

Highlights

The weather was the leading factor in 2010. Until late March, the snowpack at Paradise was about 75% of normal. It was looking like it may be an early climbing season. April, May, and June were much cooler and wetter than normal. The snowpack recovered and eventually topped out around 200%. Weather and avalanche conditions curtailed many climbers' summit plans until late June. However, after the fourth of July, the weather became more stable and climbing operations were normal after that.

There were an unusual number of search and rescue incidents this season, especially lower down on the mountain. This can partly be explained by the unseasonably cool and wet weather. Poor weather leads to many of the major incidents on Mt. Rainier. The cool weather also pushed unstable winter and spring-like climbing conditions (the physical snow and ice conditions) into a period of higher use where the conditions are normally more firm, stable, and reliable. There were 26 search and rescue incidents in 2009 (19 climbing related). In fiscal year 2010, there were 41 search and rescue incidents (20 climbing related).

The climbing program had not replaced two supervisory rangers for almost 4 years. These two positions were filled in the spring of 2010. These two positions are on-hill and high camp supervisors for the climbing ranger program and act as the district ranger in his absence.

Climbing rangers began their summer season on April 5th, almost 5 weeks sooner than normal. Climbing activity usually increases almost exponentially after mid-May, which makes it difficult to conduct training. The early start date made it far simpler to train in core skill areas.

A comprehensive training program was coordinated for the climbing rangers which included a 5-day technical rope rigging class, an EMT refresher and skills test, ski patrol litter training at Crystal Mountain, aviation refreshers and trainings with the military, Incident Command System, GPS, and Operational Leadership – to name a few. This helped prepare climbing rangers for an intense season of climbing and also rescue operations.

There were three international entities that came to Mt. Rainier to experience our climbing (and rescue) programs. Ang Tshering Lama, a Nepali national, volunteered with the climbing rangers at high camps Muir and Schurman. Climbing rangers also hosted representatives from the Seoul Mountain Rescue Association for several days. Climbing rangers also coordinated with the US State Department for a day-visit of professionals from Chengdu, China to tour our climbing program. These visits help Mt. Rainier develop its image as a leader in climbing management around the world.

International Mountain Guides part-owner, George Dunn achieved his 500th summit on Mt. Rainier (the current record). George's experience, cooperation, and leadership are instrumental in creating an exceptional work and climbing environment at Mt. Rainier.

The Mountaineering Ranger District

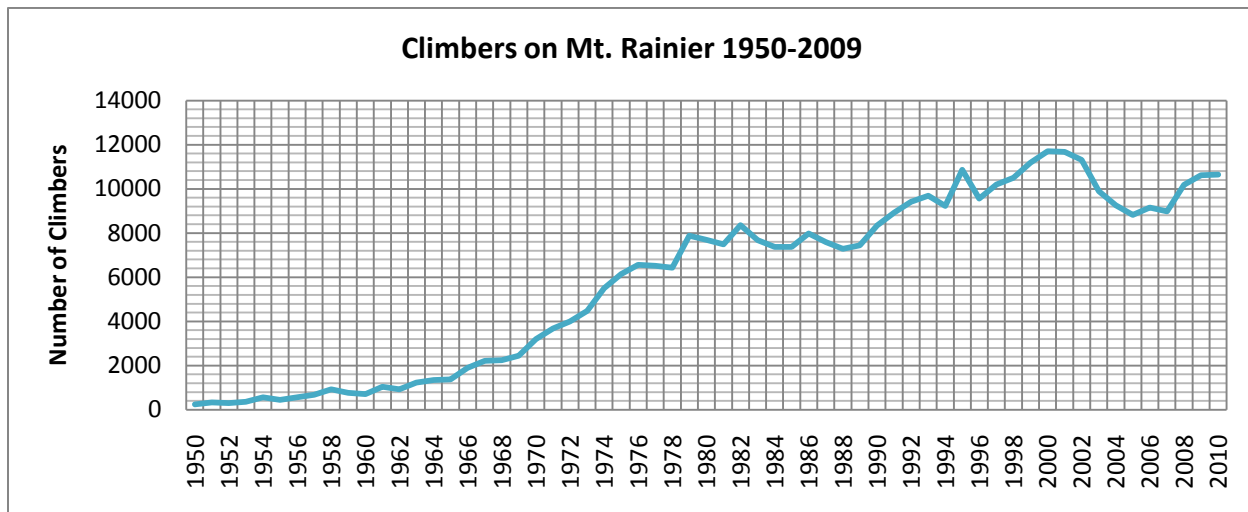
The mountaineering ranger district is approximately 70,000 acres of Mt. Rainier's 250,000 acres, or roughly everything above tree line up to the summit. Aside from an area of roughly 1 acre that includes Camp Muir, the entire district is designated wilderness. There are two management policies that affect wilderness management in the park.

