

Mt. Rainier National Park
Mountaineering Report
2014

Summary and Highlights -2014

For the first season in several years, the climbing staff had no new members. All of the climbing staff from previous seasons returned for the 2014 season. Retaining staff from season to season allows for a higher level of professionalism and familiarity with the mountain and ranger operations.



Figure 1 Climbing rangers on a patrol of the Kautz Glacier route

Climbing Rangers continued to train in helicopter short haul rescue, with several more climbing rangers becoming certified. This method was adopted by Mount Rainier National Park in late 2012. Climbing Rangers logged many hours training in not only helicopter short haul, but also in STEP maneuvers (single-skid, toe-in, one-skid, entry and exit procedures), general aviation crewmember skills, as well as trainings with the Joint Base Lewis-McChord and the 214th Army Reserve.

Both the Disappointment Cleaver route and the Emmons/Winthrop route remained in excellent climbing condition well into the late climbing season this year. In 2013, the Disappointment Cleaver route meandered all over the upper mountain to avoid large crevasses and icefall zones, and at times was unclimbable for days at a time.

2014 brought a return to much more standard climbing conditions, with one exception. By the middle of August, the climbing route traveled much farther than normal out onto the Emmons shoulder, and crossed the bergschrund much farther north than typical. This route provided for smooth glacier travel and relatively few reroutes into the later season.

The Emmons glacier also followed a traditional trajectory in terms of historic climbing conditions throughout the summer of 2014. The Emmons saw many ski mountaineers from May well into and through June, as well as the usual influx of climbers after July 4th, then tapering off slowly until the middle of August.

The Camp Muir Development Concept Plan was approved and signed in 2013, and work began in 2014. The initial project selected was a new, more efficient bathroom on the eastern side of Camp Muir. This bathroom is being designed to fit in with the existing historic architecture of Camp Muir. Any project at 10,000 feet on the side of a volcano is a massive undertaking. This meant many helicopter supply flights to and from Camp Muir this summer. Nearly 50,000 pounds of concrete were flown to Camp Muir. In addition to all of the concrete, other construction supplies, tents, stoves, and personal supplies for the carpenters was also flown to Camp Muir. These flights happened over several days throughout the summer. The new bathroom is projected to be finished by the end of the 2015 summer season.

Camp Schurman was also received upgrades in 2014. Communications for rangers at Camp Schurman have long been a problem. Much of the ground work and infrastructure for a network communications bridge was flown to and installed at Camp Schurman in 2014. Once fully operational, this network bridge will allow Climbing Rangers to have reliable communications with the rest of the park, and during rescue operations. Climbing Rangers also built a new cabinet in the ranger hut.

Two training highlights occurred this summer. Rigging for Rescue was contracted to serve as a facilitator for a technical rescue seminar for the guides and rangers. Guides and rangers play a large part on all upper mountain rescues. During poor weather when aviation is not on the table as a rescue tool, rangers and guides must work together and use the same techniques for ground based lowerings involving general independent climbers. Two mock rescues from the top Mt. Rainier National Park

of disappointment cleaver were conducted in June and August. This is probably the first time that such technical training has been conducted this high on the mountain. This will continue in 2015

Overall Climbing Statistics and Route Use

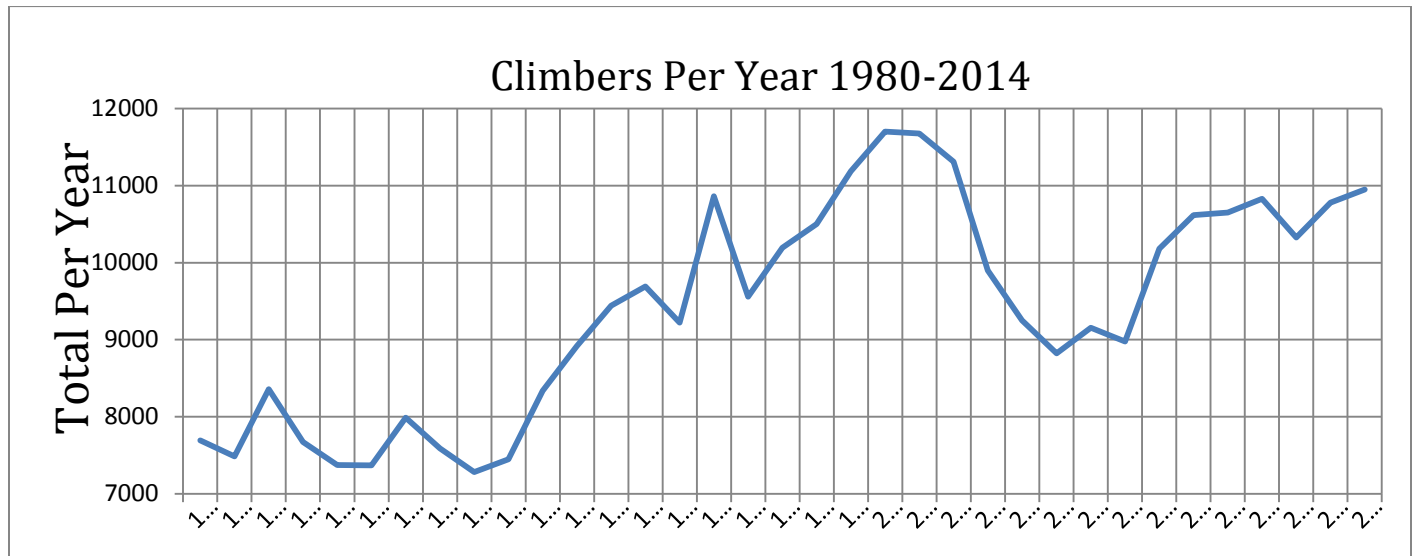


Figure 2 Overall climbers per year since 1950

There were 10949 climbers in 2014. This was a roughly 1.5% increase over 2013. The climbing numbers, as in the past several years, started very strong in the early and mid-season. Several months were even on an all-time record pace. However, as in the past several years, numbers diminished quite significantly in August and September. But unlike 2013, August of 2014 was quite nice, with many sunny and warm days. This nice weather trend even continued well into the fall, with only a few storms passing through in September.

