LECTURE #5
Glacier Travel & Crevasse Rescue Pt. 2

Lecture 5 Topics
Glacier Travel
Crevasse Rescue
What to Expect on Glacier Climbs
Field Trip Leader Q & A (Field Trips 5, 6P, 6/7)

Assigned Reading (complete prior to Lecture #5)

The Freedom of the Hills, 9th edition

Glacier Travel & Crevasse Rescue	Chapter 18
Mountain Geology	Chapter 26
The Cycle of Snow	Chapter 27

Basic Rock & Glacier Climbing Course Manual

All Lecture #5 Material

GLACIER TRAVEL & CREVASSE RESCUE

OVERVIEW

Glacier travel employs all the techniques used in snow travel with one major addition, navigating crevasses. Crevasses are vertical ice trenches in the snow, which are very hazardous and ready to trap the careless climber. They tend to stay hidden until later in the season when the snow melts and collapses into the crevasse. If the snow coverage is thick and strong you will likely walk right over the crevasse and never know it. Sometimes a visible crevasse will have a snow bridge that you can cross if it's strong enough, but the real hazard is the crevasse with just a weak thin covering of snow that will not support a climber's weight. It is not always the lead climber that breaks through, it may be the second or third or even the next rope team. You never know. That's why you **ALWAYS ROPE-UP WHEN TRAVELING ON A GLACIER** and keep the rope fully extended. It's ideal to have three climbers per rope and at least two teams, so if you have to perform a rescue, it is much faster and easier. While on the glacier, persist in searching for evidence of crevasses as you move. Expect them. Belay, or be prepared to arrest, when moving a team over snow bridges. Know how to perform a rescue and be equipped to rescue in several ways.

WHAT TO EXPECT ON A GLACIER CLIMB

For those of you who are not already familiar with climbs or climb planning, the following is a general outline of what to expect and what is expected of you on a glacier climb. Keep in mind that glaciated peaks of the Northwest, at least those you can get credit for climbing, are big (i.e. Mount Rainier, Mount Adams) and if not big, they can be very remote (Mount Olympus, Glacier Peak). The point here is that your glacier climbs are not typically quick and easy (like your single day rock climbs), nearly all take a minimum of two days and some taking three or more. Overall, they are complex events. Each member of the climbing party must be ready and understand what they are trying to accomplish; they must plan and organize carefully. All details count. If someone forgets an item of equipment, it can potentially spoil the trip for the whole team. The following is a breakdown of events involved in planning for a typical glacier climb.

Pre-Climb Planning:

Pre-climb planning, primarily done by the leader, typically starts months in advance. First they must decide on a peak, and then start to do research on the various routes. Once the route has been selected, the leader can begin to better understand the various technicalities of the route, and with those details they can start to form the team. In selecting the team, the leader will sometimes screen participants to ensure they are competent, comfortable on specific terrain

and/or have a specific fitness level due to the speed needed to accomplish the goal (this is where reading the leader's notes is important).

Typically two weeks out, the leader will start looking for more recent beta on the route/conditions. They are trying to figure out what gear each member and/or the group needs to bring or special circumstances/considerations about the route (i.e. will there be running water or do they need to plan to bring x amounts of stoves and fuel for x number of climbers. Is there ice on the summit ridge, so we need x number of ice screws? If there is ice on the ridge will it be safe to take the team to the top or should they ditch this plan and try something else?). In addition, the leader will start confirming participation on the climb, and may start collecting emergency contact information, tent partner requests, and will try to understand what each participant has to contribute for group gear.

About a week out, the leader will start to distribute and finalize the details of the climb: climb itinerary, tent partners, personal gear, group gear, logistics, and potential concerns. They will also be monitoring the weather, to sometimes make a go/no go last minute decision. Leaders vary in how they plan their climbs. Some go into great detail and others are more general in their approach. Your job in preparing for the pre-climb is to do your planning as far as you can, go over your equipment status, identify concerns you have about the climb, and be ready with a list of questions. MOST IMPORTANT: RESPOND QUICKLY and let the leader know ASAP if you have a health problem!

Info You Should Know After Good Pre-Climb Planning:

1. Who is in the party and who is your tent mate
2. The climbing route, itinerary, and any concerns with doing that route.
3. The equipment you must have for the climb and what group gear you are required to bring.
4. Meeting times and locations for carpooling to the trail head.
5. The leader's rules and expectations for the climbing party.
6. Weather conditions.
7. Answers to any other questions you may have.