The Organic Act (1916) established the National Park Service. It dictated the NPS's mission which stated that its purpose is to, "... conserve the natural and historic objects and the wildlife therein, and provide for the enjoyment of the same, in such

manner and by such means that will allow for the enjoyment of future generations.” And the Wilderness Act (1964) established that, “ ... A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain.” Four principles were defined, roughly summarized; 1) where the imprint of man's work substantially unnoticeable; (2) where the land has outstanding opportunities for solitude; (3) is composed of least five thousand acres; (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

It is for these management directives that our climbing program exists as well as to provide for visitor education, information, and resource protection.

Wilderness visitor use in the mountaineering district is disproportionate to its size. Most of Mt. Rainier's overnight wilderness (both climbing and hiking) is associated with climbing. Roughly 10,500 climbers attempted Mt. Rainier in 2010, as opposed to 9,500 people who used the lower regions of the park for overnight backpacking. The extent of day use is not well-known as there have only been intermittent studies at various trailheads, but summer day-use into the alpine zones is probably very comparable to day-use into the backcountry zones. A simple study done with a trail counter at Pebble Creek (1/2 way up to Camp Muir) in 2010 roughly compared traffic entering the park to passers-by at Pebble Creek, which on some days was roughly 10% of the entrance station volume!



The Mt. Rainier climbing program attempts to manage the alpine zones consistent with these service and resource management policies. It seeks to preserve the wilderness character, maintain solitude, discourage and eliminate impacts, and help users understand its purpose and intent.

The Climbing Program and its Rangers

On no other mountain in the United States, are there so many people in technical glaciated terrain for so many days. This creates management responsibilities the National Park Service must address.

On top of managing wilderness, the climbing program seeks to promote visitor education and safety by registering, contacting, and providing information to climbers before, during, and after their visit. It is required by US law (36 CFR 7.5) to register for (and check out of) each climb. Of the approximately 4,500 climbers who are associated with the commercial guide services, the remaining 6,100 people require some level of briefing or interaction during the registration process.

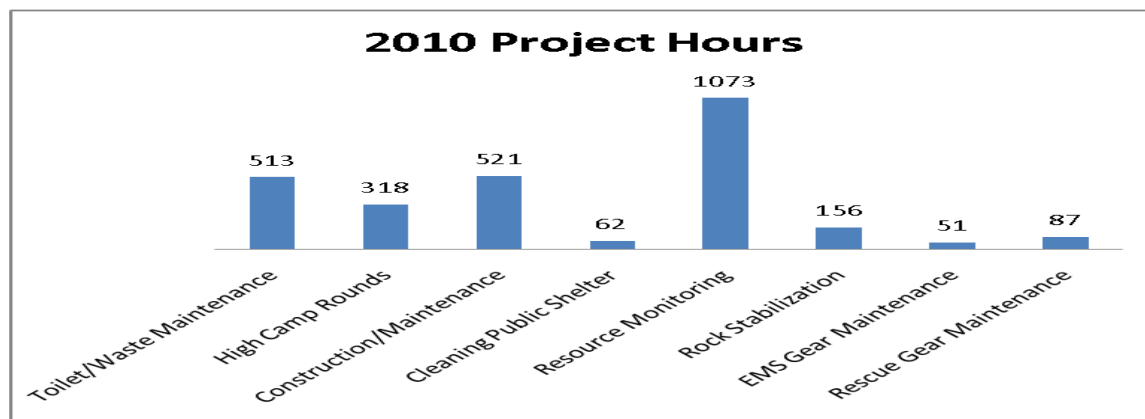
Although there are many skilled and experienced mountaineers who climb all of the routes on Mt. Rainier, demographic surveys and studies have concluded that the majority of mountaineers who attempt to climb the mountain are relatively novice or have a fairly modest level of technical mountaineering experience. This is why climbing rangers provide a thorough briefing to each party.