Route Distribution 2014

Route	Total 2014	2014 % of Avg	09-14 Total	6-year avg
Disappointment Cleaver (DC)	8138	74.33%	35313	65.89%
Emmons – Winthrop	1466	13.39%	1615	3.01%
Kautz Glacier	414	3.78%	2188	4.08%
Fuhrer's Finger	189	1.73%	818	1.53%
Little Tahoma	152	1.39%	709	1.32%
Ingraham Direct	126	1.15%	3576	6.67%
Gibraltar Ledges	123	1.12%	663	1.24%
Glacier Only	119	1.09%	475	0.89%
Liberty Ridge	94	0.86%	648	1.21%
Ptarmigan Ridge	38	0.35%	144	0.27%
Kautz Cleaver	34	0.31%	152	0.28%
Tahoma Glacier	22	0.20%	134	0.25%
Gibraltar Chute	10	0.09%	27	0.05%
Success Cleaver	9	0.08%	63	0.12%
Sunset Ridge	4	0.04%	18	0.03%
Edmonds HW	4	0.04%	6881	12.84%

Kautz Headwall	3	0.03%	34	0.06%
Mowich Face	2	0.02%	31	0.06%
Sunset Amphitheater	2	0.02%	8	0.01%
Nisqually Cleaver	0	0.00%	11	0.02%
Nisqually Glacier	0	0.00%	42	0.08%
Wilson Headwall	0	0.00%	32	0.06%
Nisqually Ice Cliff	0	0.00%	14	0.03%
Total Numbers	10949		53596	

Figure 3 2014 route use compared to 6-year average

Climbing Program Operations

Only two of the sixteen climbing rangers are permanent rangers. Fourteen rangers are seasonal, receive no government pension, or health coverage, and are paid about \$18 / hour. Seasonal rangers are limited to six months of work. This means that the average ranger works only for three five-month(+) seasons and moves on to better paying gigs elsewhere.

Staff retention becomes an important issue when such a tremendous amount of training is invested in each ranger. It has also been a limiting factor of the over-all climbing team’s abilities because the team can only perform at the level of the least skilled member.

This year, the two permanent supervisors were given the entire upper mountain climbing team to supervise. A seasonal lead ranger was given the rangers at the Climbing Information Center to supervise. A permanent ranger from the maintenance division in the park was borrowed to supervise the high camp maintenance staff.

The two upper mountain teams staffed high camps and conducted climbing patrols. The rangers at the Climbing Information Center were primarily responsible for keeping the CIC open and registering climbers. All rangers participated in search and rescue incidents, chiefly at or near their respective environments.

The climbing program identifies five core skills; 1) mountaineering ability, 2) emergency medical services, 3) aviation skills, 4) technical rope rescue, and 5) avalanche skills. The identification of these five core skills inform how we train each season. The NPS feels obliged to have quality and industry standard training in each one of these core skills. In all but one of these core skills an outside standard of certification is called upon for each climbing ranger to adhere to. The National Registry of Emergency Medical Technicians tests and certifies our EMT’s. The American Institute for Avalanche Research and Education (AIARE) or the Canadian Avalanche Institute or a select few other organizations will give training and certification at various skill levels. The Department of the Interior now has search and rescue and technical rope rescue qualifications with testing and certification elements. The National Wildland Fire Coordinating Group has a very well thought out system of aviation qualifications.

Mountaineering-specific qualifications have been harder to adopt. 2014 marks the first year that climbing rangers are being put on a track of becoming American Mountain Guide Association qualified Alpine or Ski Guides. Although many of the skills are the same and often we’re put in client-like environments, our main goal is to develop industry standard, and professional level mountaineering technique. We estimate by spring-summer 2016, we will have our first certified personnel on our staff.

Ultimately, it has been mountaineering mistakes that have led to devastating outcomes. On rescues on the upper mountain, often when conditions are the most challenging, a climbing ranger is forced into using all of the skills

simultaneously. Risk management models suggest strong levels of professionalism and training when such high intensity and complex skills are required of a job to get it done if the task cannot be simplified in some way.

Mount Rainier National Park Mountaineering District - 2014

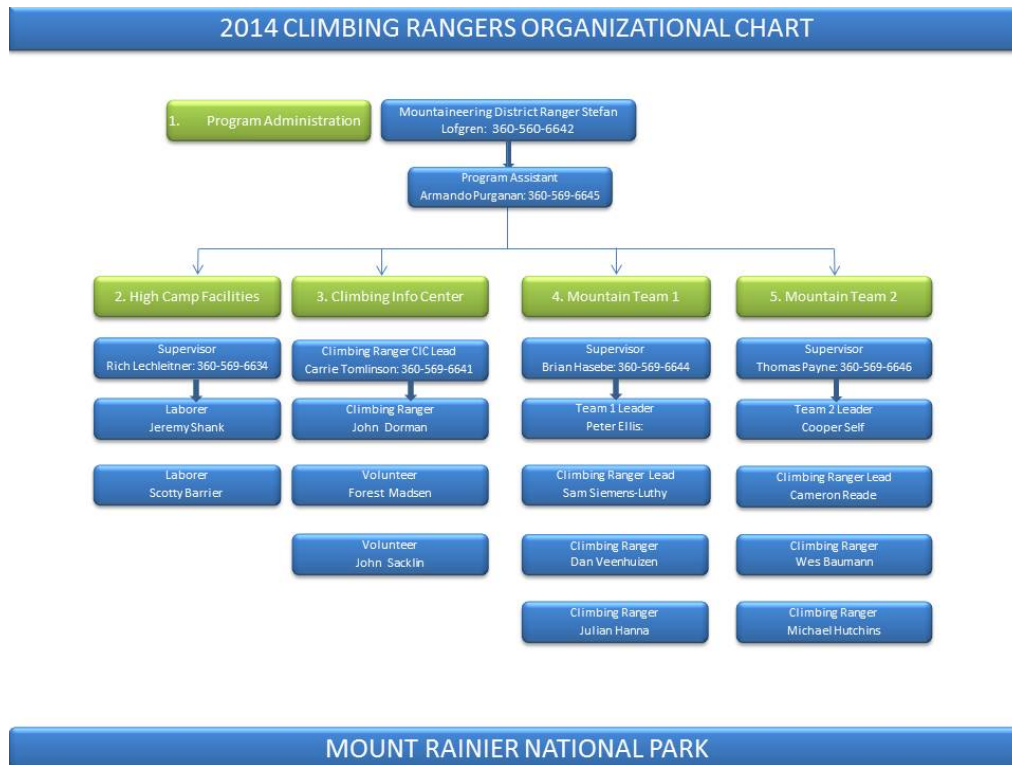


Figure 4 Climbing program organizational configuration

Training

In 2014, the climbing ranger program recorded nearly 3250 personnel-hours of training. This is on par with the average of the last 3 years. We estimate that around \$100,000 is dedicated to training in developing and refreshing rangers' skills each season.

