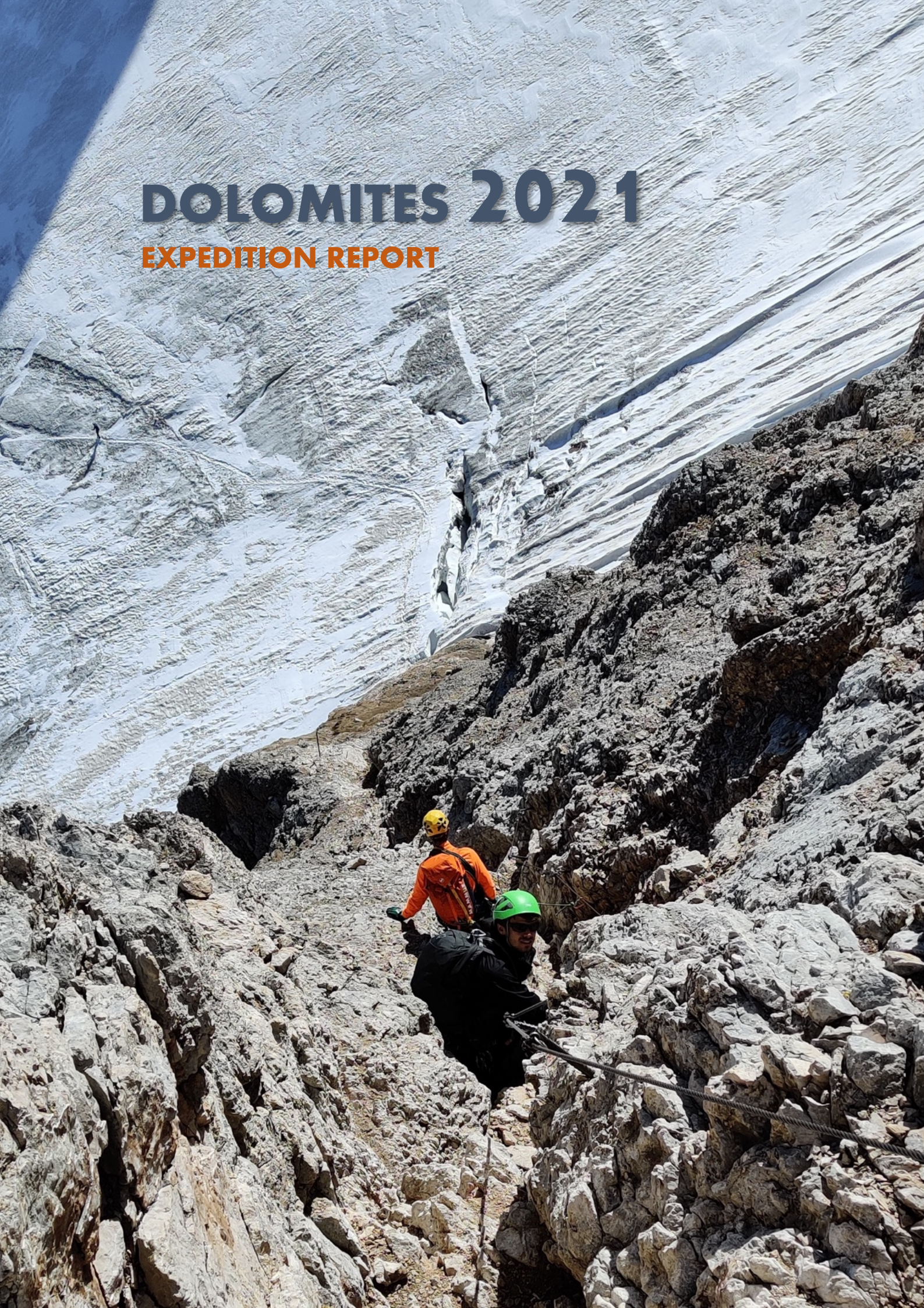


DOLOMITES 2021

EXPEDITION REPORT



James and Fabio on the Marmolada after an early morning start.