Most of these contacts happen at three general locations. Most climbers register at either the Paradise Climbing Information Center or at the White River Wilderness Information Center. Over 90% of the climbers on Mt. Rainier are climbing a route from Camp Muir or Schurman. Depending on party experience, it takes between 5-45 minutes to register a climbing party.

Minimum impact techniques, the human waste pack-out system, climber etiquette, weather and other information is given. There is often long line of people at the door and climbers are usually in a hurry to begin their climbs. The contact length is frequently cut to the absolute bare minimum.

Climbers are next contacted at their high camps (mostly Muir and Schurman) where we do our best to have at least one or two rangers every night. Once again, there are a lot of people to talk to in a fairly short period of time, but our contacts hit closer to home at high camp, now that people have a taste of the mountain and can see their objective more readily.

Finally, during their climb, rangers are often on the route and can observe and provide guidance and enforcement (if necessary) to climbing parties. It is common for climbing rangers to find multiple bluebags incorrectly disposed along the climbing route, find improperly stored food (ransacked by animals), or campsites excavated into the fragile fellfield environment. These impacts are mitigated, destroyed, returned to their original condition, or packed down out of the park.



Finally, rangers climb the routes and visit the alpine zones to gather information on climbing conditions to give to the public. The climbing program maintains a climbing blog (www.mountrainierclimbing.blogspot.com) on which to post these conditions updates. There are between 250,000 and 500,000 hits on this website a year. It has been shown that the quality and quantity of our climbing route condition updates contribute greatly to the rescue incident volume.

Climbing rangers are hired for and maintain technical skill and proficiency in (5) core areas, which are;

1. Climbing Ability – crucial to their safety and efficiency
2. Emergency Medical Services – at the EMT-Basic level
3. Technical Rope Rescue – taught in 2010 by Rigging for Rescue, LLC.
4. Aviation – as Helicopter Crewmembers or Helicopter Managers (US DOI / USFS qualification)
5. US Level 2 Avalanche Safety Training

Specifically identifying these core skills provide the framework for training climbing rangers to be safe and efficient at work. Rangers also learn how to collect fees, manage visitor quotas in the alpine areas, report incidents and medical interventions, issue climbing passes, run ranger stations, record wilderness impacts, manage wildlife issues, and professional risk management techniques, to name a few.

In 2010, the climbing ranger work unit was divided into (4) major sub-units. This system allowed the staff to train more efficiently and decrease the amount of responsibility to any ONE ranger. The district ranger has the overall administrative and budget responsibilities. The high camp maintenance laborers, climbing information center, and the actual climbing rangers make up the other three work units.

In 2010, there were 9 regular paid seasonal employees, 2 permanent supervisors, 5 volunteers and SCA's, and 1 district ranger. Due to an injury early in the season of a climbing ranger, a few of the volunteers were able to be hired for a short period (less than a month) as emergency backfills. There were 16 rangers working in the climbing ranger work unit in 2010.

Staffing Proportion	
Permanent	3
Seasonal	9
Volunteer / SCA	5

There is currently a 30 dollar per person special use fee for climbing Mount Rainier. All of this money goes back to the climbing program. It is meant to recoup the cost of its staffing, equipment requirements, and help manage the human waste left by climbers. It neither funds search and rescue nor goes to the general ranger fund to pay for other ranger services. It has been 8 years since the fees were raised to 30 dollars. The climbing program is currently undergoing a public process to raise the climbing fee a minimum of 13 dollars. The current staffing level is neither sufficient to provide for the safety of the climbing rangers nor preserve the alpine wilderness effectively.

