

Annual Mountaineering Summary: 2012

With little fanfare, Denali's summit was reached for the twenty-thousandth time during the 2012 climbing season. Such little fanfare, in fact, it was not even realized until long after the last climber had flown from the mountain. Seems that such a milestone would not go unnoticed, how-ever after some thought, it makes sense, being what we do, and should do, is to celebrate the journey and the style in which that journey was accomplished. Sometimes the jour-ney includes reaching a summit, sometimes it does not. Either way, the true success is not simply measured by what altitude is reached. One such example, commemorated this year, was the 1912 expedition led by Belmore Browne. Browne and his team set out from Seward, Alaska in the winter of 1912 by dog-sled with the hope to become first expedition to reach the summit of North America. After months of traveling across Alaska and experiencing all it had to offer, and then climbing to within 125 feet of the pinnacle of the continent, Browne and his partner, Herschel Parker, turned back after deciding that weather conditions would not allow them to go further. What their fate would have been had they made a decision to push further, we will never know. However we do know that they eventually made it home safely, and just a couple of years later, Browne became instrumental in the creation of what would become Denali National Park and Preserve – in many minds, a legacy much more memorable and long-lasting than being first to the top.

A little closer to home for many here at Denali, this year we also remembered the sacrifices of a some of our own who lost

their lives while working to protect both park re-sources and visitors. In 1999, ranger Cale Shaffer and volunteers Brian Reagan and Adam Kolff were aboard a small aircraft with pilot Don Bowers, heading into basecamp to start a mountaineering patrol. Their plane crashed in a sudden storm, tragically claiming the lives of all four men. This year, park staff petitioned the Director of the National Park Service to officially name the park's new ranger and fire headquarters facility the "Shaffer Building". The effort was undertaken to recognize the way in which Cale Shaffer worked to serve park visitors, protect park resources and inspire co-workers to do the same; the building name also helps insure that those who come after us never forget the sacrifices of Brian, Adam, Cale, and their families.

Looking forward to 2013, we will be commemorating the centennial anniversary of the first summit of Denali. A large part of the commemoration will involve a conference held in Talkeetna in mid-September. The "Sustainable Summits" conference is being planned and organized by a partnership that includes the American Alpine Club and Denali National Park with help from other supporting organizations. We hope that working together, we can find sustainable long term solutions to help secure another hundred years of climbing, on mountains around the world and at home here at Denali. Hope to see you in Talkeetna this fall.

-John Leonard, South District Ranger

2012 Quick Facts

- Busiest summit days
 - May 27 - 56
 - June 2 - 45
 - June 18 - 41
 - June 16 - 28
- Summits by month
 - May - 174
 - June - 280
 - July - 44
- Average trip length - 17.1 days
- Average trip length with a summit - 17.5 days
- Average climber age - 38.7 years
- A record-breaking 162 women attempted Denali in 2012, comprising 13.2% of all climbers. A total of 60 female climbers reached the summit, for a combined summit rate of 37%.
- In addition to our typical international visitor base, Denali welcomed climbers from such faraway lands as Oman, Tanzania, Macedonia, Israel, Guatemala, Cayman Islands, Serbia, and Thailand.

2012 Medical Summary

Mountaineering rangers, volunteer physicians, and volunteer medical technicians treated a rather typical variety of ailments and injuries in 2012. Of the 34 patients that required or requested some level of NPS medical intervention, 9 cases (26% of total) fell into the 'Medical Other' category, which included appendicitis, cysts, broken tooth, abscess, and other assorted medical ailments. Eight climbers were treated for cold-related injuries, and another eight were treated for altitude sickness including HACE, HAPE, and AMS. Seven patients were treated for some degree of trauma, including injured knees, ankles, and skin abrasions. The NPS patrols responded to only two cardiac patients, slightly fewer than usual.

