

EXPEDITION REPORT

GREENLAND RENLAND EXPEDITION 2008



June - July 2008

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ABSTRACT

The idea for this expedition arose when Crispin Chatterton and Nat Spring were discussing plans for a mountaineering trip to Bolivia in 2006. A new idea began to emerge to attempt an exploratory climbing trip involving low carbon travel by boat. Greenland seemed to be a good choice of destination due to the huge amount of unexplored terrain and it's relatively easy access by sea from the UK. Concerns over sea ice conditions led to the abandonment of the low carbon travel plans but by that stage sufficient research had been done for us to be hooked on Greenland and so we pressed ahead. Rob Grant leapt at the idea when approached and the trip was born.

Our aim from the outset was simple: to climb unclimbed peaks in a remote area by the easiest routes in Alpine style. We envisaged putting up routes of about Alpine PD/ V Diff standard, though this turned out to be a conservative estimate. We were also very keen to carry out some sort of scientific research while on Renland in order that something useful should come out of the expedition.

The expedition achieved all of its aims in the face of some difficult conditions caused by a winter of heavy snow and a late melt. We climbed three new major peaks via snow and ice lines, one subsidiary peak and a minor point via a rock route. We also made the second ascent of Bodger, a peak first ascended by the West Lancashire Scouts Greenland expedition of 2007. We also explored two glaciers and travelled and explored the full length of the Edward Bailey glacier. Finally, we were able to make a survey of plant life at various altitudes on Renland.

1. INTRODUCTION

1.1 Aims

The aim of the expedition was to explore the mountaineering possibilities of a little-visited area of East Greenland, known as Renland, and to make Alpine and rock climbing ascents of major unclimbed peaks in the area, establishing new routes where possible. In addition to the climbing focus our intention was to collect plants and record associated information in the areas to the north and south of the Edward Bailey glacier on Renland as a contribution to a survey of flora (flowering plants and ferns) of the central fjord region of Greenland which was initiated in 1961 by Dr. Geoffrey Halliday.

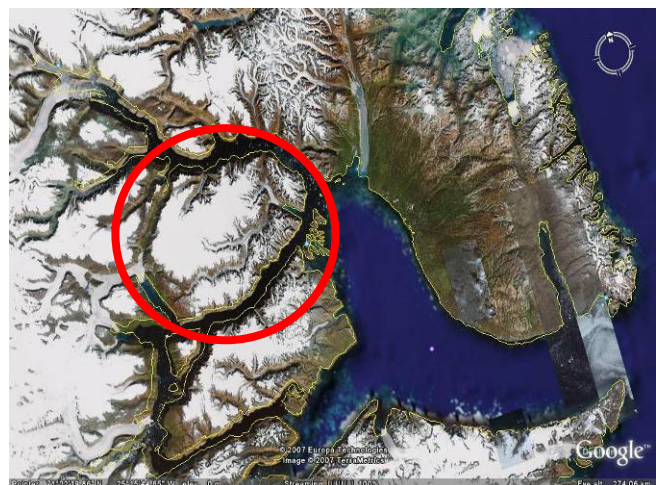
1.2 Expedition location

The expedition was based in an area known as Renland (71°15'N, 25°49'W) which lies at the head (west) of Scoresby Sound. The area is part of the main Greenland landmass, but separated from it by a deep valley, and is characterised by a major icesheet with smaller subsidiary icecaps. The south of Renland is cut east/west by a deep glaciated valley (the Edward Bailey glacier) which allows relatively easy access to the interior. The Edward Bailey glacier is surrounded by rock spires and walls reaching to over 2000m.



Greenland with Scoresby Sound circled

Scoresby Sound with Renland circled





Map of Renland showing the location of the Edward Bailey glacier and the expedition base camp (star)

1.3 Team members

Nat Spring

Nat (35) is currently Head of Research at Earthwatch Institute (Europe) and has spent the last the 8.5 years developing field research projects globally and is trained in Wilderness First Aid. He has 15 years' of rock climbing experience, and Scottish winter climbing up to grade IV in the Cairngorms, Glencoe and Ben Nevis areas. He has made two traverses of the Cuillin ridge (summer conditions) and several alpine climbing trips to the Mont Blanc massif. Nat has made ascents of various African peaks including Mt Kilimanjaro, Mt. Kenya and Mt. Mulanje (Malawi), and several ascents of Mt. Kinabalu in Sabah, Malaysia. Nat is keen on endurance events - he rowed across the Atlantic Ocean from the Canary Islands to Barbados in 2004 and he is keen on marathon kayak racing – the longer the better.



Crispin Chatterton

Crispin (31) is a teacher in Sheffield. He has been climbing for over twenty years, especially in North Wales but also in the Alps, Pyrenees, Peru and East Africa. He also loves Scottish winter climbing and has climbed routes up to grade 4 including North East Buttress and Tower Ridge on Ben Nevis, and Fingers Ridge and Invernookie in the Northern Corries. He has done two alpine seasons in Arolla and Chamonix with ascents of the Pigne d'Arolla and Pointe Isabella amongst others. He has undertaken a successful trip to the Cordillera Blanca of Peru with an ascent of the south-west face of Artesonraju and an attempt on Tocllaraju. He has also made an ascent of Point John on Mount Kenya and explored bouldering potential in Rwanda.

Rob Grant

Rob (29) is a climbing wall builder with 14 years' climbing experience. He has Scottish winter climbing experience including Point Five Gulley, Tower Ridge and North East Buttress on Ben Nevis, Savage Slit and The Orion direct. Rob has climbed many Alpine routes including Cosmiques Arête and Aiguille du Tour. He has undertaken two successful trips to the Andes with ascents including Tocllaraju, Artesonraju, Pisco, Yanapaccha, Urus, Ishinca. He has extensive ski touring experience including ski descents of Table Couloir.



1.4 Expedition schedule

The following table details the key dates during the course of the expedition in June/July 2008.

<i>Date</i>	<i>Activity</i>
23rd June 2008	Flight to Keflavik airport in Iceland from Stansted airport (UK).
23rd – 24th June 2008	In Reykjavik – preparing kit, sightseeing and eating.
25th June 2008	Flight from Reykjavik domestic airport to Constable Point in East Greenland via Kulusuk airport.
26th June 2008	Waiting at Constable Point for helicopter transfer to Renland – walked up nearby peak.
27th June 2008	Helicopter flight from Constable Point to Renland and established base camp on the Edward Bailey glacier.
27th June – 21st July 2008	On Renland exploring and climbing.
21st July 2008	Return helicopter flight from Renland to Constable Point. Night at Constable Point in strong wind.
22nd July 2008	Flight from Constable Point to Reykjavik (direct). Night in B&B
23rd July	Return flight to UK.

2. PLANNING AND LOGISTICS

2.1 Background research and information sources

We decided to put together an expedition that would take us to a remote and adventurous part of the world to attempt new routes and explore new areas. From the outset we were keen to make every effort to minimise our environmental impact at every stage of the planning and execution of the expedition, in particular regarding travel.

Greenland was an immediately obvious choice for a location. It offers endless opportunities for exploration and attempts on unclimbed peaks, in some of the most remote mountains on Earth. It is also relatively easy to access Greenland from the UK. Our initial plan was to sail from Iceland to Greenland and Nat had preliminary discussions with Runar Karlsson from Borea Adventures in Iceland about chartering a yacht to take us from Isafjordur in northern Iceland to a point on the Blossville coast of East Greenland from where we could access the mountains. Obviously, the cost of chartering a yacht, which would have to return to Iceland having dropped us off in Greenland and come back to pick us up at the end of the expedition, would be high so our choice of location for the expedition was largely determined by sailing distance and associated costs (not to mention feasibility of the team being able to safely disembark on Greenland). At this point in our planning, with the sailing option agreed in principle, we

contacted Paul Walker at Tangent Expeditions to make use of his extensive knowledge of East Greenland and potential climbing objectives for our expedition.