Climbing Ranger Training 2014

<u>Category</u>	<u>Number</u>	<u>Hours</u>
Avalanche	5 trainings	32 hours
Aviation	12 trainings	101 hours
Climbing Ranger	8 trainings	50 hours
EMS	10 trainings	71.5 hours
Other	7 trainings	61.5 hours
SAR	28 trainings	246.5 hours
Wildland Fire	2 trainings	16 hours



Figure 5 Climbing rangers train for short-haul

Climbing rangers conduct patrols above high camps for numerous reasons. Climbing frequently maintains top level conditioning so that during rescues one is not focusing on one's self. Maintaining a firsthand knowledge of conditions is important when subsequently doing rounds at high camp or before a shift in the climbing information center. Unfortunately, people still litter and leave blue bags (and worse) on the route which climbing rangers spend time cleaning up.

Here are the number of ascents on each route that climbing rangers patrolled in 2014. Note that one climb may count as three ascents if there were three rangers on the climb.

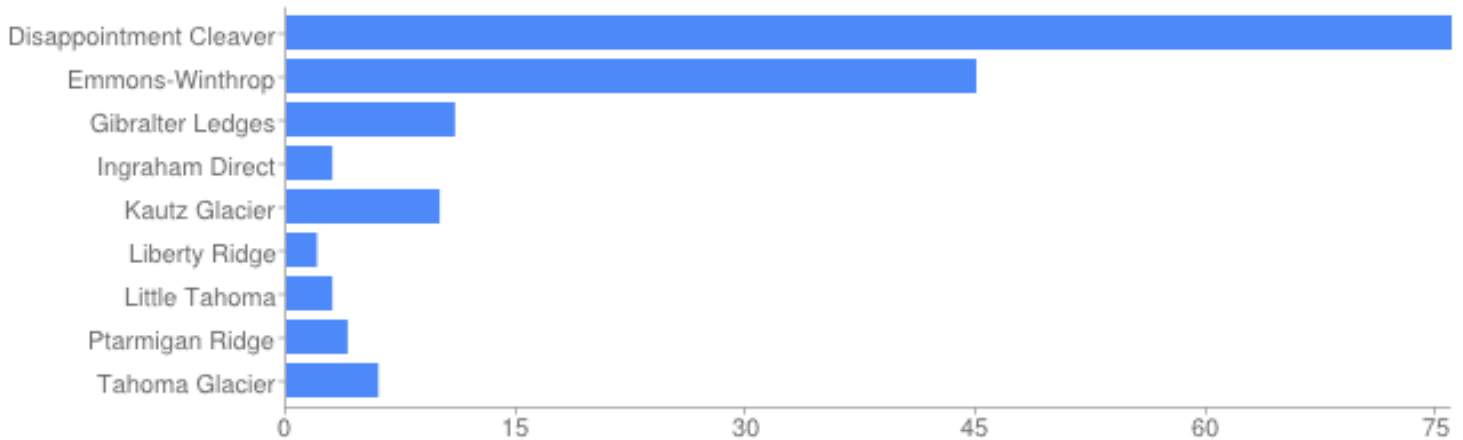


Figure 6 Climbing ranger route-ascents

Climbing Information Center (CIC) / White River Wilderness Information Center (WIC)

The climbing information center at Paradise is the main climbing permit issuing station in the park. For the third year in a row, the climbing information center has been run by its own staff of rangers. This program configuration allows us to target specific types of training and simplify the skills that any one ranger must learn in order to be effective at their job. The downside to this is that the rangers who issue the permits are less familiar with the current conditions. Nevertheless, the climbers will mostly be climbing through Camps Schurman or Muir where they will talk to a ranger who recently climbed and can provide information on current conditions.

This is slated to change back to all climbing rangers working the CIC in 2015. One of the downsides of CIC specific rangers is that they are limited by their experience and lack of appropriate supervision. To develop and make available more resources during search and rescue incidents, the climbing program will incorporate into its climbing teams all rangers on its staff into its preseason training, high camp staffing, search and rescue roles, and climbing patrols.

The rangers who work at the CIC also have the collateral duty of preventative search and rescue. It is part of their work to travel between Paradise and Camp Muir and contact day and overnight hikers and climbers and make sure they are permitted, equipped and informed about the conditions and weather. In 2015, climbing rangers will once again staff the CIC, as in years past. Rangers will rotate between high camps, upper-mountain time, and shifts in the CIC.

The White River WIC is staffed on Friday afternoons and Saturday mornings by the climbing rangers who are scheduled to provide coverage on the Camp Schurman side of the mountain. The rangers then climb to Camp Schurman on Saturday afternoon. The East District backcountry staff registers all other climbers from Sunday to Thursday.

mountrainierclimbing.blogspot.com

The climbing blog has been the best way the climbing rangers have been able to get updated route conditions out to the public in a timely way. The blog is immensely popular and takes hits from all over the world. In the past several years, there have been hundreds of thousands of hits. We actually receive requests to advertise on it from large corporations. The annual total blog hits on all threads for 2014 was 132,720.