- Altitude / AMS: 23%
- Medical, cardiac: 6%
- Medical, other: 26%
- Cold injury: 24%
- Trauma: 21%

2012 Rescue Summary

The search and rescue missions performed by Denali rangers in 2012 are summarized below. For more detailed information on these and other mountaineering missions performed in 2012, refer to Accidents in North American Mountaineering-2013, published by the American Alpine Club.

Climbing Fall

A climber suffered head injuries after his rappel anchor failed while climbing the "Shaken Not Stirred" route on the Moose's Tooth. With timely assistance provided by a nearby climbing team, the semi-conscious climber was rescued from the Root Canal glacier by the military in the early morning hours of April 21.

Fatal Climbing Fall

On May 18, a climber fell to his death from 16,200 feet on the West Buttress. According to a witness report, the unroped climber jumped after his tumbling backpack and then could not arrest his fall. The Park's helicopter transported rangers to the accident site to confirm the death and complete a body recovery.

Fatal Skiing Fall

A climber died from traumatic injuries incurred in a 2,000-foot fall during a ski descent of the Orient Express Couloir on May 23. NPS personnel recovered his body from a crevasse at 15,850 feet, which was then flown off the mountain via helicopter.

Knee Injury

A climber injured his knee while skiing on the Kahiltna Glacier on May 25. The climber was assisted from 10,400-feet back to the Kahiltna Basecamp by three separate teams of NPS rangers.

Ankle Injury

On May 28, a climber was lowered from high camp to the 14,200-foot level by two teams of NPS rangers following an ankle injury. Thereafter, the injured climber continued his descent under his own power with help from teammates.

Cardiac Illness

At the 14,200-foot camp on Denali, NPS rangers responded to a client from a guided expedition who was complaining of chest pain, fatigue and tingling hands on May 27. He was transported to the ranger medical tent and subsequently evacuated by helicopter.

Aircraft Mishap (RCC-Assist)

On the evening of May 27, at the request of the Alaska Rescue Coordination Center (RCC), the park's helicopter pilot and two rangers retrieved a fixed wing pilot who had to make an emergency landing in the neighboring Talkeetna Mountains. The pilot of the downed aircraft was uninjured in the landing.

Calf Injury

A client from a guided expedition injured his calf muscle on May 29 while ascending the fixed lines at 16,400-feet. His guides assisted him in descending the fixed lines, from which point NPS volunteers transported him by cascade litter to the medical camp at 14,200-feet. The patient was monitored by the NPS volunteer medic for several days, during which time his condition did not improve and he remained unable to bear any weight on the leg. He was flown out to by helicopter on June 2.

HACE

On June 3, after an attempt to move to the 17,200-foot camp, a guide was brought to the NPS medical tent at 14,200-feet complaining of extreme weakness, fatigue, headache, ataxia, and nausea. NPS volunteer medics treated the patient for HACE. Over the next 48 hours, the patient's condition showed little or no improvement. Due to the potentially life-threatening nature of the illness, the patient was evacuated by the park helicopter on June 5.

Avalanche with Injuries

On June 12, a four-person rope team triggered an avalanche and was swept a short distance while traveling just below the fixed-lines area on Denali's West Buttress (approximately 15,400 feet). The four climbers suffered a variety of non-life threatening, but immobilizing injuries. After 48 hours, with no medical improvement in their condition, three of the four climbers were evacuated via park helicopter.

Avalanche, with Fatalities

An avalanche at Motorcycle Hill (11,200-feet) on the West Buttress during the early morning hours of June 14 claimed the lives of four climbers. One additional teammate survived the avalanche and was able to climb out of the crevasse in which the five-person rope team had landed. The four deceased climbers were buried under heavily compacted ice and snow

debris, and were unable to be recovered safely.

HAPE

On June 16, a climber descending from the summit began experiencing signs and symptoms of high altitude pulmonary edema (HAPE). Unable to descend under his own power below Denali Pass (18,200-feet), his guides lowered him to approximately 17,400-feet, at which point an NPS patrol responded to the team's request for help. The patient was brought into high camp and provided medical assistance, but with no improvement after 14 hours of medical care, the patient was evacuated from 17,200-foot camp via the park helicopter.