Crispin and Nat met Paul Walker at his base in the Lake District in March 2007 and studied various images and aerial photographs of potential locations in the Blosseville Coast area. After these initial discussions we provisionally settled on Ejnar Mikkelsens Fjeld and the surrounding area. Ejnar Mikkelsens Fjeld stands at 3,308m above sea level and is one of the most dramatic and impressive peaks in the Arctic. The only route previously climbed on the mountain (at that time) involves ascending 1000m up a steep side glacier and negotiating a large icefall, before climbing a 500m, 40-50° snow and ice face to reach the exposed summit ridge.

While the main peak has been climbed there are extensive opportunities for exploratory mountaineering in the surrounding area and a large number of unclimbed peaks. The mountains in this area are composed of poor quality basalt rock, but the weather conditions produce excellent solid snow and ice. This means that most of the climbing would have been ice climbing with no rock or mixed climbing. The area was made more interesting for us by the fact that it is a 5-6 day travel from the coast, up the Kronborg glacier. This glacier has only been travelled once before, in 1970 by a party searching for the wreckage of a plane that crashed onto it.

During our first meeting Paul Walker described how sea ice moved southwards from the Arctic in the summer months down the east coast of East Greenland, often becoming 'caught' on the indented coastline, such as the Blosseville coast. He indicated that sea ice conditions varied greatly between years and depending on the situation in summer 2008 there was a high chance that we would not be able to reach the coast and start our expedition. With this advice in mind, before committing to accessing Greenland by sea we sought further advice on the feasibility of such an approach. Nat spoke to climber and polar guide Steve Jones who had investigated sailing to Greenland as part of a climbing expedition. He mentioned that he had considered the logistics and challenges at length and had decided that the likelihood of sea ice preventing the yacht reaching the Greenland coast was too high to justify the costs and logistical challenges of adopting this approach – and not reaching the mainland.

Reluctantly we decided that we would fly to Greenland from Iceland instead of sailing (with hindsight this proved to be a wise decision – the winter season was late in 2008 and sea ice would have caused a problem). On a positive note, deciding to fly to Greenland increased the range of potential climbing locations. We eventually settled on Renland which is located directly north of an area known as Milne Land at the head of Scoresby Sound. The first climbing expedition to visit the area was the West Lancashire Scouts in 2007. We contacted the leader of the West Lancashire Scouts Greenland 2007 expedition, Dick Griffiths, and met team member Chris Moseley to seek advice and information on the area.

In July 2007 50 members of West Lancashire County Scouts spent a month on Renland where they explored almost 1,000 miles² of glaciated mountainous terrain operating from a base on the Edward Bailey glacier in the south/centre of the area. The team made ascents of 32 separate mountains each of which involved 2 to 4 days away from base. The team described the area as 'a milieu of spires and minarets' with scope for rock climbing, ice gullies and mixed routes - in essence, endless possibilities for our expedition in 2008.

Paul Walker and Tangent Expeditions helped us to organise our flight to Renland (see section 2.4) and freight to Constable Point. We decided to be dropped on the Edward Bailey glacier but closer to the snout (further east at around N71°11' W26°10') than the Scout's base camp. We

planned to operate from a base camp making exploratory trips of up to 4 days from camp. We identified a number of potential climbing objectives before leaving the UK but the expedition plan was left fairly open to be determined by snow/ice conditions and the reality of climbing objectives on-site. During our planning we learnt from Paul Walker that a team from Queen's University Belfast Mountaineering Club was also visiting Renland in summer 2008 and in the end we were able to share helicopter flights (they left Renland on the flight we flew in on from Constable Point).

Since only one climbing expedition had previously visited Renland the detailed information on the area was limited to their documents (the Scouts had only produced a summary report by the time we left for Renland) and verbal records. However, during our planning phase we made use of the Royal Geographical Society archives and since both Crispin and Nat were based in Oxford we made contact with a member of the Oxford University Greenland Expedition 2006, Ben Spencer, for general advice on undertaking a climbing expedition to Greenland. We also referred to the comprehensive report on the Oxford University Greenland Expedition 2006. Aerial photographs were sourced from the Danish Polar Centre via Paul Walker. Paul Rose (Greenland and polar expert), Dr Andy Russell (geomorphologist/glaciologist, Newcastle University) and Henning Thing (Science Co-ordinator, Danish Polar Centre) were also contacted for advice.

2.2 Fundraising

We had a three-pronged fundraising strategy. Firstly, we raised money through organising a ball. Secondly, we submitted applications to funding bodies. Thirdly, Nat gave a number of paid presentations about his row across the Atlantic and the upcoming expedition. We didn't spend any time trying to attract corporate sponsorship as we felt we were unlikely to attract the sort of media interest that would make such sponsorship attractive to the corporate sector. However, we did seek support in-kind as detailed below. We also used the expedition to raise money for charity, choosing the Sobell House Hospice in Oxford (www.sobellhospiceoxford.org) where Nat lives. Money raised through the ball was split between the expedition and the hospice.

In terms of events we aimed to organise a fundraising ball, do a sponsored traverse of the Welsh 3000 ft peaks and hold a race night. In the end we pressed ahead with the ball but didn't have time to organise sponsorship for the Welsh 3000s and race night, also feeling that we had perhaps exhausted the good will and wallets of family and friends with the ball! "The Arctic Ball" as we called it was great fun and raised about £1,500 which was split between the expedition and Sobell House. It was also enormously hard work, but worth it both for the funds raised and also for enlisting the support of friends and family who learned a lot about the expedition during the night.

We were selective in the number of funding applications that we wrote, submitting applications only where we felt we had a good chance of receiving an award rather than taking a scattergun approach. We were delighted to receive funding from the Mount Everest Foundation, The Gino Watkins Memorial Fund (including the Arctic Club award), The Andrew Croft Memorial Fund and the Augustine Courtauld Foundation and the Alpine Ski Club Kenneth Smith Scholarship 2008. We were not successful in application to the Timissartok Foundation, the Captain Scott 'Spirit of Adventure' Award, Shipton/Tilman Grant, and the Bill Wallace grant. We also approached a number of companies for products and services in kind. We were

enormously grateful to Wild West Jerky, Tunnocks for their Caramel Wafers, Soreen for their malt loaf and John West for their tuna. We were also able to obtain kit at trade price from DMM, Mammut, and Ellis Brigham, and a reduced price tent from Terra Nova.

Overall we were pleased with the results of our fundraising. We raised around £5,000 cash, not counting products provided in-kind, less than a quarter of the overall budget but about what we expected to raise as an independent expedition with no affiliation to universities, clubs or other high-profile organisations.

2.3 Finances

Expeditions to remote areas of the Arctic are expensive! The need to use helicopters and/or charter aircraft is a major financial burden. Overall though we managed to contain our costs by keeping food costs low and not indulging in too many expensive training trips.

We opened a business bank account with The Co-Operative Bank to which we were all signatories. This was essential for receiving money from funding bodies, that are unable to make out cheques to individuals, and also made the management of funds much more convenient.

Below is a table of our outgoings and income.