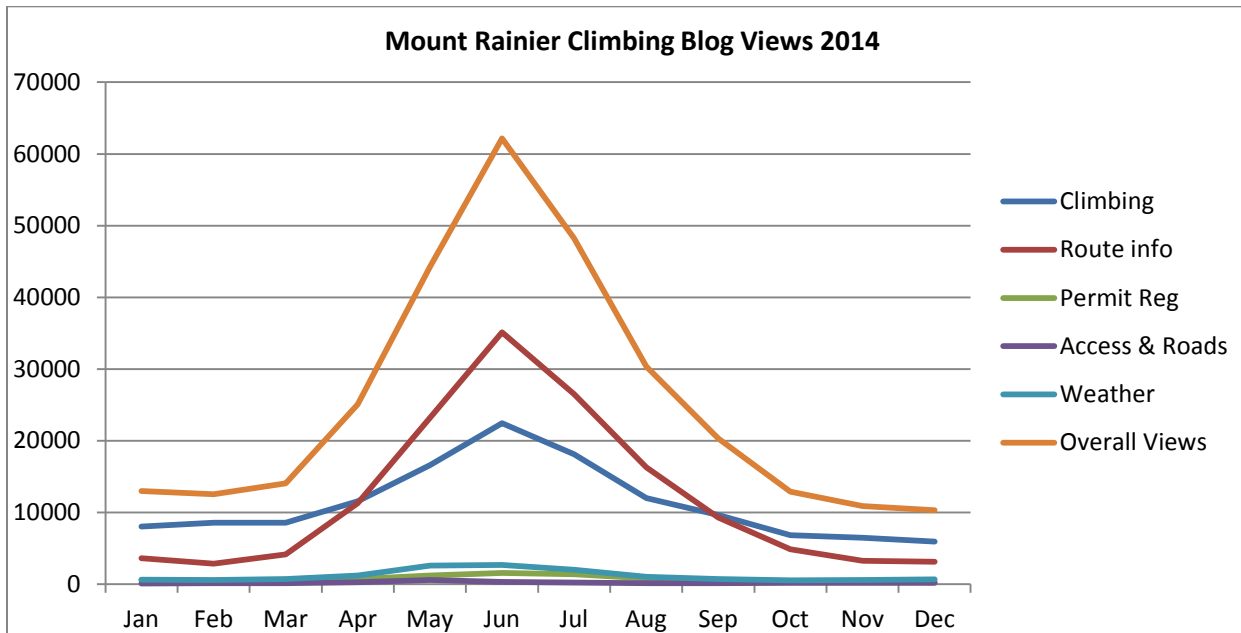


Figure 7 Blog hits on mountrainierclimbing.blogspot.com

Because of the installation of the network bridge to Camp Muir in 2011, the climbing rangers now have the ability to update the blog from Camp Muir, immediately after their climb. This should increase the timeliness of their route updates, reports, and communications. Hopefully in 2015 rangers will have the same capabilities at Camp Schurman.

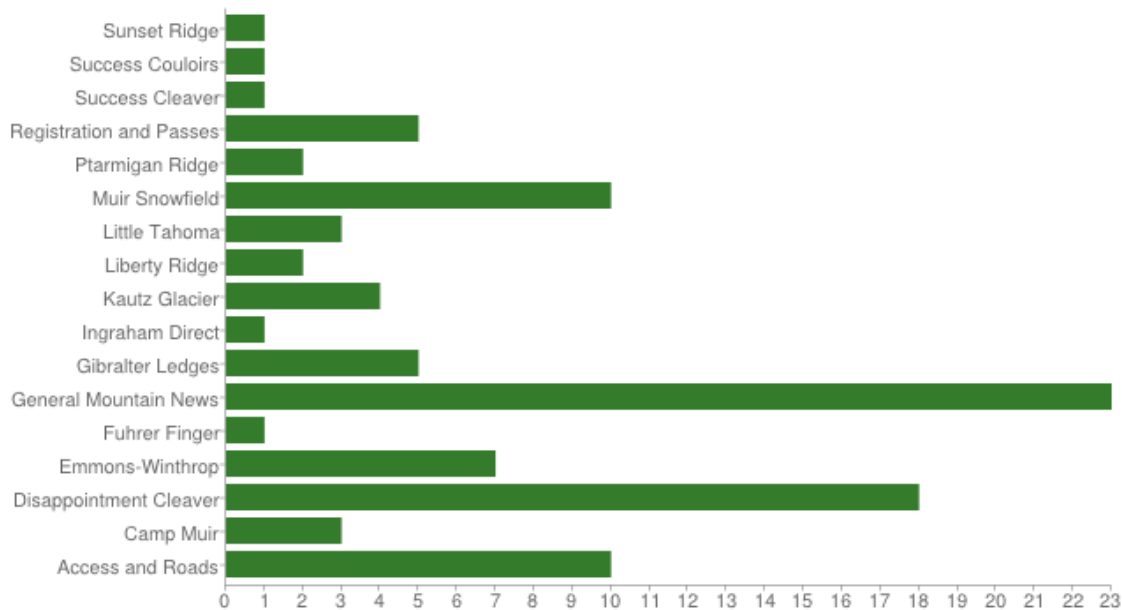


Figure 8 Climbing ranger blog posts and updates on each thread

Resource Protection

Another important process will begin in the spring of 2015. A new Wilderness Stewardship Plan will be developed for the Mt. Rainier Wilderness (a part of the National Wilderness Preservation System) through the NEPA process, including development of an EIS. The park sought assistance to lead the process and prepare an EIS that will result in a new plan. The NPS Environmental Quality Division, a function of the NPS headquartered in Denver, is working with a contractor, SWCA, Inc., to round up all the data, related plans, and comments that will lead to a new plan in two to three years. The effort will require periods of public comment along the way. This effort paves the way to use modern tools and ideas to protect one of the most special wilderness areas in the US, and one of the most awesome regions in the world. Stay tuned and keep a lookout for an announcement and invitation to the public scoping process on the Park's website.

The climbing rangers are simply wilderness rangers who must have skill in climbing to access the area of land in our district, monitor its use, document impacts, and clean up areas of impact. As a part of each individual's weekly climbing ranger patrol log, rangers are required to enter each impact they observe. There are roughly 62 impact categories under 8 general categories. The more impacts the rangers record, the better managers can make decisions and intervene to control or mitigate these impacts.

Climbing rangers recorded fewer impacts than in years past. This is largely due to a smaller emphasis on recording impacts. The climbing program will re-establish a stronger emphasis on recording wilderness impacts, conduct impact surveys and campsite monitoring on select routes, and continue to do what it can to keep the mountain clean.