HAPE

A guided client came down with HAPE at the 14,200-foot camp on June 25. He was treated for several days with only mild improvements, and his team assisted him down the mountain while he remained on oxygen.

Appendicitis

On July 3, a guided client began displaying signs and symptoms of appendicitis at the 11,200-foot camp during the team's ascent of the West Buttress. An NPS ranger patrol responded to his location and assisted him to a landing site near 10,000 feet. The patient was flown off of the mountain via park helicopter and transferred to a waiting air ambulance.

Aircraft Mishap (RCC Assist)

On July 7, the park's helicopter responded to a request from the Rescue Coordination Center (RCC) to rescue the pilot and passengers of a scenic flight who had to make an emergency off-airport landing near Broad Pass. One of the passengers had accidentally shut off the airplane's fuel supply while in mid-flight. No one was injured in the emergency landing.

Aircraft Mishap

An instructor pilot and his student activated a personal locator beacon on July 21 after their airplane flipped over on an aborted take-off in the southwestern portion of Denali National Preserve near the Yentna River. The RCC launched a military helicopter which picked up the two uninjured passengers and transported them to the Talkeetna State Airport.

Avalanche with Injuries

A team of three late season climbers set off an avalanche above the 17,200-foot high camp on Denali's West Buttress route on July 25. They attempted to rest and deal with their injuries for several days after the event, however they eventually contacted a flightseeing aircraft via radio to request an NPS rescue. The park helicopter shorthauled the three climbers to the Kahiltna Glacier and transferred them to a LifeMed ambulance.

Tracking Crevassed Human Waste on Denali

To mitigate the impacts of climbers on backcountry resources, the National Park Service establishes standards for human waste disposal. Beginning in 2007, removal of human waste via Clean Mountain Cans (CMCs) became mandatory above the 14,200-foot camp, as well as near the airstrip at Basecamp (7,200-feet). Use of these CMCs, with biodegradable bag

liners, has radically improved sanitation at the 17,200-foot high camp. However, most bags of human waste collected in CMCs at all elevations—including at 14,200-foot camp, where climbers spend the majority of their time acclimatizing and waiting for good weather—are thrown into crevasses between Basecamp and 14,200-foot Camp.

Since Bradford Washburn's first ascent of the West Buttress route in 1951, the number of climbers has increased from less than 500 per year prior to 1980 to about 1,200 per year. Climbing parties spend an average of 18 days on the mountain. The math is simple and impressive: depending on the average weight of each climber's daily fecal output—between 0.23 and 0.35 lbs (106 and 159 g), more than 36,000 climbers have deposited between 152,000 and 215,000 lbs (69 to 97 metric tons) of human waste on the Kahiltna Glacier. For now, the snowy surface of the Kahiltna Glacier remains fairly clean, because climbers follow NPS regulations and dispose of their human waste in CMCs and then in deep crevasses. But there is another factor at work—the glacier itself.

Glaciers form in an accumulation zone where annual snowfall exceeds annual melt. The accumulated perennial snows eventually change to glacier ice and flow downhill until melt exceeds snow-fall—at what is known as the ablation zone—at lower elevations. Because the West Buttress is located in the accumulation zone of the Kahiltna Glacier, crevassed waste will be buried the next winter and ever more deeply each successive year. However, each year the glacier flows and slowly carries the waste downhill towards the ablation zone, where it will eventually, inevitably, melt out at the glacier surface. The precise timing of waste emergence depends on glacier velocity, on the rates of snow accumulation and melt—parameters that are difficult to measure and sensitive to climate change—and on how far above the balance point between accumulation and ablation the waste was deposited.

Recognizing that the Kahiltna Glacier is transporting human waste toward its eventual “melt out,” Dr. Michael Loso of Alaska Pacific University (APU), in collaboration with NPS climbing rangers and other physical scientists, began a multi-year study to answer two questions: (1) Where and when will the human waste emerge? and (2) Are there health impacts of the waste, i.e., are bacteria entering the meltwater?