ITEM	DETAILS	COST (£)
Travel	Return flights to Reykjavik (3 team members)	690
	Accommodation in Reykjavik (3 team members x 3 nights)	330
	Return travel to Greenland - Constable Point (3 team members)	1,200
	Return helicopter flights to Renland from Constable Point (3 team members and kit)	11,100
Food and Freight	Food	600
	Freight (to and from UK)	1,500
Insurance	Total for 3 team members	1,050
Equipment	Kit rental, fuel and logistics support	1,500
	Additional personal equipment (total for expedition)	1,500
Communications	Satellite phone charges	300
TOTAL EXPENDITURE		19,770
Income	MEF grant	600
	Gino Watkins Memorial Fund/Arctic Club Award	1,500
	Andrew Croft Memorial Fund	300
	Augustine Courtauld Memorial Trust	500
	Fundraising ball	1,500
	General fundraising	140
	Public talks	450
	Personal contributions (3 team members)	14,780
TOTAL INCOME		19,770

2.4 Travel and insurance

We flew from Stanstead to Reykjavik with Iceland Express with flights costing £230 per person. On arrival at Keflavik airport in Iceland we took a shuttle bus to the bus station in the centre of Reykjavik. We spent two nights at "Snorris" guesthouse on the "Snorrabraut" road (Tel: 00354) 552 0598). This guesthouse is a 5 minute taxi ride from both the main bus station in Reykjavik and the domestic airport, from where we flew to Greenland.

We flew on a scheduled Iceland air flight to Constable Point in Greenland via Kulusuk airport (south of Constable Point on Greenland). This flight cost £400 per person.

At Constable Point we camped on open ground behind the so-called Constable Point 'Hilton' – a basic bunkhouse. Due to the unusually long winter in 2007/2008 the area we camped on was wet and muddy due to the recent snow melt. For a nominal charge we made use of the washing and toilet facilities at the Hilton and also sheltered there from rain (at the start of the expedition) and clouds of mosquitoes (at the end of the expedition).

A helicopter from Constable Point operated by Greenland Air took us to and from our base camp location on Renland with a flight time of 50 minutes each way.

At the end of the expedition we were extracted from Renland a few days ahead of schedule and the flights between Iceland and Greenland were fully flexible allowing us to escape the mosquitoes at Constable Point and get back to Iceland. However, our flights from Iceland to the UK on Iceland Express were not flexible and we paid a fee to change them.

We arranged Worldwide Expedition Travel, Rescue and Repatriation Insurance through P.J.Hayman & Company.

2.5 Food

The nature of this expedition meant that we did not need to be too scientific about quantities of food so we decided to err on the side of caution and take plenty. We shopped at Tesco and Netto, received free goods from Soreen, Tunnocks and John West and a generous discount from Wild West Beef Jerky. We took Wayfarer meals for eating at base camp.

On a typical day we ate the following.

Base camp:

- Breakfast: Porridge with jam and raisins.
- Lunch: soup, chapattis, tuna or corned beef.
- Evening meal: Wayfarer meal, pasta 500g between us or instant mash. Pudding that consisted of any of the following, custard powder, packet steamed pudding, tinned fruit, and fruit compote.

Away from base camp:

- Breakfast: Muesli, Tea
- Day: 6 oatcakes and Primula cheese spread, a selection chocolate bars and biscuits, a small bag of trail mix, 1 third of a malt loaf.
- Evening: soup, noodles, olive oil and hot chocolate.

We ate very well, had few food cravings and weight loss among the team was negligible. The Wayfarer meals, though expensive, were excellent. Flour for chapattis was a great addition to our diet – chapatti making provided great bad weather and rest day entertainment. Other favourite food items were Beef jerky and a selection of dried herbs and chilli mixed with olive oil for adding to soups and noodles. The only item we ran out of was hot chocolate powder.



Day packs of food

We brought back approximately a quarter of the food we took with us. We were happy that this left us a good margin in case of delayed extraction.

2.6 Equipment and freight

We packed our supplies in a five 120 litre blue barrels and several small cardboard boxes that were shrink wrapped. Our freight weighed approximately 280kg and it was shipped to Constable Point in Greenland 6 weeks prior to our departure from the UK.

We took 25 litres of white gas in a combination of a single 20 litre jerry can and one 5 litre car fuel can which was useful for decanting fuel into our stove bottles. We used approximately 12 litres of fuel during the course of the expedition but it was reassuring to have a plentiful supply.

See Appendix A for a full equipment list.

General comments on equipment:

Stoves: we took four stoves of which we only needed to use two. These were an MSR XKG which performed excellently and a Primus Himalaya which was also good though did require a little more servicing due to its age.

Tents: our main tent was a Terra Nova Hyperspace with a heavy duty fly sheet and snow valances. It was great for the job. An unexpected benefit of the heavy fly sheet was that it made the tent darker during the night. We used a £30 Decathlon tent for supplies.

Sleeping bags: we all used Rab down bags that were rated comfortable to at least -12°C and we were all comfortable most of the time. Because of the rain, synthetic bags may have been a better choice.

Boots/socks: because of the rain and the 24hr sunlight the glaciers were wet most of the time. Our boots became saturated on a daily bases and wet feet were a constant annoyance. We would recommend plastic boots and yeti style gaiters for any future expeditions to Renland at a similar time of year. We used Smartwool and Thorlo socks. We found that Thorlo socks dried faster than Smartwool.

General clothing: normal summer alpine clothing was perfect and we found that while on the move a thermal top was often sufficient during the daytime. We all took down jackets and wore them at base camp.

Skis: We decided not to take skis and were happy with this decision; however, there were occasions when skis could have been used. See our recommendations for future objectives for more details.

Rifle: we carried a rifle and plenty of ammunition as protection against polar bears. In the area in which we were operating on Renland polar bear encounters were perceived to be unlikely and we did not carry the rifle when climbing or travelling around the Edward Bailey glacier area. We each fired a practice round when we arrived on Renland. A rifle is an essential piece of kit at Constable Point.

Binoculars: we carried a couple of pairs of lightweight binoculars which were helpful for assessing ascent and descent routes.

Ropes: We used a single 60m 9.2 mm rope for climbing and carried an extra 60m 8.4 mm rope for abseils. This worked very well although the dry treatment on the 9.2mm rope proved ineffective and it therefore got very heavy in the wet.

2.7 Communications

As required by the Danish Polar Centre, we were equipped with a PLB (Personal Locator Beacon) which transmitted on 121.5Mhz. If triggered the PLB would transmit our position to the nearest search and rescue unit. We carried an Iridium satellite phone with a spare battery. A Silva solar panel was used to fully recharge the satellite phone batteries before leaving base camp for any length of time. We also carried a VHF airband radio which would have enabled us to contact aircraft passing overhead in case of an emergency. We were equipped with an appropriate selection of handheld and rocket flares.

On reconnaissance and climbing trips away from base we carried the satellite phone with a fully-charged battery (and a fully charged spare battery) which would have allowed us to initiate medical support or evacuation in the event of an emergency. In case of a minor accident the satellite phone would also have enabled us to talk to our UK-based support doctor for advice on

how to treat the casualty. The satellite phone, a number of flares and the VHF radio were carried in dry bags.

At the end of the expedition we used the satellite phone to speak to the helicopter pilot at Constable Point to arrange extraction and to discuss weather conditions at the landing point. Calls were made to our home agent every 3-4 days to give an update of our position and any news. Throughout the expedition we called a family member every three days to relay an update for the blog on our website.

We were equipped with Silva compasses and a Garmin eTrek GPS unit which we used to record the position of key features (e.g. peaks climbed and river crossing points). On a number of occasions we used the GPS to guide as we navigated but generally this was not necessary when the weather was stable.

2.8 Medical arrangements

Renland is a remote location and we were entirely reliant on helicopter extraction in the event of an emergency. A helicopter from Constable Point can reach Renland in approximately 1 hour from take-off but we operated under the assumption that it would take several hours for a helicopter to reach us. We also assumed that extraction from the mountains (i.e. away from the main Edward Bailey glacier area) would be difficult, if not impossible. Before leaving us the helicopter pilot warned us that if there were any mechanical difficulties with the helicopter and it was grounded awaiting repair of parts it could take several days to fix, or to secure a replacement helicopter. In poor weather conditions (which we experienced at both the start and end of the expedition) we might also have to wait several days to be rescued. With these considerations (and the small size of our team) in mind we had to adopt a fairly cautious approach during the expedition.