Wilderness Preservation and Resource Management

One of the largest *single* workloads in the climbing ranger work unit is managing the human waste created by climbers. On lesser traveled routes, this amounts to the human waste packout system (blue bags) and the barrels in which the waste is collected. On the main routes, this includes the toilets at high camps and the blue bag system. In 2010, two high camp maintenance personnel were staffed full time at the high camps (one at either camp) to maintain the toilets and blue bag systems. Both positions also perform routine maintenance on the structures and facilities.

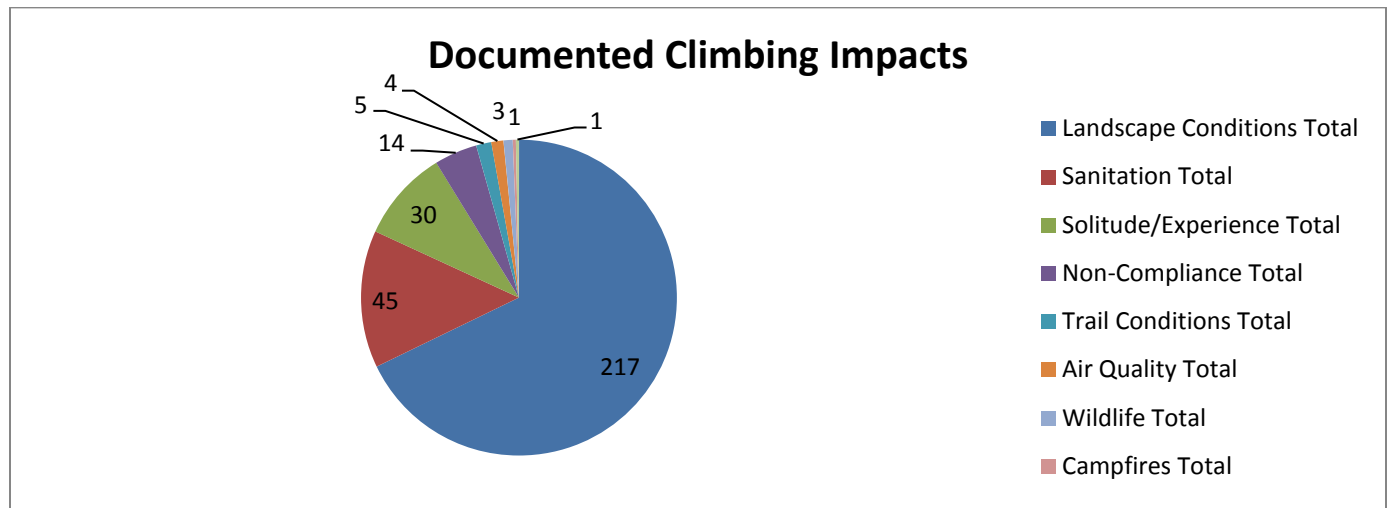
Human Waste Collected from Mountaineering Operations		
Location	Number of Barrels	Pounds of Waste
Camp Muir		
Raw Human Waste	12	5000
Blue Bags	7	1000
Camp Schurman		
Raw Human Waste	3	1200
Blue Bags	2	500
Paradise		
Blue Bags	3	700
White River		
Blue Bags	0.25	50

West Side Road		
Blue Bags	0.1	20
Totals	27.35	8470

The current toilet system is clumsy, mechanically challenging, and only minimally efficient. The park has asked Seattle University students to research a more efficient way to manage all this human waste. They are expected to produce a report at the beginning of summer 2011 which provides an array of options including functional components, costs, emissions, safety factors, and staffing. This research is expected to benefit both Camp Muir and Camp Schurman.

The park has also contracted with Brooks Solar, LLC of Chelan, WA to produce a prototype solar water melting apparatus (similar to a more common solar hot water heater) which will help offset the several thousand pounds of propane the rangers and guides must fly to Camp Muir to support their operations. Most of the propane that is used at high camps is devoted to melting water. Fewer helicopter flights mean a smaller carbon footprint and less impact on the surrounding wilderness. This will also benefit both high camps.