To predict how fast the waste is moving, Loso and his collaborators have used high-precision GPS to track movements of over 30 stakes drilled into the ice, at intervals from the 11,200-foot camp down glacier about 33 miles. In addition, University of Alaska Fairbanks (UAF) collaborator Matthias Braun has measured velocities farther down glacier using repeat satellite images. To gather more information about accumulation and melting of the Kahiltna Glacier, Loso is also working with UAF researcher Anthony Arendt and graduate student Joanna Young. By returning over one or more seasons to measure stakes inserted in the Kahiltna Glacier, they can quantify what is happening in both zones of accumulation (i.e., how much deeper are the stakes buried) and of ablation (i.e., how much more of the stake is showing)

To test for bacterial contamination from human waste, APU graduate student Katelyn Goodwin analyzed meltwater collected from the Kahiltna River (where it flows out of the terminus of the Kahiltna Glacier about 43 miles below the 11,200-foot Camp) and from nearby streams that would be unimpacted by the crevassed human waste. She also tested how the fecal coliform bacteria persistence in human waste might be affected by a variety of glacier microenvironments: (1) deep burial at Basecamp for one year, (2) exposure near the cold windswept summit for one year, (3) incidental contamination in “pee holes” near active climber camps during the season, and (4) laboratory simulation of repetitive

freeze-thaw cycles for over six months.

Ice on the Kahiltna Glacier is almost stationary in some locations, but “zips” along at more than 1,394 feet per year at a location about 14 miles down from 11,200-foot camp, and about 7 miles below Basecamp. Although these rates may seem fast, it will take years for crevassed waste to reach the glacier’s ablation zone and melt out. Based on the preliminary information about accumulation and ablation, Loso’s estimate for where and when the first waste will emerge at the ice surface is near the Great Icefall about 9.3 miles down glacier from Basecamp in the next decade.

Tests of water taken from streams near the Kahiltna (unlikely to be impacted) came back clean (i.e., no coliform bacteria), but in both 2010 and 2011, trace levels of fecal contamination were found in the waters of the Kahiltna River—but at levels that are still within Alaska state water quality standards. *E. coli* and other fecal bacteria were able to survive exposure to the cold and UV radiation in the four micro-environments tested. These findings strongly suggest that despite the massive size of the Kahiltna Glacier, human waste en-cased in the ice on the climbing route remains biologically active, interacts with glacial meltwater, and is already making its way into the downstream watershed.

At the start of Loso’s study, the impacts of crevassed and emergent waste were unknown. Now estimates of the timing and location of the meltout of human waste are available. Fecal coliform is present in the glacier meltwater. A major remaining question concerns the aesthetic impact of emergent waste. Aside from human health concerns, what is the impact on visitor experience when waste piles begin melting out on the lower glacier?

Loso and collaborators will continue to work to understand the role of climate change in predictions of meltout times and locations, and to work with NPS rangers, researchers, and managers to consider the appropriate management response.

Sustainable Summits and Other Centennial Events

Climbing and history enthusiasts alike are looking forward to the 100th anniversary of the first summit of Denali. Hudson Stuck, Harry Karstens, Walter Harper, and Robert Tatum were the first mountaineers to reach the top, standing on the south summit on June 7, 1913. In honor of the centennial, Denali National Park has several diverse plans in the works. A commemorative ascent of the Muldrow Glacier route is currently planned by descendants of pioneer climbers Karstens, Stuck, and Harper, as well as several Athabaskan team members from nearby villages. The intent is to replicate the original climb as closely as possible in terms of timing, route, and a degree of dog sled support.

At least two major museum exhibits highlighting the first ascent are planned for 2013. Curators at the Museum of the North in Fairbanks are putting together a multi-media exhibit including historical artifacts, extensive narratives, and a digital mapping exhibit. From its direct vantage point of the Muldrow Glacier route, Denali National Park’s Eielson Visitor Center will host a specialized interactive exhibit to help bring the pioneer 1913 climb to life for park visitors.