If a helicopter had been deployed in the event of an emergency a doctor from the hospital at the Scoresbysund settlement (the nearest settlement to Constable Point) and a policeman would have travelled out to Renland in the helicopter to meet the team and casualty. Minor injuries could have been treated at the Scoresbysund hospital but most casualties would be evacuated directly to Iceland. In the event of an emergency we would have contacted the following (in this order): Greenland police, insurance company, the airport at Constable Point, Paul Walker and Air Iceland.

Crispin and Rob attended a mountain first aid course in May 2008. Nat has Wilderness Medical Training and is a member of the Crisis Management Team at Earthwatch Europe through which he has been trained in crisis management, in-field risk assessment and emergency planning. The team was supported remotely from the UK by an experienced expedition doctor, Dr. Will Stableforth, for advice on non-emergency issues.

With advice from our first aid training courses and Dr. Stableforth we put together a comprehensive first aid kit which we kept at base camp. On all trips away from base camp we carried a lightweight first aid kit.

We were lucky only to experience blisters and minor cuts during the expedition but the planning and prior medical training provided a degree of reassurance that we could deal with an emergency situation.

2.9 Camp arrangements

Tents

We took two tents, see equipment section above, using the Terra Nova for sleeping and the Decathlon tent for supplies. As we ate our way through the supplies Rob moved to sleep in the supply tent to give us all more room. The supply tent was invaluable, keeping supplies dry in the rain and providing a vital dry storage area for spare clothing. We used the same base camp site as the Irish team who had been there before us and made good use of an excellent rock shelter that they had built against a boulder. We covered this with a tarpaulin, giving us a space for cooking and reading during wet weather. This was of enormous value both to our physical comfort and our sanity during extended periods of inactivity. It also meant that we could keep supplies accessibly near the cooking area without them getting wet.

Cooking

We had two large pots for cooking and rotated cooking duties on an informal basis. Rob constructed a small platform for the stoves which made cooking somewhat easier. We each had a large plastic bowl for eating from and a spoon, and a mug each. The mugs were our main eating vessel when bivvying away from base camp and Crispin found that his small, metal mug was far inferior to the large plastic models that Nat and Rob had. We also took a small washing up bowl, sponges and biodegradable soap for washing up.

Hygiene

As we were on Renland for a month hygiene was an ongoing challenge. We camped atop a moraine which had a stream flowing on either side of it. We designated the stream to the south as the drinking and washing stream and all toilet functions were therefore performed on the slope leading to the northern stream (out of sight of the camp). The proximity of water meant that we were able to remain relatively clean, washing on rest days, so about one day in four. Washing was undertaken with varying degrees of enthusiasm as the stream was melt water running on a bed of glacial ice and was therefore numbingly cold. When it wasn't raining clothes dried very quickly on improvised washing lines. We had a designated "piss rock" on the northern side of the moraine. We also had a designated rock for defecation which we changed regularly to avoid an excessive build up of faeces in a particular area. All toilet roll was burned immediately. This worked well in all but the wettest of conditions. We took alcohol gel for sterilising hands after using the toilet.

Storage

As well as the tent and the base camp shelter we had our blue freight barrels for storage and this proved extremely useful. The barrels have a rubber seal and are airtight so electrical equipment such as the satellite phone, chargers etc could be stored safely. We also used them for storing climbing equipment, books etc and one was placed on top of our shelter rock to make it easy to spot base camp from a distance, vital at the end of long plods back along the glacier.

Entertainment

We took along a stock of books and were very grateful for these on rest days and rainy days. We also had books of crosswords and sudoku puzzles, playing cards and a CD player with small speakers

2.10 Environmental and social impact assessment

CO₂ emissions from travel

Travel to Renland was by far the biggest source of CO₂ emissions during this trip. Our original plan had been to minimise the carbon impact of our trip by sailing from Iceland to Greenland and taking a ferry from Scotland to Iceland. It soon became clear that reaching any of the areas that we were considering in the early planning of the trip by sailing boat was impractical due to the unpredictable nature of sea ice conditions off the east coast of Greenland. Quantity of sea ice in summer varies from year to year and there was a significant danger of our not being able to reach the coast by sail. Given the costs involved we did not feel this was a risk that we could take. Furthermore, research into the relative carbon impact of flying to Reykjavik versus taking a ferry and driving showed that there was insufficient difference between the two to justify the extra costs and organisation required by such an approach.

We still have money remaining in our budget set aside for carbon offsetting and this will be spent as soon as we are able to find a carbon offsetting company that is able to help us calculate the approximate carbon emissions of the trip. The multiple legs of the journey, involving four different types of aircraft, have made the evaluation of the carbon footprint very challenging. Our target is to have resolved this issue before the end of the year.

Waste

When packing our freight we removed all excess packaging from food and equipment in order to minimise the amount of potential waste once in-situ. Absolutely no waste was left on Renland by the trip. We did not burn any of our waste on-site apart from toilet paper for reasons of hygiene. Waste was carefully stored while on Renland and then removed by helicopter at the end of the trip. Our waste was then left at Constable Point to be removed along with the domestic waste from the airstrip.

Human waste

We did not remove any human waste from the area. We felt that this was justified by the small scale of our expedition, just three people and the facts that human waste is entirely biodegradable and there is no human settlement on Renland, nor any regular visitors. We had designated areas for urination and defecation. The latter shifted regularly for reasons of hygiene and to leave only a small amount in any one area, allowing it to degrade rapidly in the open. By the time we left faeces deposited early in the trip was in an advanced state of degradation and we are confident that little or no waste will remain when the next season's snow arrive. Clearly this is critical as soon as waste freezes it will remain for much longer in the environment.

Visual impact on the environment

Our only visual impact on the environment was a shelter at base camp that was built from moraine boulders by the team that was there before us. We destroyed the shelter at the end of the trip as best we could. As the camp was on the moraine glacial shifting will destroy any remaining suggestion of our presence.

Social impact

We had very little contact with Greenlanders during our trip beyond the handful of workers at Constable Point. The direct social impact of our expedition was therefore minimal. The broader social impact of the growth in the number of climbing expeditions to this area is limited by the remoteness of the area and the fact that Constable Point, a small airstrip, is used as the jumping

off point for expeditions. Furthermore, the cost of organising an expedition to this area is so prohibitive as to mean that there is unlikely ever to develop any mass tourism such as that in areas of the Himalaya or South America.

2.11 Photography

The expeditions' main cameras were a Nikon Coolpix S550 and an Olympus C-50:50. The Nikon was perfect for the job being compact and able to operate well despite getting damp. Three batteries provided power, with some to spare, to take nearly 500 pictures and view the pictures several times.

We also carried a Pentax SLR which provided good back-up but was less practical due to their size.



The Alpine Bowl

2.12 Training

Each member of the team followed their own training regime for the trip. Nat did a lot of work in the gym, while Crispin and Rob spent more time running outdoors and climbing. All team members felt that they were fit and ready for the expedition. Mark Twight's "Extreme Alpinism" was extremely useful as a guide to training.

We didn't have as much opportunity to train as a team as we would have liked, getting only a week of climbing in Scotland and a couple of days climbing in the Peak District. It wasn't felt that this was too much of a hindrance as the team members weren't complete strangers to each other when the team was put together. One member of the team did drop out after the training week in Scotland, feeling that he didn't have the experience to take part in the expedition. In this respect that week was crucial as it would have caused significant problems had this issue not been exposed before arriving on Renland!

2.13 Permits

Our Expedition was based outside the North-East Greenland National Park, therefore we did not need a formal Expedition Permit. We secured permits for our VHF radio and rifle.

3. EXPEDITION REPORT

3.1 Expedition log

June 23rd: Travel to Iceland.

Flew from Stansted to Reykjavik landing in early afternoon took the bus into town and on to the Snoriss guesthouse. Had a wander round the centre of Reykjavik and down to the coast.