Climbing rangers are also involved in more monitoring that is more scientific in nature. Climbing rangers in the fall, do surveys and have long-term monitoring programs for impacts and campsites on the Kautz, Ptarmigan Ridge, Curtis Ridge, and Success Cleaver. We try to visit each site every two or three years to see if they are growing or if more camp sites are being developed. We try to destroy and rehab new camp sites and maintain the ones we documented when we started in an effort to try to freeze the condition as it was at that point in time. This work is mostly done in the fall.

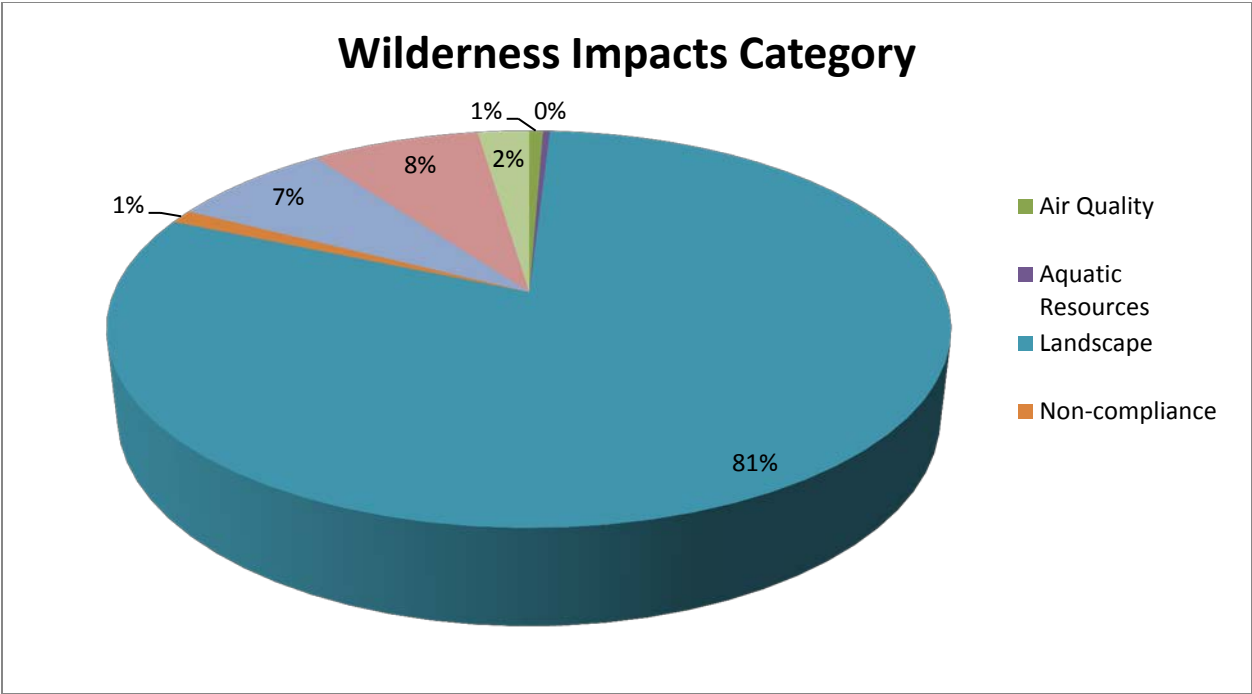


Figure 9 Wilderness Impacts per major category

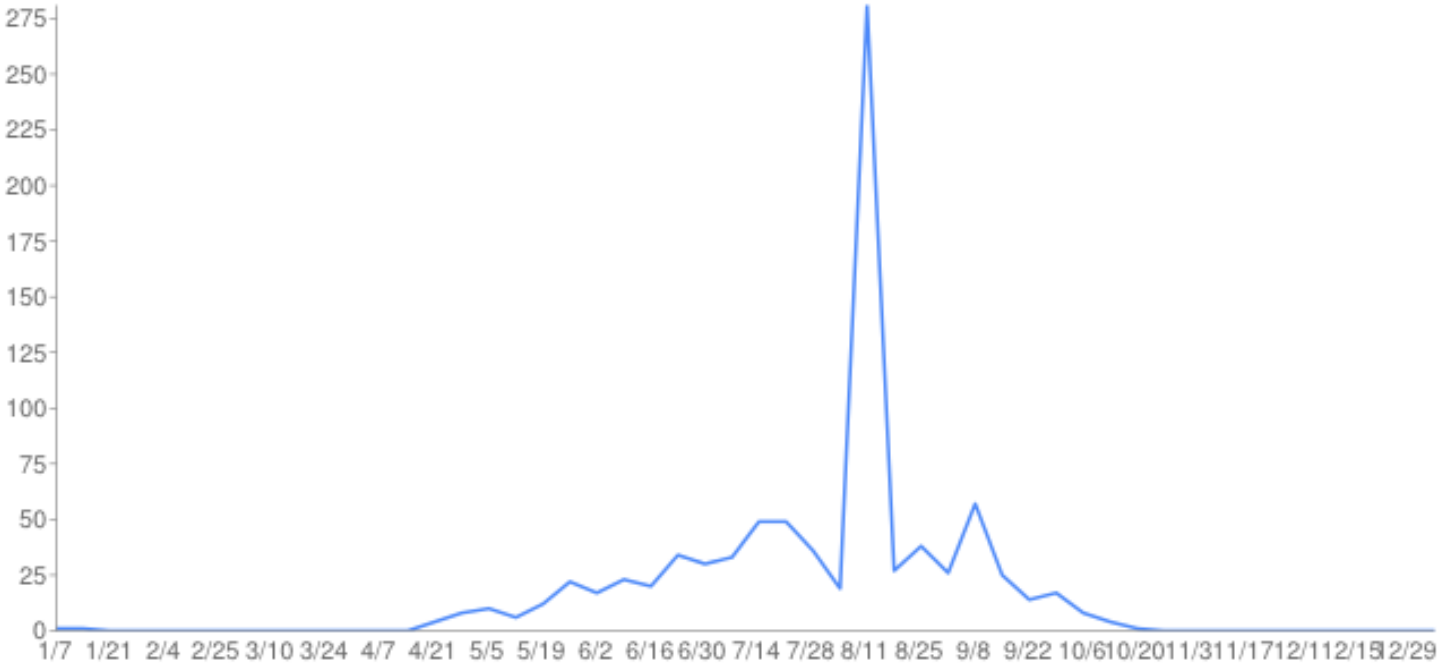


Figure 10 Wilderness impacts recorded per week

Wilderness impact monitoring is one of the easiest and most convenient ways for managers to evaluate current trends and identify hot spots and emerging trends in visitor use and impact. Near real-time impact summaries are available to managers.