Summary

Despite the uncertainties presented by the ongoing pandemic, the expedition was deemed successful, having given James and Tristan exposure to a range of technical mountaineering and climbing experience, including their first glacier traverses and Tristan's first lead on multi-pitch trad (and James' first multi-pitch). Having explored but a small portion of the plethora of the interesting crags, via ferrata, larger alpine faces, and glaciated peaks that the Dolomites conceal, both James and Tristan already have their eyes set on how they can return.

Acknowledgements:

The expedition would not have been possible without the generous and kind support of the following organisations. We are hugely grateful for their support in what were undoubtedly uncertain and rapidly evolving circumstances prior to travel.

Imperial College Exploration Board

Old Centralians' Trust

The Royal School of Mines Association

Imperial College Mountaineering Club

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Tristan and James taking in the views on the hike down from Cinque Torri.

Expedition Overview:

We split our time in the Dolomites between the Eastern region, centred around Cortina d'Ampezzo and the Western side, centred around the small town of Canazei. After 2 days of bad weather, and a chance encounter with the Italian military carrying out exercises at the entirety of Cinque Torri, we spent several days in the Rosengarten group getting acquainted with some of the via ferratas in the area. This was used as technical preparation for the later ascent on the Marmolada, with varied and remote terrain on some of the passes and ridges giving fantastic exposure and a solid introduction to using the via ferratas. While here, we experienced the first snowfall of the season and were the first to summit the Catinaccio d'Antermoia (3,002 m) after the fresh snowfall. We also summited the Roda di Vael (2806 m) and completed a traverse of the ridgeway between Molignon di Fuori (2,779 m) and Molignon di Dentro (2,852 m) using the via ferrata Lorenzi-Molignon (VF4C).

After a fully packed 4 days in the mountains, we focussed our efforts on sport climbing on the absolutely fantastic rock for which the Dolomites is so well known. We spent 2 days climbing single pitch routes at Citta dei Sassi, and at the Passo Fedaiia on the Marmolada, before climbing our first multi-pitch with our guide: Myriam (V+) at Cinque Torri.

Given a fantastic weather window at the end of that week, we decided on an ascent of the West Ridge of the Marmolada to Punta Penia (3,343 m) the next day. Despite fresh snowfall earlier in the week, the crevasses on the glacier were clearly visible and we navigated 3 glaciers under the leadership of our guide, Fabio Agnese. We completed the ascent in a single day, returning to Sass de Stria for a final day of multi-pitch climbing before Fabio left the team. Tristan led 8 pitches of trad multipitch for the first time on the South Arête (IV+), demonstrating the value of working closely with a guide in really our repertoire of skills when it comes to climbing.

After a final day of multi-pitch climbing without a guide at Sass de Stria, the expedition came to a close, with Tristan and James travelling back to London via Venice. The expedition was deemed successful in meeting its aims: preparing the team for more ambitious technical climbing and mountaineering expeditions in the future. Both Tristan and James gained vital glacier mountaineering experience as well as significantly pushing their technical climbing ability and developing confidence in complex multi-pitch climbing routes (both on ascent and descent).

Amended Itinerary

Day 1: Travel to Cortina d'Ampezzo from London.

Day 2-3: Based at the rifugio Cinque Torri. Minimal climbing possible due to bad weather.

Day 4-5: Based at Paolina Hütte. Travelled to the Western side of the Dolomites, then did the via ferrata Roda di Vael (VF1B) and Massare (VF2B) on the Rosengarten.