June 24th: Reykjavik.

Walked around Reykjavik and visited the interesting national museum. Had a final couple of beers.

June 25th: Arrival at Constable Point.

Constable Point is a dreary place. Think Tatooine in Star Wars, but replace the sand with mud. While you're unlikely to have your arm light sabred off in a pub it might get bitten off by a polar bear. Fresh footprints the size of dinner plates confirm that this is a genuine cause for concern.

We were pleased to discover that all of our freight had arrived from the UK and was in order.

June 26th: Constable Point.

Spent the day at Constable Point. It rained in the morning but conditions improved in the afternoon and we walked up a nearby hill from where we got views across Hurry Fjord to Liverpool Land and the over the rolling hills that surround Constable Point.



Constable Point airport and Hurry Fjord

June 27th: To Renland.

We woke to rain and wind. It was touch and go whether or not we could fly today, but after a tense hour we took to the sky as scheduled. On arrival on Renland we spent the afternoon sorting the stores and building our camp. Later we went for a short walk to the west and were all very impressed by the scale of the place. It was big! By early evening low clouds were weaving among the spires and summits. Nat contacted Paul Walker to confirm our arrival on site.



Base camp looking west up the Edward Bailey glacier

June 28th: First recce.

We woke to light rain and sleet, though things were undoubtedly improving. We set off in mid-morning in the direction of an area which the Scouts expedition had named The Alpine Bowl. We were impressed further by the scale of the place and by the difficulty of the terrain. We frequently post holed above our knees in the unconsolidated snow. The snow was very wet and going was hard. By afternoon the clouds had receded and the sky was wall-to-wall blue. The sun brought avalanches and rock falls. We turned back after five hours, with no definite climbing objectives identified, but a good feel for the scale and conditions.

June 29th: Second recce.

The sun blazed all night. In the morning we set off up the Edward Bailey glacier with the aim of getting as far as the Mashed Potato Glacier. Going was reasonable, much of the glacier was dry though it was frequently cut by streams were usually banked by snow with the consistency of mashed potato, making crossing arduous and occasionally treacherous. We spotted two possible objectives which we referred to as Nat's tower and the Tea Cake. We returned to base camp with the intention returning to this vicinity with a temporary camp to attempt both these. Throughout the day, we had been aware of a sheet of grey cloud creeping in from the west.



Looking for climbing objectives

June 30th: Wet, plant collecting, wet.

At some point in the small hours it began to rain. The weather remained unsettled, with very low cloud and showers into the afternoon. Late in the afternoon it looked as though things may improve but we were not confident enough to continue with our original plan of setting off to attempt the peaks we had identified the day before, so we walked to the north bank of the glacier (45 minutes from camp) to collect plants. We collected 20 plant specimens and saw possible evidence of ivory gulls before the weather turned for the worse and we hurried back to base camp.



Our first plant specimens

July 1st: Aiguille de Minuit.

The rain finally stopped in late morning and the cloud base rose rapidly and then rose and dipped for several hours. There were a few showers, though the trend was for improvement so we decided to go and climb a rock spire that we had seen on our first recce trip on the 28th June at the bottom of the Alpine Bowl glacier. We set off early evening, but found the glacier too treacherous and slow with deep covering of saturated snow hiding numerous crevasses on the approach to the rock spire. So, instead we headed to another smaller rock feature nearby.

We climbed a poor 7 pitch route on mostly appalling rock that involved difficulties up to about HS 4b. We topped out shortly after midnight and descended down a very convenient snow gully. We were back at camp under glorious sunshine by 4am. We all found that our bodies tried to resist climbing during these night time hours.

July 2nd: The 'death bivi'.

We had a lazy morning during which we decided to postpone our plans to attempt the Tea Cake until the glaciers had dried up a bit. Instead we decided to go east and investigate two glaciers on the lower south bank of the Edward Bailey glacier. We packed food for three days and set off at 7.30pm. After four frustrating hours weaving through complicated moraine, we emerged at the snout of the glacier. We found a comfortable bivi site on glacial till. We spotted boot prints nearby. We bedded down at about 1pm and not long after this it began to rain.

July 3rd: Wet and windy.

By morning the rain was heavy and persistent with the cloud down to about 700m so we scarpered back to base camp. We spent a miserable day crammed in damp sleeping bags in the tent. The wind picked up and for several hours from late afternoon it reached gale force.

July 4th: The rain continues.

The title says it all. Sudoku, crosswords, chapatti making. Rivers raged down rock faces that were bone dry the day before - by evening the wind was beginning to pick up again.

July 5th:and continues.

We woke to slightly improved weather and filled with optimism we put all our gear out to dry. But soon ragged clouds began to descend bringing more showers.

July 6th: And we're off.

This morning the weather really had improved. We spent the morning waiting for our gear to dry then after a big lunch, impatient to get going, we set off west towards the Tea Cake. The going was good until we began to descend the Catalinadal glacier where we found the snow to be waterlogged and there were many wide streams that ran beneath, or partially beneath the snow. At best crossing these required a short detour, but after making a couple of detours of over a kilometre we decided to abandon our plans. We turned back up the glacier and camped (with a tent this time to avoid a repeat of the soaking we received on the 2nd July) on a moraine below the Watchtower glacier. We decided to ascend this in the morning to get a feel for the conditions at higher altitudes on the Renland icecap.



Weather clearing after several days of rain

July 7th: Poor snow bridges.

We made an efficient getaway under a flawless blue sky but realised very quickly that getting off our moraine was going to be problematic. After a detour of several kilometres (east then west to a point where the river disappeared beneath the glacier), necessitated by a river in spate, we were back on track.

The glacier was far more complicated than appearances suggested, it was riddled with huge crevasses, but fortunately was completely dry for the first few hundred metres. We reached a high point c.1200m and decided that continuing was unjustifiable because of a mass of man-eating crevasses covered by poor snow bridges. Reluctantly we returned to our moraine camp. We discovered a foot long piece of antler in the stream by camp. It still contained marrow, so presumably it had been frozen since its owner fell.

July 8th: The West.

Nat and Rob made an early start to go and investigate the western end of the Edward Bailey glacier. The current high pressure had produced a good frost during the small hours and going was fast. We continued for about five hours, reaching a high point of 1198m and spotting some very promising objectives on the south bank in the vicinity of a peak that the Scouts had named 'Bodger'.

Going was tough in the late afternoon sun. Cumulus clouds built through the afternoon and offered some respite from the sun. We reached our camp near the Watchtower glacier at around 5pm. After a brew we made the 2.5 hour march back to base camp.

July 9th: Rest.

A day of wall-to-wall blue sky, though a westerly wind picked up in the afternoon.

July 10th: Back west.

We set off after lunch to reach a bivi site below Bodger with the intention of climbing to the icecap by a steep snow face the following day. We found a comfortable spot on a moraine close to the foot of the route and retired with an alarm set for 5.30am.

July 11th: First success – Peak 1 (Pointe Walters).

We all slept badly beneath a blazing sun and emerged from our bags to a bitter westerly wind. We began the route just before seven and climbed on a mixture of old avalanche debris and rotten ice. The face averaged 45°. After half height the snow deepened and regularly post holed to knee height. We continued, encountering frequent crevasses, until a bergschrund forced a detour left. A steepening 55-60° slope led to a ridge and a summit a couple of hundred meters west (1871m). From here, we made our way to the summit of Bodger (second ascent of this peak) in about half an hour on good firm snow. We down climbed the route of ascent.



Climbing Pointe Walters



On the summit of Pointe Walters

July 12th: Long Day.