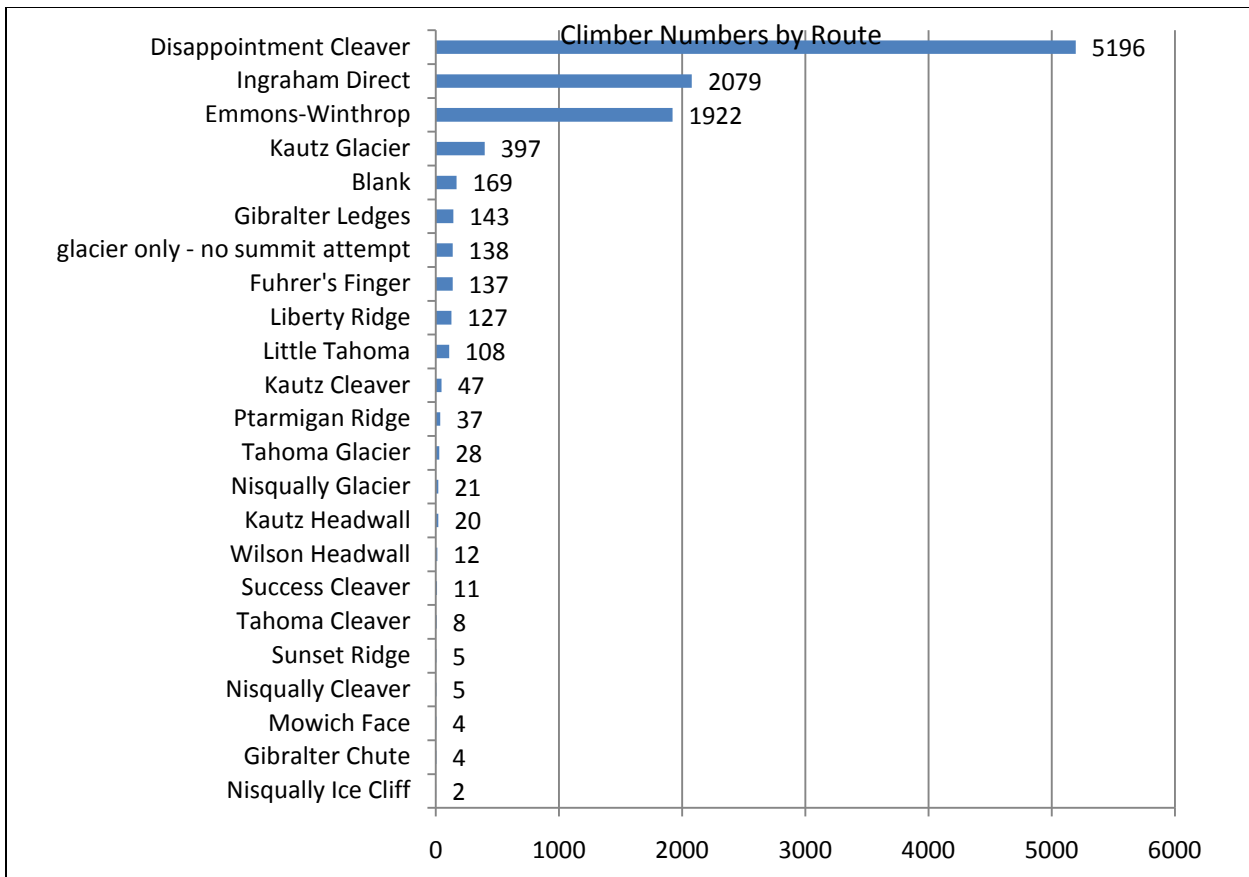
Unfortunately, due to low staffing levels in 2010, climbing rangers were not able to patrol many other routes other than the Disappointment Cleaver and the Emmons-Winthrop route. Climbing rangers were still able to document and eliminate mountain impacts. Climbing rangers are new to this documentation system are not yet in the habit of documenting all the impact they observe or mitigate. Greater attention will be given to this system in 2011.