Day 6: Hiked to rifugio Vajolet

Day 7: Hiked to rifugio Antermoia via the via ferrata Lorenzi-Molignon (VF4C)

Day 8: Returned to Karersee via the via ferrata Antermoia (VF2B) and the Sandtner Pass (VF2A)

Day 9: Climbed at Passo Fedaia

Day 10: Climbed at Citta dei Sassi

Day 11: Guide arrived. First multi-pitch climb on Myriam (V+) at Cinque Torri

Day 12: Ascent on the Marmolada (3,342 m) via West Ridge (VF4C) and descent via Normal Route (PD)

Day 13: Trad multi-pitch up the South Arête (IV+) at Sass de Stria

Day 14: Climbing at Sass de Stria

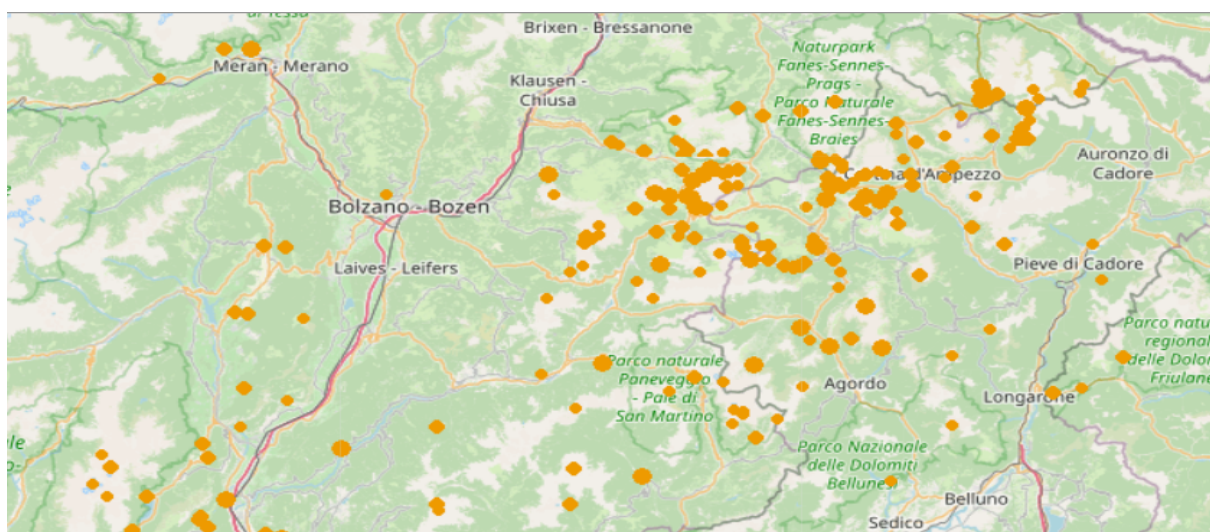
Day 15-16: Travelled back to London via Venice

An Overview of the Location

The Dolomites are a mountain group lying in the eastern section of the Italian Alps. Surrounded on all sides by valleys, the striking and characteristically steep peaks of the Dolomites loom over the surrounding area with their huge faces and summits which often breach 3000m in altitude. The Dolomites take their name from the geologist Dieudonné Dolomieu who conducted the first scientific study of the area and its associated geology. The rock is formed of light-coloured limestone, this rock has led to the unique geography of the area and its famous jagged mountain peaks.

During our time in the Dolomites, their more recent history became very apparent. During the First World War, they were the site of prolonged conflict along the Italo-Austrian frontier. This was reflected in the local geography of several of the locations in which we climbed. At Sass de Stria the approach to the crag was involved traversing trenches and passing complex networks of caves and galleries which were used by troops on both sides. The intricate scars of the War pockmark the mountains, with some of the man-made cave-networks exceeding 500m in length. One happy outcome of all this was the establishment of many of the Via Ferrata which are still in use today, providing excellent access to otherwise technical peaks.

The breadth of crags throughout the region offers some of the most striking yet easily accessible climbs in the world. Given the easy accessibility and wide range of grades offered throughout the region it was a very appropriate area to push our technical abilities, both on rock and on more technical mixed terrain. It was also fantastic to sample some truly exceptional multi-pitch routes on limestone which really did live up to its reputation. The key crags climbed during the expedition were Cinque Torri, Passo Fedaia, Citta dei Sassi and Sass de Stria. We also spent several days in the Rosengarten group and on the Marmolada.