We had another 5.30 start. Our intention was to head west to the head of the Edward Bailey glacier. Going was initially good and we passed some fine rock objectives on the south bank with good gullies for descent. After about five hours we reached a point where the glacier merged with rolling terrain of imperceptible scale. We were intrigued by a small summit to the north and decided to have a go. But after an hour trying to cross streams and battling with wet snow we realised it was not going to be feasible so we returned to our bivi site. From here we continued back to base camp. On the way we found a bone on the glacier. We arrived back at camp having covered 50km in 17hours.



Far west of the Edward Bailey glacier near the Renland Icecap

July 13th: Rest/Nat's Birthday.

Overcast by high clouds.

July 14th: Back to the Death Bivi.

In the afternoon, we descended back to the snout of the Edward Bailey glacier. We hoped that the lowest glacier on the south bank would lead us to the icecap.

July 15th: Two glaciers (Shark Teeth glacier and Bowling Alley glacier).

We set off shortly after midnight and approached the glacier from a moraine on its left bank. Going was very good once we reached the glacier and we quickly reached a bowl with two very impressive towers rising from it, but there was no easy route to the icecap. We returned to the bivi and headed back up the Edward Bailey to the next glacier to the west. We were turned back after a few hundred meters by vast crevasses and towering seracs - we returned to base camp.

***Descending the
Shark Teeth
glacier***



July 16th: Alpine Bowl.

After lunch we set off up the Alpine Bowl glacier. We found a comfortable but cold bivi site close to the right bank after about 2.5 hours. We carried on for a further 2 hours to give ourselves a head start with the route finding in the morning. We found boot depth snow above 1000m but parts of this glacier remain shaded for most of the day, so going was generally very good, despite it being early evening.

July 17th: Peak 2 (Pointe Jean Guillaume).

We set off around 6am. Snow conditions were, in places, worse than yesterday afternoon because the sun reaches this part of the glacier at night. One tricky section of route finding after yesterday's high point (we scrambled up the left bank) brought us to the alpine bowl.

From here we climbed steeply up the prominent south facing glacier until it was possible to enter a couloir on the left. We crossed a bergshroud on an avalanche cone and after crossing a rock band climbed soft deep snow for several hundred meters until we reached a section of ice that

steepened to 60°. This led to a col with dramatic views to the coast. From there a narrow ridge snaked to a beautiful summit and views out to Scoresby Sound. Foreboding clouds over the sea encouraged us to make a hasty retreat by two abseils and down climbing. We returned to base camp because the weather seemed to be turning.



Approaching the summit of Pointe Jean Guillaume

July 18th: Back to the Bowl.

The weather never did break, so the following afternoon we returned under flawless blue skies back to the cold bivi. Our aim was to ascend a north facing couloir from the Alpine Bowl.

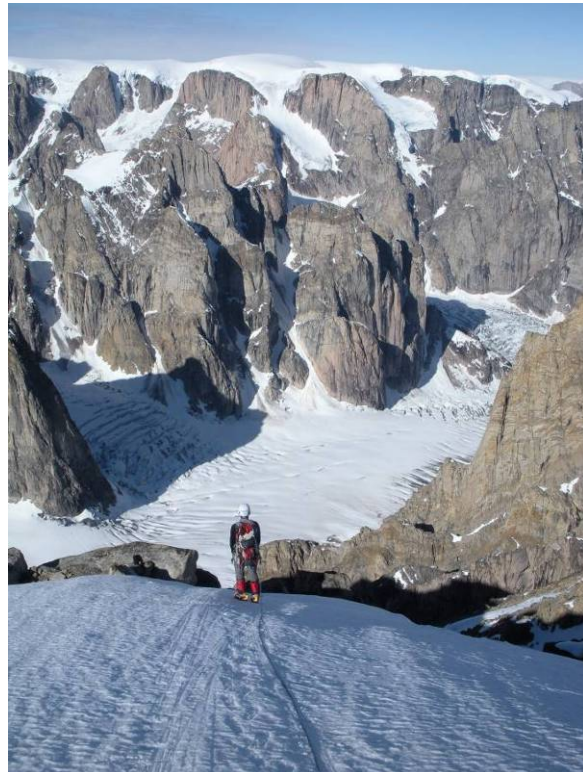


The cold bivi in the Alpine Bowl

July 19th: Peaks 3 and 4 (Catherinesbjerg and Colonel's Peak)

An early start, perfect weather. We followed our furrow back to the Alpine Bowl and ascended the couloir on perfect neve. At a fork we went left, this led to a shoulder in a great position (see

cover photo) and a short rock step. From here an easy snow slope led to a ridge and summits 3 and 4 and stunning views. On our descent we found a plant specimen at the shoulder. We down climbed the route with one abseil.



Descending from Catherinesbjerg with the Alpine Bowl below

July 20th: Rest

July 21st: Extraction



Extraction from base camp

3.2 Climbing report

Operating from a base camp located at 26W 0530266/7900068 recce trips were made from the upper reaches to the snout of the Edward Bailey glacier in order to identify potential climbing objectives. The following ascents were subsequently made (UTM co-ordinates used as per GPS and West Lancashire Scouts Expedition):

Peak 1 (Pointe Walters): 1871m, 26W 0511456/ 7894968 (South side of Upper Edward Bailey Glacier). Climbed by a north facing 800m face of 45-60°. Descent by down climbing.

Peak 2 (Pointe Jean Guillaume): 1949m. 26W 0534593/ 7893702 (Alpine Bowl). Climbed glacier steeply to the bergshrund at which point a gully to the left of the glacier led to 60° ice and a col where a ridge snaked to summit. Down climbed the route with two 60m abseils over steep ice.

Peak 3 (Catherinesbjerg): 1997m. 26W 0533802/ 7895438 (Alpine Bowl). Climbed by a south facing couloir (Wall-to-Wall Couloir) on 45° snow to a col from where a rock step led to a ridge and the summit. Down climbed with one abseil over the rock step.

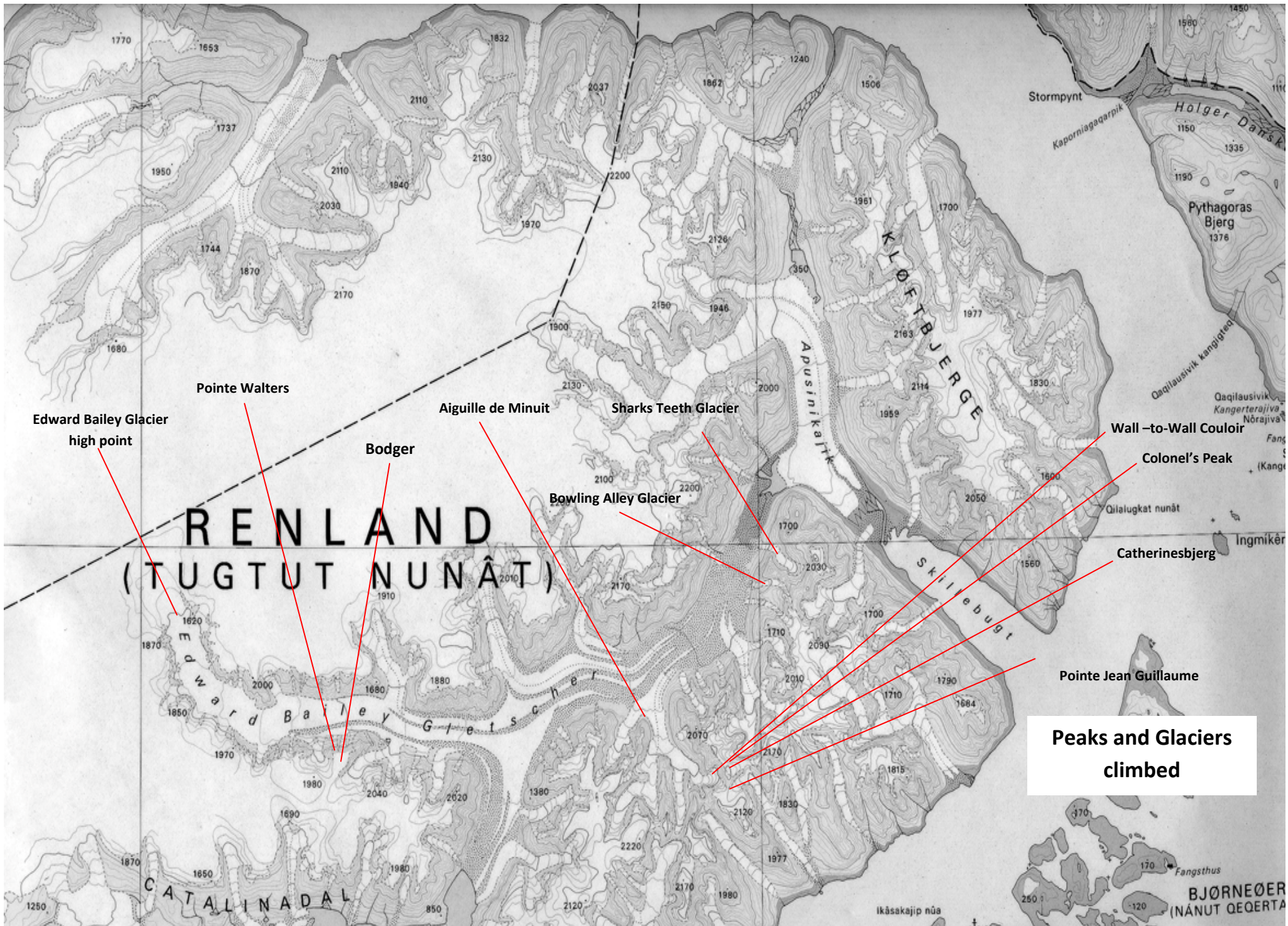
Peak 4 (Colonel's Peak - subsidiary peak of Peak 3): 1965m. 26W 0533649/ 7895553. From Peak 3 the ridge was followed for 200m to the north-west. Descent as per Peak 3.