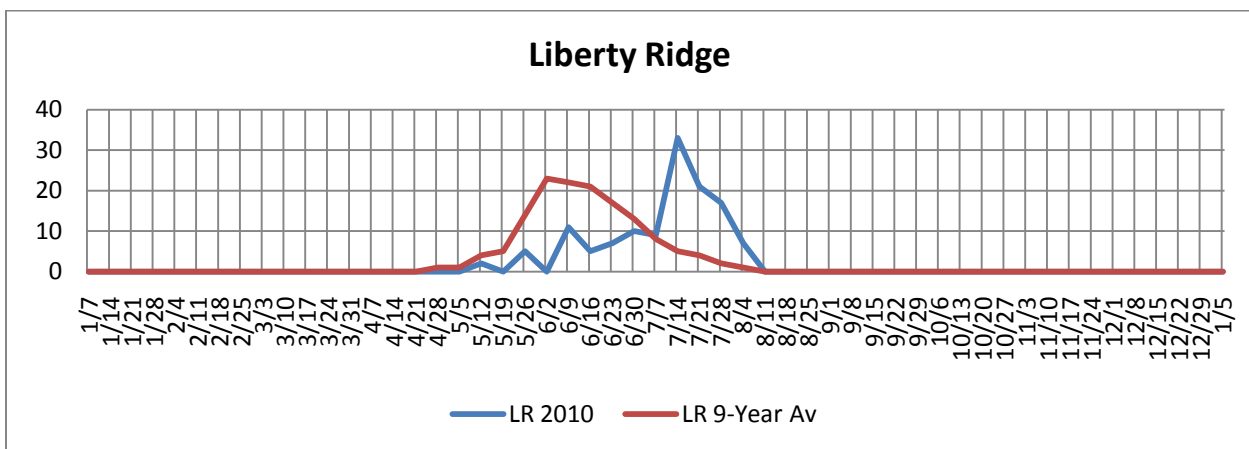
Camp Muir is a National Historic Landmark District. The park is currently working on a Development Concept Plan for the rehabilitation of its structures and the stabilization of the rock and immediately adjacent pumice and fellfield. In 2011, this plan is expected to receive public comment and an alternative selected through the National Environmental Policy Act (NEPA) process.

Both high camps received maintenance. Most notably, NPS carpenters and masons finished enclosing the entire Camp Schurman hut in rock and concrete. They also replaced a window on the rear of the structure. The hut had begun to come apart; the concrete and rock wall literally was peeling away from the inner steel structure.

Climbing rangers also maintain statistics on climbing route use. These statistics are used by national media of various locations for special interest articles, scientific, demographic, and social research projects. Here are the route statistics for 2010.



As mentioned above, late winter/spring season snow and a cold start to the summer, allowed good climbing conditions to persist on routes that tend fall out of shape early. This allowed these routes to be climbed later in the summer during better weather. Here is a graph of climber per week that shows this phenomenon.



Climbing rangers also participated in a few ongoing scientific research projects. Climbing rangers help scientists from North Cascades National Park install ablation stakes on the Emmons and Nisqually Glaciers. These stakes measure the mass-balance of the glaciers. 2010 was the first year in its study period (2002-present) that there was a slight positive summer balance on the Emmons Glacier. This means there was more accumulation than melt. Results were slightly negative on the Nisqually. The Muir snowfield and Nisqually Glacier has lost up to 25 feet of depth in the last 8 years.

The mountaineering district ranger also coordinated two research projects. In one simple study that compared the extent of the Muir ice fields in 2002 to their present extent showed that they have decreased in size by as much as 45 acres. In a similar project, it was shown that the Nisqually Glacier receded 700 feet in 7 years – and its lower extent (up to about 6200') may be becoming stagnant. Stagnating glaciers are prone to glacial outburst floods.