Human Waste

Nothing much has changed from last year in our management of human waste. We have two systems, the toilets at the high camps and the blue bag system.

The toilets at high camps are not “composting” toilets; they work somewhat effectively at separating the solids and liquids. The liquids are dispersed directly back into the rock debris below Camps Schurman and Muir. The solids are somewhat dehydrated and then transferred to 40-gallon barrels, which in turn are flown off by helicopters. The barrels are then transported to a waste processing facility outside the park.

The blue bag system is used in areas where there are no toilets. Human waste is deposited on the ground or snow. The solids are picked up like you pick up your dog’s poop in the park. The waste is transported by the visitor/climber to a high camp or ranger station where they are put in a barrel. The barrel is either flown from Camp Schurman/Muir or picked up by vehicle at ranger stations. These barrels are then transported to an incinerating facility outside the park.



Figure 11 New toilet construction at Camp Muir

The overhead in maintaining these two systems costs between 80,000 and 100,000 dollars, if you include all the people, materials, supplies, and transportation costs. Several tens of thousands of those dollars are paid for by money not associated with the climbing program or the cost recovery fee (climbing fee). The exact cost of operating the system is not easy to figure because you have to include a percentage of several people’s time who are not paid for out of cost recovery money.

In 2014, construction began on new toilets at Camp Muir. These new toilets will not try to evaporate liquids. What we lose by adding potentially more weight to our fall loads, we will gain in lessening operating complexity. The new toilets are a simpler design with a focus to draw smells from the interior, down the hole, and out a ventilation stack on the top. We hope to make a less odorous experience while in the toilet!

In 2014, of the total cost of operating the human waste system in the alpine areas of Mt. Rainier paid for out of climbing fees was about \$45,000.

Below is the number of each type of human waste collected at Camp Muir.

Human Waste Collected from Mountaineering Operations 2014		
Location	Number of Barrels	Pounds of Waste
Camp Muir		
Raw Human Waste	20	8500
Blue Bags	12	2000
Camp Schurman		
Raw Human Waste	3.5	1,750
Blue Bags	3	400
White River		
Blue Bags	1	200
Paradise		
Blue Bags	7	1250
West Side Rd		
Blue Bags	0.1	20
Totals	46.6	14120

Figure 12 Total human waste removed from Mt. Rainier

Volunteers

The climbing program has always relied on partnerships to conduct its operation. Each year, approximately ¼ of all employee hours are from volunteers. However, volunteers aren't exactly free.

Because of the complexity of the duties and the serious consequences of mistakes, the climbing ranger program only accepts volunteers who are able to commit to an April through September, 40-hour per week schedule. This allows for the volunteers to receive the same training as the climbing rangers they work with, such as avalanche training, EMS training, technical rope rescue training, general operations training, risk management policies, aviation training, and incident management training to name a few.

Each full-time volunteer also receives a \$20 per day stipend and their housing is paid for. Such costs average just over \$4,000 dollars per volunteer per summer.

This season, the climbing information center was staff by two paid rangers and two volunteer rangers. We couldn't have done it without our two volunteers. Thanks Forrest and JD!

The entire volunteer program cost us about \$18,000 this year. The return on investment though is quite high.

VIP Hours 2014

VIP	SCA	MRA	Total
1527	0	1784	3311

Paid Equivalent:	x \$20/hour	\$66220.00
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Figure 13 Total volunteer hours and cost valuation

Guiding

There are three authorized guide services on Mt. Rainier who conduct more than one trip a year. These are known as concession franchises. In 2006, three ten-year contracts were awarded by a competitive process to Alpine Ascents, International, International Mountain Guides, and Rainier Mountaineering, Inc. The competitive process has served the general and guided public very well. Visitors are offered unique experiences with each guide service. These three guide services are three of the largest and most professional guide services in the world. We are lucky to have them at our park.

Guide Service	Guides	Clients	Total
Alpine Ascents International	352	680	1032
International Mountain Guides	367	707	1074
Rainier Mountaineering, Inc.	734	1990	2724
Total:	1453	3377	4830

As a part of the process of managing a concession in a National Park, the concessions franchise (mountaineering, lodging, or restaurant) are monitored for quality and meeting the terms of their contract. Some of the franchise fees

collected as a percentage of gross revenues of the franchises are given back to the climbing program to enable monitoring. The monitoring is typically done on the hill where they are conducting their guiding. Issues are passed on to the mountaineering district ranger and concessions analyst in the park. Issues are remedied immediately.