The Night Before:

This can be a traumatic experience the first timer. Your equipment will not fit in the pack, and when you finally get it all in, you can barely lift it and are super worried about keeping up with the group. Don't give up, persevere and it will work out. You can avoid some of this heartburn with a few practice sessions a day or two in advance, and if you are still worried then, call the leader to figure out ways to save on size or weight.

The Trailhead:

Arrive early or be ready when you get there. Don't leave half of your packing to be done at the trailhead (unless you plan to be very early). The leader will have some last minute instructions and equipment checks to see that everything is OK and everyone has required gear. As a student you will have the honor of carrying a rope and possibly other group gear. Don't worry, if you carry it in, someone else will carry it out.

The Approach:

The approach is the hike from the trailhead to base camp for glacier climbs, or to the base of the first pitch for rock climbs. Approaches are always uphill with a full and heavy pack. If you did not fully heed the conditioning information in Lecture #1, you will pay the price. Typically, approaches cover a good amount of distance and several thousand feet of elevation gain. They can include trails, but are mostly off trail scrambling, and/or go through snow fields, and in some cases, involve roped glacier travel. You can't waste time on the approach. The leader will want to arrive at base of the first pitch early enough for the whole group to climb up and rappel down, and sometimes, on busy routes, to beat other parties to the rock climb. On glacier climbs, the leaders will want to get to camp early enough to get everything set up and everyone prepared for summit day.

Base Camp:

Arrival at base camp marks the end of the approach. You will probably be tired, hungry, and sore, but remember this is not a guided tour. Don't wait for the leader to tell you every detail of what to do. Grab a quick snack then, start:

- Filtering water or set up stoves to melt snow for drinking water and cooking.
  NOTE: If you are carrying a stove, and snow needs to be melted for drinking and cooking: find a good spot, get the stove set up and start the process of making water **before** you do anything else. This will likely take a long time, so as others finish with their tent set up they can come take over melting water or set up your tent for you.
- Building tent platforms (for snow sites) and pitch your tent.
- Help others with their set up or filtering water.
- Change into dry clothes/Stay warm.
- After all the above is done start making dinner.

At some point (likely while everyone is enjoying dinner as all chores are done or being finished up) the climb leader will call a meeting or come around and make rope team assignments, confirm wake up and departure times for the next morning, and provide any final instructions. If you have questions or problems, talk to the climb leader, particularly if it's something concerning you about your fitness for the next day's climb. For a glacier climb, it is advised to lay out the rope, mark the tie-in spots and tie-on your prusiks in preparation for the next morning.
Before you get into your sleeping bag for the night you should know or have done the following:

1. Departure time, so you can plan your wake up time.
2. Alarm is set, or someone knows they are supposed to wake you up.
3. Who is on your rope team, your position on the rope, rope is set up and ready to go.
4. Any potential concerns about the route.
5. Your water bottles are full (not left out in the cold), and your breakfast is ready for quick preparation.
6. Your head lamp, harness, and chest sling are nearby and ready, and crampons fit your boots.
7. Your summit pack is mostly ready (you have food and clothing not being worn packed).

If you have all of the above in hand, you're pretty well set. If not, don't go to bed until it's done. Also, if you tend to be slow, it's your responsibility to get up a little earlier to make sure you're ready on time. Do not leave the team waiting for you.

Summit Day:

Summit day starts **early**. Normally, wake up time is between midnight and 3 AM, with departure an hour later. Why so early you ask? There are several reasons. The primary reason is SAFETY. It's safer to travel on a glacier in the early hours when the snow is frozen. Snow bridges are stronger, and there is less of a chance of snow/ice or rock fall from higher on the mountain. Second, avalanche hazards increase on the higher peaks after late morning. Third, it is easier and faster to walk on a hard snow surface. Fourth, on summit day you start from base camp, summit, and return to base camp, then pack up and hike all the way out to the trail head. It's a long day!