Denali National Park is also planning a Centennial Speaker’s Series to be held at the Denali Visitor Center auditorium beginning in early June. Local historians speak on epic pioneer climbs and adventures in central Alaska.

Finally, as a primary facet of the Centennial Celebration, Denali National Park and the American Alpine Club will co-host an international mountain conference, Sustainable Summits: The International Mountain Conference on Environmental Practices, September 8-11, 2013 in Talkeetna, Alaska. This summit of land managers, climbers, planners and scientists from the world's mountainous areas will focus on environmentally sustainable management practices and on developing global partnerships. The conference will be open to all interested individuals from around the world, with a capacity of 150 attendees.

2012 Mislow-Swanson Denali Pro Award

This year, teammates Bernie Babcock of Wasilla, Alaska and Ben Smith of Missoula, Montana were selected by Denali National Park and Preserve and Pigeon Mountain Industries (PMI) as the 2012 recipients of the Mislow-Swanson Denali Pro Award. The award which originated as a partnership between the National Park Service (NPS) and PMI to honor mountaineers who demonstrate the highest standards in the sport for safety, self-sufficiency, assisting fellow mountaineers, exemplary expedition behavior, and clean climbing. The efforts of Babcock and Smith provide a classic example of selfless actions that allowed for a lifesaving rescue.

In the early morning hours on April 21, the NPS was notified by the Alaska Rescue Coordination Center (RCC) that a climber was in distress at the base of the "Shaken Not Stirred" route on Moose's Tooth. The reporting climber, Bernie Babcock, stated that a member of a Japanese party of three contacted him and his partner Ben Smith just after midnight asking for help because one team member was seriously injured. Babcock reported that he and Smith, along with a two person Dutch team, responded to the accident scene where they found a critically injured climber.

Babcock and Smith worked with the Dutch team to stabilize and evacuate the unconscious patient. The climbers, now turned rescuers, worked through falling snow, cold, and dark morning hours to get the injured climber back to their camp. At camp, Babcock used his satellite phone to make an emergency call for help to the RCC. Subsequently, Babcock and Smith worked tirelessly to triage and stabilize the injured climber, which would later involve transporting the patient closer to a safe helicopter landing zone. Unfortunately for those on scene, the early attempts to evacuate the patient were thwarted by un-flyable conditions. With a UH-60 Pave-Hawk helicopter waiting nearby and a C-130 Hercules circling above the clouds overhead, Babcock and Smith worked to manage the scene and eventually were able to convey crucial weather observations that allowed a life-saving hoist operation to be conducted. Had it not been for their preparedness, selflessness, and willingness to spring into action, the fate of the injured climber would have been dire.

Mountaineer Volunteers-in-Parks (VIPs)

Deep gratitude goes out to the 45 volunteers who contributed over 12,000 hours to the Denali mountaineering program in 2012. In addition to a talented crop of first-time volunteers, we were thrilled to welcome back a record 17 former volunteers!

2012 South District Staff

- South District Ranger: John Leonard
- Lead Mountaineering Ranger: Coley Gentzel
- Mountaineering Rangers: Tucker Chenoweth, Lauren Edwards, Chris Erickson, Matt Hendrickson, Brandon Latham, John Loomis, Joe Reichert, Roger Robinson, Mik Shain, Dave Weber, Mark Westman, Kevin Wright
- Helicopter Pilot: Andy Hermansky
- Helicopter Mechanic: Kirt Petterson
- Admin / Public Information: Maureen McLaughlin
- Supervisory VUA: Missy Smothers
- Visitor Use Assistants: Julia Crocetto, Pam Robinson, Robert Zimmer
- Chief of Planning: Miriam Valentine
- Education Specialist: Bob Henry
- Interpretive Ranger: Jay Katzen
- SCA: Karina Yeznaian
- Maintenance: Cary Birdsall
- Medical Director: Jennifer Dow, M.D.
- Medical Adviser: Paul Marcolini
- Rescue/Shorthaul Adviser: Renny Jackson