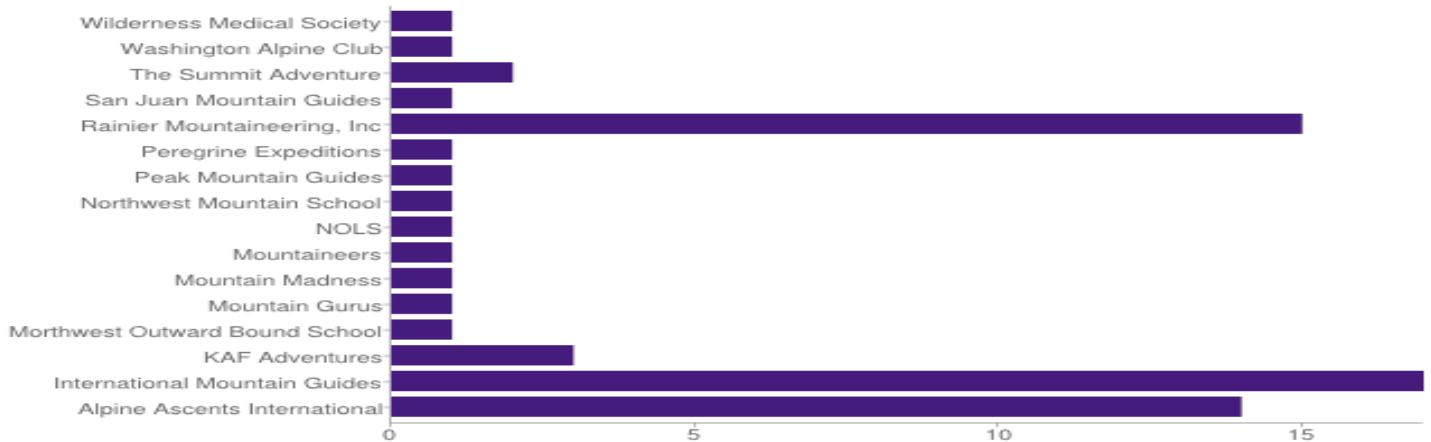


Figure 14 Climbing ranger commercial use monitoring

Other guiding activity takes place on the mountain. Fifteen single use trip commercial use authorizations are granted for two-year periods. Each one of the sixteen companies are granted one trip up Mt. Rainier each summer. Other various but relatively minor guided activity occurs in the winter in the form of expedition seminars, avalanche training, or shorter duration trips.

Mountain Rescue Association (MRA)



Climbing operations at Mt. Rainier don't really include the mountain rescue groups on a scheduled and operational basis, however, their participation in SAR incidents is important to Mt. Rainier's response to SAR incidents.

Mt. Rescue and the climbing rangers / park rangers are beginning to train together more than they have in the last 20 years. This will ultimately prove to provide a more coordinated response.

Mt. Rainier relationship with MRA continues to grow, evolve, and develop. During the Thanks much to the efforts of Rick Lorenz, OMR, the callout procedures have reached a modern level of development.

Mt. Rescue contributed 1781 hours of personnel-hours on SAR incidents at Mt. Rainier in 2014. This is about average for the last several years, but is not to be taken for granted as many as 10% of our total rescues are almost entirely MRA personnel.

Searches and Rescues

In fiscal year 2013 (Oct 1, 2013 – Sept 30, 2014) there were 37 search and rescue operations. This was an average year in the number of rescues. Not normal was the six-person fatality incident involving and Alpine Ascents International guided group on Liberty Ridge. There were 11 fatalities in the park in 2014. This is above average.

2014	\$149,023.00
2013	\$149,299.00
2012	\$359,342.00
2011	\$130,398.00

such a large, high altitude, joint technical training was conducted not once, but twice in a single summer! Cooperation between the guide services and climbing rangers is paramount to rescue operations, and the safety of the general climbing public. Huge thanks to Mike Gibbs from Rigging for Rescue for coming out to put on a technical seminar to ensure that rangers and guides were operating with the same techniques. And a big thanks to all three guide services for providing personnel to participate in training with the climbing rangers! Trainings of this nature will continue in 2015.



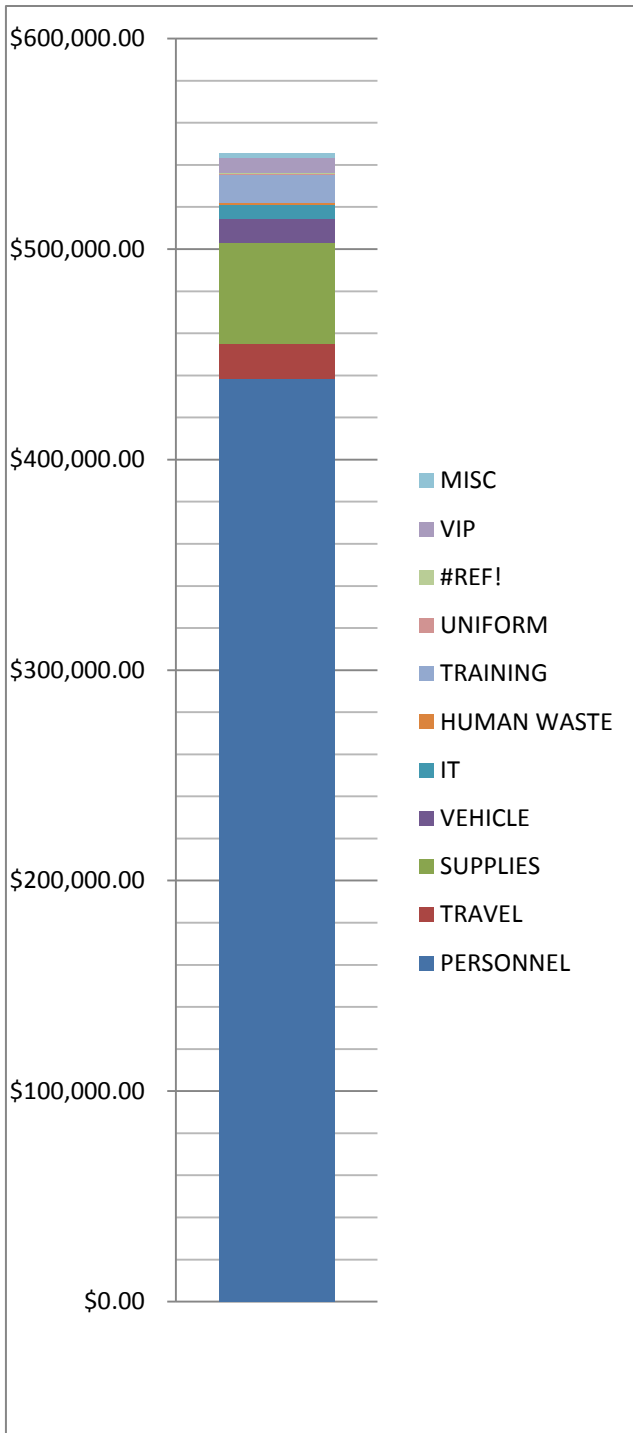
Figure 18 The installation of new solar panels for the microwave communications bridge to Camp Schurman

Also, some big news in 2014 included the funding and acquisition of microwave radio gear that will enable a phone to work in the hut at Camp Schurman as it does at Camp Muir. The project is being undertaken in two parts. The first part is to build the off-grid solar photo-voltaic system at Camp Schurman to power the remote end of the micro-wave link. This step was finished in September 2014. The second phase will be completed during the summer of 2015 when we install the actual microwave radio infrastructure.