Rock route (Aiguille de Minuit): 871m – 6 pitches with difficulties up to Hard Severe on poor rock. Descent via a snow gully easily accessed from the top of the route. 26W 0529750/ 7896800 (approximate co-ordinates).

2nd ascent of Bodger (1st ascent by West Lancashire Scouts Greenland 2007 expedition).

Glacier high points (see map):

- a) two glaciers off the eastern end of Edward Bailey Glacier (south side).
 - Bowling Alley glacier
 - Sharks Teeth glacier
- b) Upper Edward Bailey glacier (far west) in the vicinity of the Renland Icecap.





Pointe Walters (peak out of sight behind rock forepeak)



Pointe Jean Guillaume



Approaching the summit of Catherinesbjerg

3.3 Climbing conditions

The 24hr daylight that covers Greenland during summer poses some interesting problems for the climber. While frosts did occur, between about 2 and 5 am, the hardening affect on the snow was limited and the window of good conditions was short. We found better snow conditions during the day on areas that were in the shade than in the same area during the coldest hours of the night when exposed to the sun.

Snow bridges were far less trustworthy than ones that any of us had experienced in the Alps or the Andes. Spring of 2008 was late coming in Greenland and much of the winter's snow was still around, the snow line was around 1000m when we arrived, however it receded very quickly under constant daylight. This combined with heavy rainfall at the start of the expedition meant that the glacial rivers and streams were in spate for the duration of the expedition. Often the streams ran beneath soft snow making crossing treacherous. We frequently had to make extensive detours to find crossing points.

Rock fall and serac collapses were common at all times and we saw some evidence of recent slab avalanches that we assumed to be related to heavy rainfall.

Rock in the area was mostly very good quality, though we did experience areas with the consistency of weetabix.

3.4 Future objectives

Renland offers a lot of potential. What follows are a few of the objectives open to future expeditions. The area would be of most interest to teams keen on long alpine style rock routes.

There are also some stunning big walls. Possibilities for ski touring exist, notably in the area of peaks 3 and 4 and the head of the Edward Bailey glacier.

a. Mirror Wall - Easy access and incredible!



b. Sharks Teeth - Easy access via the Sharks Teeth glacier.



- c. The Aretes - several long and committing routes with the potential for easy descents via the Watchtower glacier. Located just west of the Watchtower glacier.



- d. Point 1771 (The Tea Cake) - located above the lower left bank of The Catalinadal glacier. A hidden glacier may, or may not, provide a classic alpine route to this summit (The Tea Cake is on the distant skyline hidden on the right of the image below but the possible route can be seen in the centre – moving up and right).



3.5 Weather

The weather was fine and stable for most of our expedition. On the occasions when it did break the process was very gradual, occurring over at least eight hours and was preceded by an obvious build up of clouds. The worst weather that we encountered, between July 3rd and 5th came in from the east.

3.6 Fieldwork

In March we were contacted by Dr. Geoffrey Halliday who has been working on the flora (flowering plants and ferns) of the central fjord region of Greenland since 1961. Although he has pretty good coverage of the Scoresby Sound area he lacks any information on Renland apart from a few coastal sites. Dr. Halliday asked if we could make a complete list of plant species occurring in the area in which we would be exploring and climbing. In particular he wanted us to note species occurring above 1500m, recording the highest altitude at which each species was found.

We took an Arctic plant press for drying and transporting flowering and fruiting specimens back to the UK for further identification. We were pleased to be able to add a research element to our climbing expedition.



Botanical objectives:

1. To make as complete a list as possible of the species occurring in each of the two general areas – a) south of the main east/west glacier (Edward Bailey glacier), and b) north of Edward Bailey glacier.
2. To note which species occur above 1500m and, as far as possible, to record their maximum altitude, and certainly the species present at the highest site.

Summary of fieldwork:

When we arrived on site on 27th June there was still considerable snow cover in the area due to a particularly late Spring in 2007/2008. It was evident that plants had only recently started to re-establish themselves and flower.

The first part of the expedition was spent reconnoitring the Edward Bailey glacier and the peaks/glaciers leading off it. Several days of rain and the snow cover and resulting unfavourable climbing conditions meant that actually climbing did not start immediately. During the course of the recce it was found that the routes originally proposed for climbing when in the UK were unfeasible (due to complex and potentially dangerous icefalls and unconsolidated snow on the glaciers).

The nature of routes eventually climbed (snow/ice with some mixed ground) meant that opportunities for plant collection whilst away from the Edward Bailey glacier and immediate areas was limited, and plant diversity was found to be low (perhaps not surprisingly). With the exception of one plant (from site 3) we were not able to collect any altitude data (above 1500m) as planned under objective 2.

Plant collections were made at four sites and specimens were dried and stored in the press. We identified the plants where possible and labelled them noting species name, location and site characteristics. Site details are recorded below.

1. Base camp area (71° 12.083' N, 026° 09.508' W - 496m). Site description: wide area of open relatively flat medial moraine.
2. North side of Edward Bailey glacier on south facing slope leading up off glacier directly North of Base Camp (463 – 600m). Site description: vegetated lower slope of mountain above moraine with rock slabs and scree - angle of slope c.30 – 40°.
3. South-east facing mud/scree covered ledge (71° 09.565' N, 026° 03.729' W - 1885m).
4. Medial moraine on Edward Bailey glacier 1.5km South of base camp. Site description: complex area of moraine with mounds of boulders up to 10m high.

On return to the UK we sent the specimens and records to Dr. Halliday.

3.8 Risks, hazards and annoyances

In addition to the climbing related risks and hazards (e.g. crevasses, snow conditions) covered in section 3.3 the following covers additional safety related considerations:

Insects

Flies were present at base camp but not in sufficient numbers to pose an annoyance or hygiene problems. Mosquitoes were, thankfully, almost entirely absent.

