, will be a lengthy process. A common ski injury, such as a boot-top fracture, can be life threatening on Mount Rainier.

Crevasse falls are always a risk when skiing over glaciated terrain. Even skilled ski-mountaineers can fall into hidden crevasses. Prepare for the worst by pre-rigging a harness with a top-clip option and having multiple skiers carry a substantial amount of rope and equipment to access and extract a skier wedged in a crevasse.

Unlike ski areas with groomed runs and manicured slopes which are skiable in a variety of conditions, Mount Rainier is rarely skiable from the top, all the way down. Poor visibility, icy conditions, and avalanche danger usually shut teams down. Even if conditions are skiable at some

elevations, it's rare to have the entire 10,000 foot descent be in good shape. There is generally a thousand feet or more of "survival" skiing. Be prepared to take the skis off and down climb certain sections. Often skiers will stash their skis at a point on the route where they feel comfortable skiing down from, and continue up to the summit on foot. And, as always, stay within your limitations. Conservative decisions are key to a long and eventually rewarding tenure as a ski-mountaineer.

### **Authorized Guiding Activity**

Guiding a person or a party on a climb of Mount Rainier in exchange for any type of fee is considered a commercial use of the national park. Federal regulations prohibit engaging in or soliciting any business in the park areas, except in accordance with the provisions of a written agreement with the United States. As in other National Park Service areas, commercial visitor services may be provided only by those holding an authorization from the United States. The National Park Service uses the following principles to guide our policy and program development in regards to any commercial use in the park and mountaineering guiding in particular:

1. Concession services are important to our visitors
  - a. A major responsibility of park management is to ensure that adequate services are provided in the national park.
2. Quality services should be provided at reasonable prices
  - a. When commercial services are available we verify that they are provided at prices comparable to those outside the park.
3. The National Park Service must remain the primary controller of park visitor services
  - a. To assure that the visitor services aspects of the operation are consistent with park resource management, the NPS must continue to strictly control most aspects of the concessions operation.
4. The National Park Service Concessions Program is a partnership with private enterprise
  - a. The partnership concept has worked out well because it has allowed the NPS to oversee the private operators, and in turn has allowed the private sector to provide the necessary capital while receiving the privileges of profitable businesses providing services to park visitors.

There are three categories of legal commercial ‘Summit Climb’ guiding in Mount Rainier National Park:

### Concessionaire

There are three concessionaire guide services in Mount Rainier National Park. The contract for each concessionaire lasts for a ten year term. At the end of the contract term the companies must reapply for the following term. There is a competitive process for awarding the contracts.

The three concessionaires are:

- **Alpine Ascents International**
- **International Mountain Guides**
- **Rainier Mountaineering, Inc**

### Commercial Use Authorization - Single Use Permit

If the NPS determines that there is a need, it is able to issue commercial use authorizations (CUA’s) to persons (referring to individuals, corporations, and other entities) to provide commercial services to park visitors in limited circumstances. CUAs, although used to authorize commercial services to park visitors, are not concession contracts. They are intended to provide a simple means to authorize suitable commercial services to visitors in the park in the limited circumstances in the legislation.

A current list of CUA Single Trip Summit Climb providers can be found [here](#).

### Commercial Non-profit - Single Use Permit

A **Commercial Non-profit SUP** is issued to organizations that have 501c (3) non-profit status and in-park activities that are commercial in nature. Examples of criteria used to determine if a non-profit organization falls into the Commercial Non-Profit category are:

- 1) Rates charged to participants – Is the fee greater than direct expenses?

- 2) Donations similar to for-profit fee rates for a climb or activity.
- 3) Leaders/Guides paid above stipend.
- 4) No taxable income is received by company or organization.

The application form for a Commercial Non-profit permit can be found [here](#).

Outside of either of these three criteria all exchanges of money or goods for a guided summit climb is considered illegal.

### Checking Out

Remember to do one thing when you get back to the trail-head. Turn in your climbing permit. You are required to check out of your climb by 36 CFR 7.5. We also track specifics including what route you actually climbed and how many of your party made it to the summit.

**It is a \$250 fine to leave the park without checking out.**

### Supplemental Reading

- *Alpine Climbing: Techniques to Take You Higher*, Cosley & Houtson
- *Mountaineering: Freedom of the Hills*, Mountaineers Books
- *Glacier Travel and Crevasse Rescue*, Selters
- *Mount Rainier: The Essential Guide*, Becky and VanSteen
- *Mount Rainier: A Climbing Guide*, Gauthier



NPS/Cameron Reade photo



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U.S. Department of the Interior

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