For more historic and statistical information on climbing routes, please visit:

<http://www.mountrainierclimbing.us/routes/routes.html>

Commercial Guide Services

This was the 4th year of the new commercial services plan which allows for 3 competing guide services up the main climbing routes. The three guide services are Alpine Ascents International (AAI), International Mountain Guides (IMG), and Rainier Mountaineering, Inc. (RMI). Without making it overly complicated, RMI is allowed 24 guides and clients through Camp Muir a day and each other guide service is allowed 12 – alternating each day, so each day there are only 36 guide service-related public (guides and clients) at Camp Muir. This allows for 74 public independent climbers.

Guide Service	Clients	Guides	Total
RMI	1923	704	2629
AAI	645	339	984
IMG	642	336	978
Total	3210	1379	4589

For the first time, guides and rangers are training together in all manner of mountain skills. This was one of the most successful summers in trying to share resources and information between the two entities. All guides from all guide services and climbing rangers participated in four trainings this season. Trainings covered rescue techniques, trip planning, Incident Command System, and altitude physiology and medicine.

Guides and rangers will continue to coordinate their efforts to streamline services and the sharing of information. Guides are often the first people on a rescue scene with a radio to report it and begin initial treatment or evacuation. Although they still have their clients' safety to think about, they can often break one guide free to assist rangers with an incident. This technical skill is proximal and efficient to the incident. Guides were involved with the majority of the 20 search and rescue incidents on the upper mountain this year.

Rangers also monitor the commercial guide services following a protocol which is taken from their contract and operating plan. Rangers completed almost 100 observations over this summer. This monitoring process helps catch small problems before they develop in larger molehills – and mountains. The climbing program receives money from franchise fees (a fixed percentage the guide services pay back to the park) to perform these duties.

Cooperators and Contributors

There are 11 mountain rescue units in Washington State. 2010 saw the development of a program that facilitates mountain rescue units to train on Mt. Rainier, be available for rescue incidents, contribute to the monitoring of the routes for impacts, and help us update climbing conditions on our blog. This provisional program was tested on a limited basis in 2010, and we have mutually decided develop it fully in 2011.

Mountain rescue is an important resource for our local climbing community. They provide trained rescue and aviation resources during incidents throughout the state. Currently, a mountain rescue membership card serves as their yearly climbing pass.

The local Mountaineers chapters conduct trainings in the park which require an SUP. The climbing program is looking for ways to monitor and participate in these activities because it is a convenient way to get information to these groups. And the climbing program hopes to be able to attend meetings and explain management actions to these user-groups in the future.

The climbing program has the benefit of a strong relationship with the 214th General Support Aviation Brigade of the US Army Reserve at Joint Base Ft. Lewis-McChord. Our mutually beneficial relationship provides the military with a mountain flying training environment and provides the climbing rangers and public with a helicopter to perform safely and effectively at all altitudes during search and rescue missions around Mt. Rainier. 2010 saw the re-establishment of this relationship after they returned from long deployments overseas. This service comes with no cost to the climber.

Search and Rescue

Mt. Rainier National Park is exclusive federal jurisdiction, which gives the park the responsibility for providing for the all manner of public safety functions, such as; Law Enforcement, Structural Fire Protection, Emergency Medical Services, and Search and Rescue. Since we already have climbing rangers performing duties at high camp, who are trained mountain climbers, it is not a stretch of their skills to be trained in technical rescue techniques.

The climbing rangers provide a quick and efficient rescue response. Most climbing rangers can climb Mount Rainier from Camp Muir in less than two hours. The costs born of search and rescue incidents are not, for the most part, paid for by money associated with the climbing fee. The NPS maintains a contingency fund that allows parks to charge their non-budgeted cost totaling over 500 dollars relating to a search and rescue to that contingency account. Since most searches and rescues occur during the late afternoon and last well into the evening, overtime costs are quickly accrued.