A few notes on summit day events:

1. **Wake Up On Time:** When it's wake up time you will feel lousy and feel like you didn't sleep at all. DON'T WORRY THIS IS NORMAL. Get up and get moving!
2. **Departure Time: Don't waste time!** Your goal is to have you and your gear ready, and to be tied-into the rope at your spot by departure time. Don't make the group wait for you.
3. **Summit:** Remember when you reach the summit, the climb is only HALF done. Depending on the leader and prevailing conditions, your stay at the top may be brief or last awhile. The leader will let you know. On the way down use caution. Stay alert. More accidents occur on the descent than going up.
4. **Eat and Drink:** you will likely not be very hungry or thirsty in the morning. Eat and drink anyway. You are using an enormous amount of energy at high altitudes. Don't bonk.
5. **Return to The Trailhead:** Have a change of clean dry clothes at the car. It will make the trip home much more pleasant for you. Remember, you have been in these clothes ALL day, or longer!
6. **Drive home:** Expect your climb and drive home to take ALL day**.** Do not make afternoon or evening plans. If the hour is not too late, most climbing teams will arrange to stop for dinner as a group on the way home. If the hour *is* late, be safe – have some caffeine, or stop for a nap rather than driving exhausted.

LECTURE 5 KEY POINTS & OBJECTIVES AND MENTOR MOMENT

GLACIER TRAVEL & CREVASSE RESCUE

Use these objectives from this lecture to prepare for the final exam.

Glacier Travel & Crevasse Rescue

Name 5 common glacier hazards.
Explain what type(s) of additional equipment you carry on a glacier climb.
Explain the first rule of safe glacier travel.
Describe how to tie into a three-person, four-person and two-person rope team.
Explain the term "rope management" as related to glacier travel.
List the important tips for detecting crevasses.
Explain the purpose of snow probing as related to glacier travel.
Describe several ways to cross a crevasse field.
List the steps in a successful rescue beginning with the moment a fall is stopped.
Describe the 3 methods used to haul a victim out of a crevasse. -- Identify the pros and cons of each.
Identify the components of the z-pulley and c-pulley system.
Describe how to prevent the rope from entrenching on the lip of a crevasse.
Explain what to do if the middle person on a rope team falls in a crevasse.

Crevasse Rescue Preparation (FT6P) Info

- FT6 Prep is at the clubhouse, be prepared to show your instructors that you have been practicing both z and c pulley crevasse methods.

Crevasse Rescue (FT 6) and Hard Snow Field Trip (FT 7) Info

- If you haven't completed and passed a conditioner you may not attend FT 6 or FT 7.
- As part of the skill testing, physical conditioning and comfort on snow is being graded on the field trip 6 and 7. You must be able to reasonably keep up with the group on the approach and while hiking around in the moderate to steep terrain. Most climbs have terrain that is equivalent or even steeper than what you will encounter in this field trip.
- You must satisfactorily complete both FT 6 and FT 7 prior to attempting a glacier climb and/or going on a climb that includes use of an ice axe.
- You must wear mountaineering boots, and have crampons that fit your mountaineer boots for both days.
- Make plans to stay overnight at or near MRNP for FT6 and FT7 – We have an early start each day! Your instructors will try to arrange camping for the evening prior to both, so stay tuned for details.
- Review knots and snow anchors prior to the field trip.
- There are 3 skills tests during these field trips. Ice axe arrest is a critical skill, you must come prepared to perform this skill with little prompting from the instructor. Crevasse Rescue and Carabiner Ice Axe belays are essential skills, these must be performed without any guidance from the instructors.

"MENTOR MOMENT"

- **Conservation requirement:** be sure to have this form completed (if you do not do a mountaineers stewardship activity) to verify satisfactory completion of the activity. Email the completed form along with your graduation application to the records chair when ready.
- Review Lecture 3 in the Basic Rock & Glacier Climbing Course Manual prior to a glacier climb.
- Use the Student Learning Objectives to study for the written exam! The passing grade is 80%.
- **Be sure to review the following for the exam:**
  a. Climbing Code
  b. 10 essential systems
  c. Climbing signals
  d. 7 steps of accident response, in order
  e. Knots and their use
  f. Student manual and the *Freedom of the Hills* assigned readings
  g. All the Key Point summaries in each lecture section of the student manual
- **Final Exam:** Bring **a pen, or pencils and eraser,** and **scratch paper** to the exam

Have fun! Enjoy using all your new skills. **Safe** Climbing!