Bears

Polar bears are a serious consideration for any expedition to East Greenland. The West Lancashire Scouts expedition did not encounter any bears on Renland and we considered our base camp and focal area not to be typical polar bear country. However, we needed to be prepared so we carried a rifle. Polar bears are relatively common visitors to Constable Point where we started and ended our time on Greenland so the rifle was an essential piece of kit in this location and we took it with us when not in the immediate vicinity of the airport buildings. In addition, we set up a perimeter trip line around our camp site using cord on bamboo poles with cooking pans/cutlery attached to the cord as an alarm.



Polar bear print at Constable Point

As mentioned in section 3.1, we didn't actually see any polar bears but we saw polar bear prints next to the Constable Point 'Hilton' and slept rather fitfully in our tent!

Moraine

Travel on the Edward Bailey glacier on Renland involves considerable time spent on moraine ranging in size from fine sand to house-sized boulders. It was often slow and difficult to navigate through the areas of moraine and movement required care when carrying kit. As is typical with moraine, the rocks tend to be loose and unstable, often only providing a thin cover over glacial ice which could be treacherous with lots of opportunities for twisted ankles or worse. We all had slips on the moraine but ski sticks provided some support and we quickly became proficient at moving over this terrain.



Moraine travel

Temperature

From conversations with various Greenland experts and members of the West Lancashire Scouts expedition we were prepared for extremes of temperature on Renland in June-July and had prepared accordingly. Typical daytime temperatures were up to around 15°C (in the sun) at base camp altitude. At higher altitudes, particularly at night, the temperature would drop to a few degrees below zero at the most. Therefore, the temperature was not extreme and with the clothing we had we did not experience any cold related problems.

Appendix A: Equipment List

1. Climbing

Mountain boots
Harnesses
Helmets
Ropes (2 x 9mm)
Crampons
Axes (2 each)
Nuts
Hexes
Quickdraws
Slings
Screw gates
Ice screws (6)
Prussicks
Pulley
Ropeman
Belays plates
Climbing rucksacks
Tat (7mm x 30m)
Nut keys (2)
Spare crampons (1 pair)
Spare axe (1)

2. Navigation and communications

Sat phone
Satphone solar panel
GPS
VHF airband radio
Compasses
Map case
Aerial photos and maps
Notebooks and pens
Whistles
Altimeter

3. Safety Kit

121.5Mhz PLB
Avalanche transceivers (1 each)
Red rocket flares
Handheld orange smoke flares
Avalanche probe
Rifle and ammunition
Comprehensive first aid kit

Lightweight first aid kits
Bothy bags (2)

4. Camping & Cooking

Tent (1 main, 1 for stores)
Down sleeping bags
Sleeping bag liners
Bivi bags
Thermarests
Rollmats
Spare tent poles
Food (30 man days each)
Cooking fuel (25 litres)
MSR stoves (3)
Coleman stove (1)
Stove maintenance kit
Cooking pans
Cooking spoons
Eating spoons
Mugs
Matches and lighters
Sponges
Washing up liquid
Tea towels
Washing bowl
Thermos

5. Clothing

Thermals tops
Thermal bottoms
Thick socks
Thin socks
Climbing trousers
T-shirts
Thermals tops
Thermal bottoms
Thick socks
Thin socks
Inner gloves
Climbing gloves
Mitts
Hats
Shell jackets
Shell trousers
Mid-layers
Down/synthetic jackets

Pants
Shades
Spare shades
Goggles
Trainers
Gaiters

6. General kit

Ski sticks
Cameras & accessories
Repair kit (duct tape, wire, glue, needle and thread etc.)
Tools
Dry bags
Plastic bags (Ziploc)
Penknives
CD player and speakers
Books
Travel wash
Wash kits
Insurance docs
Passports
Permit/paperwork
Water bottles
Base camp water container
Toilet paper
Head torches
Rechargeable AAA batteries
Solar battery charger

Appendix B: GPS points

UTM co-ordinates used as per GPS and West Lancashire Scouts Expedition 2007.

Name	Location	Altitude	Date
Base camp	26W 0530266/7900068	496m	-
Aiguille de Minuit	26W 0529750/ 7896800 (Alpine Bowl area)	871m	1/7/08
Pointe Walters	26W 0511456/ 7894968 (Upper Edward Bailey glacier)	1871m	11/7/08
Pointe Jean Guillaume	26W 0534593/ 7893702 (Alpine Bowl)	1949m	17/7/08
Catherinesbjerg	26W 0533802/ 7895438 (Alpine Bowl)	1997m	19/7/08
Colonel's Peak	26W 0533649/ 7895553 (Alpine Bowl)	1965m	19/7/08

Appendix C: Inventory of stores

Certain foods we found worked very well, others less so. Included below are comments on the different kinds of food that we brought:

- **Muesli**
- **Porridge oats** - *good for base camp breakfasts but messy to wash up and can be hard to digest*
- **Jam**
- **Hot chocolate powder** – a hot chocolate drink in the evening was invaluable for morale and we were very sad not to have brought enough for the whole trip. Originally brought just to put in porridge, it was never used for this.)
- **Oatcakes** - these are excellent hill food and give loads of energy. Particularly good topped with Primula cheese spread.)
- **Wayfayrer “boil in the bag” meals** - not cheap but very convenient, full of flavour and an excellent way of having a varied and delicious evening menu. These did have to be supplemented by a carbohydrate staple of pasta or mash, and we added tomato ketchup or chilli sauce to spice it up
- **Steam puddings** - we were left some steamable puddings by the Irish team and these were fantastic with powdered custard. Again a morale-boosting and tasty way to cram in calories.
- **Rice pudding**
- **Fruit compote**
- **Custard**
- **Freeze dried potato** - filling, easy to make and delicious. One small packet produces a huge amount of mash.
- **Supernoodles** - very cheap and filling and fuel-efficient to prepare. Great with some stock, chilli and olive oil.
- **Tuna tins**
- **Packet soups**
- **Corned beef**
- **Pasta**
- **Primula cheese**
- **Sardines**
- **Margarine**
- **Flour** - chapattis were a very popular base camp meal.
- **Tomato tins**
- **Trail Mix** – we made this up ourselves from big packs of nuts, dried fruit and seeds.
- **Cereal bars** - the big food disappointment of the trip. Not filling at all and not pleasant to eat.
- **Soreen Malt loaf** - fantastic hill food.
- **Pepperami** - surprisingly good, lots of flavour.
- **Mars bars**
- **Beef Jerky** - a really tasty snack.
- **Snickers**
- **Flapjacks** - homemade by Nat's mum and gran, these were very filling and great morale boosters.
- **Chocolate**

- **Fruit cake** - we took 4 Dundee cakes. These were excellent treats)
- **Olive oil**
- **Tabasco/Encona chilli sauce** - indispensable for livening up food.
- **Tomato Ketchup**
- **Chilli**
- **Herbs**
- **Biscuits**
- **Whisky** - we took a bottle each, could have taken a bit more. A great evening treat cooled with glacier ice.
- **Tea**
- **Coffee**
- **Dioralite**
- **Sugar**
- **Powdered milk**
- **Salt**
- **Stock cubes- chicken**
- **Tomato puree**

Appendix D: Reports distribution list

This report will initially be distributed to the following:

- Mount Everest Foundation (www.mef.org.uk)
- The Gino Watkins Memorial Fund (including the Arctic Club award) (www.spri.cam.ac.uk/about/funding/ginowatkins)
- The Andrew Croft Memorial Fund (www.acmf.org.uk)
- The Augustine Courtauld Trust (www.augustinecourtauldtrust.org)
- Royal Geographical Society (www.rgs.org)
- British Mountaineering Council (www.thebmc.co.uk)
- Tangent Expeditions (www.tangent-expeditions.co.uk)
- Expedition website (www.oxfordgreenlandexpedition.co.uk)
- Expedition referees