Depending on the year, a little over half of the rescue incidents originate with climbing parties, but many other incidents occur lower down the mountain and relate to backpackers or other day-users. In 2010, there were 20 upper-mountain, climbing-related incidents. There were 21 incidents associated with other uses. For more statistical information on search and rescues within Mt. Rainier, please visit: <http://www.mountrainierclimbing.us/sar/sar.html>

Table of summit climbing-related searches and rescues in Mt. Rainier National Park

Name	Date	Activity	Sex	Age	Duration	Injury	Total
Crevasse	4/26/2010	Climbing (summit)	Multiple	21-30	19:21:00	Torso	\$23,871.38
Calgary	5/4/2010	Climbing (summit)	Multiple	31-40	5:30:00	None	\$2,358.05
Overdue	5/15/2010	Climbing (summit)	Multiple	21-30	0:00:00	None	\$51.00
Discus	5/23/2010	Climbing (summit)	Male	41-50	10:30:00	Torso	\$1,539.14
Dmitriy	5/29/2010	Climbing (summit)	Multiple	20-Nov	2:15:00	None	\$8.50

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Diabetic	6/5/2010	Climbing (summit)	Male	41-50	3:00:00	Medical, Non-Trauma	\$840.00
Solo	6/6/2010	Climbing (summit)	Multiple	41-50	6:30:00	Torso	\$25,602.96
Hypo	6/19/2010	Climbing (summit)	Multiple	Unknown	0:00:00	Environmental	\$740.47
Two Lung	6/22/2010	Climbing (summit)	Multiple	41-50	2:20:00	altitude	\$4,774.66
Iheart Schurman	6/23/2010	Climbing (summit)	Male	61-70	1:00:00	Torso	\$2,377.12
Untied	7/1/2010	Climbing (summit)	Male	51-60	0:00:00	None	\$44,620.03
Gu	7/1/2010	Climbing (summit)	Male	31-40	3:30:00	Exhaustion	\$59.50
Inter	7/6/2010	Climbing (summit)	Male	51-60	5:30:00	Medical, Non-Trauma	\$3,428.13
HACE	7/11/2010	Climbing (summit)	Male	21-30	6:00:00	altitude	\$3,760.31
AMS Walkout	7/24/2010	Climbing (summit)	Female	41-50	7:00:00	altitude	\$119.00
Threesome	7/27/2010	Climbing (summit)	Multiple	51-60	25:00:00	Head	\$12,423.85
Next	7/30/2010	Climbing (summit)	Male	61-70	5:10:00	Head	\$3,982.98
August	8/1/2010	Climbing (summit)	Female	21-30	6:00:00	altitude	\$922.84
Steamboat Prow	8/14/2010	Climbing (summit)	Male	51-60	6:00:00	Leg	\$127.50
McKinney Run	8/31/2010	Climbing (summit)	Multiple	21-30	18:00:00	None	\$2,201.20

Total: \$133,808.62

Looking Ahead

The climbing ranger program is in the middle of several large changes. Once its funding has been determined by whether or not a slightly higher climbing fee will be implemented, then its staffing and duties will fall into place. Without a funding increase of any kind, many of the functions and duties the climbing rangers perform will have to be dropped.

In 2011, a new webcam will be installed at Camp Muir, which will be used by climbers, rangers, guides, and even the National Weather Service. A network bridge will be installed at Camp Muir that will provide IP phone access and limited internet connectivity to access weather information.

The climbing program is also taking some large steps by getting use, SAR, and climbing data and information out in web interfaces that can be used by the public. This may be fully brought to fruition during the summer of 2011.

Far and away, the number one goal for the climbing program is to have a safe working environment where we can protect the alpine wilderness we know and love on Mt. Rainier. Tough decisions will be made, either way, if there is a funding increase or not.

Climbing Staff 2010

Mountaineering District Ranger	Stefan Lofgren
Climbing Ranger Supervisors	Glenn Kessler and Brian Hasebe
Lead Climbing Rangers	David Gottlieb, Thomas Payne, Cooper Self, Philippe Wheelock, Kevin Hammonds, and Nick Hall
High Camp Laborer/Maintenance	Jeremy Shank and Theodore Cox
Climbing Information Center	Peter Ellis, Jonathon Bowman (SCA), Dustin Ewald (SCA), Charlie Zwick (VIP)
Climbing Ranger Volunteers	Arlington Ashby, Brian Scheele, Rachel Mueller, Ang Tshering Lama