This is more complicated than the system at Muir, which simply is a 4.5 mile micro-wave link between Paradise and Camp Muir, line of sight. The link between Schurman and the nearest point with access to the park's network means that we start at White River Ranger Station, shoot the signal to Grubstake Peak near the top of Crystal Mountain Ski Area, then repeat the signal directly to Camp Schurman. Purchasing gear with high enough power to cover the 17 mile distance and which also meets federal encryption standards cost quite a bit of money. The park and climbing program didn't have the kind of money required to make this a reality.

Here's where the magic happened. In 2013, a group of climbers were rescued from about 13,200 feet in a blizzard on the Emmons Glacier. A few of the party members were associated with a prominent local business. Those employees wanted to give back to the rescuers that helped them. They organized a fund raising climb through the Washington National Parks Fund, which raised over \$60,000 for the specific implementation of this communication equipment.

Income, Expenditures, and Budget



The climbing program's budget is difficult to manage. The budget cycle is by fiscal year (Oct-Sept). The planning, hiring, training, and equipping of the climbing program needs to be taken care of before the climbing season has begun, and thus before the fees have been collected! This means that we commit to spending money before we know exactly what our budget is. However much this seems like a poor business practice, we have been able to make this work since the fee's inception in 1995. In a few years, this has resulted in some rash decisions, like laying off rangers prematurely in order to save money and make budget.

In 2014, the climbing program consisted of 19 people. This breaks down into one program manager, three supervisors, four lead climbing rangers, four climbing rangers, two high camp maintenance rangers, two climbing information center rangers, two VIP's, and one administrative assistant.

Salaries of the permanent and seasonal staff account for roughly 80% of the climbing budget. The costs include regular hours, premiums (such as overtime and hazard/environmental differential) and other benefits such as paying into unemployment insurance.

Travel is mostly in park and reimbursed as backcountry per diem at the rate of \$20 / night.

Training costs include EMT refresher training, aviation training, and technical rope rescue training, as well as "Leave No Trace" and other wilderness training. Contracted training through Rigging for Rescue, Conterra, Wiland Associates, wilderness Medical Associates, etc. can cost as much as \$10-15,000 for a 4 or 5-day training!

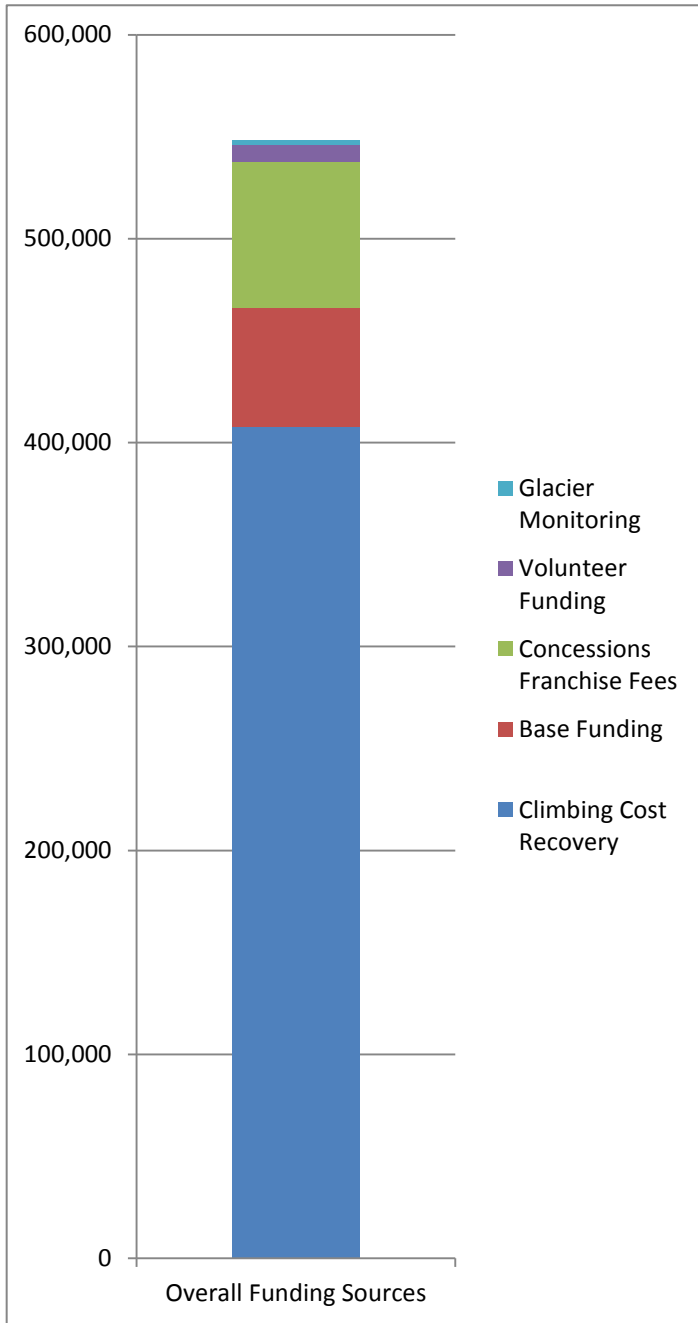
VIP (Volunteers in Parks) costs are all costs associated with the VIP's and SCA's in the climbing program. This is their \$20/day volunteer reimbursement, a small amount of gear and equipment we provide for them, and their housing.

Supplies represented here are administrative supplies such as paper, forms, booklets, pocket guides, computers, IT equipment is brought out separately, as well as operational supplies like carabiners, ropes,

crampons, jackets, and other equipment.

Vehicle rentals are strictly the three vehicles the climbing rangers rent from GSA in order to provide transportation around the park while in duty status.

The total climbing program budget (minus the mountaineering district ranger's budget of \$106,000) was \$548,000 in FY2014.



This graph represents all income categories. Roughly \$405,000 were collected from the sale of climbing passes at roughly a 10% / 90% split between youth passes and adult passes (\$45 / \$32).

\$72,000 concessions franchise fees
 \$58,000 centennial initiative
 \$2,000 glacier research/monitoring
 \$8,000 Washington National Parks Fund Grant

Total available budget in FY2014 was \$548,000. Not included in this graph is the mountaineering district ranger budget, which was about \$106,000.