Map of the Dolomites, with sport climbing crags displayed (Source: UKClimbing).

The Team



Tristan Dell (Expedition Leader)

Age at time of expedition: 26

Tristan was familiar with the Dolomites, having skied there on several occasions, including on the Marmolada. He has a long-standing fascination with the distinctive peaks of the region. As a native German speaker, he will be key to communicating effectively, with German the dominantly spoken language in Süd-Tirol.

Academic Background:

- MEng Materials Science & Engineering, Imperial College London
- Currently: 3rd Year PhD Student, Bioengineering, Imperial College Department of Bioengineering

Climbing Experience:

- Getu Valley & Yangshuo, China - 3 weeks sport climbing up to French 6c, including multi-pitch routes. A significant role in expedition planning as part of a team of 5.
- Clécy, Normandy - Climbed sport routes on basalt, including my first multi-pitch.
- UK - Regularly sport climbs on a good variety of rock types both at coastal crags and in-land at locations including the Gower, the Peak District, Southern Sandstone and North Wales.
- Have bouldered and sport climbed regularly indoors for >3 years

Other Experience:

- Prior experience mountaineering at very high altitude on a multi-day hike up to >4000m in the Indian Himalayas and multiple shorter 1-day/2-day hikes in the Alps, Highlands, North Wales and the Peak District.
- Competent skier

Qualifications:

- Fieldwork/outdoor first aid certified (2019 and 2021)
- Accepted to the Jonathan Conville Trust Alpine course (*now postponed to 2022*)



James Foote (Logistical Lead / Treasurer)

Age at time of expedition: 26

James climbs multiple times a week, getting outdoors to do so in the UK and further afield whenever he gets the chance. Winter mountaineering is a key skillset James wishes to develop, making the Dolomites a fantastic destination to develop his skills, and build upon the belay-partnership between himself and Tristan in a challenging new setting.

Academic Background:

- MChem, University of Southampton with 6 Month Placement at University of Otago, New Zealand.
- 3rd Year PhD student, Imperial College London, Department of Materials.

Climbing Experience:

- Indoor lead and sport climbing and bouldering 2 times a week
- Outdoor sport climbing in France, Normandy, Lead and sport climbing up to 6a, in Wales, The Gower, Lead climbing 6b, Sport Climbing 6b+,
- Outdoor bouldering and deep-water soloing in Portland, UK.

Other Experience:

- Multiday hikes: multiple multi day hikes carried out during 6 months living in New Zealand including mountain ascents of a number of peaks of 2000m+ altitude.
- Experience organising long multiweek trips during expeditions in South America including hikes to peaks >5000m.
- Competent skier and PADI qualified Advanced Scuba Diver.

Qualifications:

- Outdoor first aid certified (2021)

James and Tristan in high spirits at the summit of Roda di Vael.



James on the glacial plateau near the Antermoia Hütte.



A view of Cinque Torri from the Nuvulao pass.



Learning Outcomes

Logistical Considerations

Cost and Financial Planning:

As discussed in more detail in the financial summary later in this report, overall costs were higher than expected. Largely driven by uncertainty around relaxation of travel restrictions, it was difficult to make advance bookings which drove up costs. The cost of accommodation and food in rifugios was also higher than anticipated. In future, more diligent financial planning would enable the team to have a more realistic picture of costs prior to departure, ensuring that budgets can be set more appropriately. We were fortunate in that the expedition team was small and the knock-on effects manageable, however with a larger scale expedition taking place over a longer time period, it is clear that better financial planning would be key.

Hypothermia:

It's well known that the weather can turn quickly in the mountains, so we were careful to check local forecasts before heading out each day. This is especially pertinent when climbing in the Dolomites in late Summer as lightning-strike can be a significant risk factor in the afternoons in the event of a thunderstorm.

Throughout September we witnessed first-hand how quickly the temperatures can drop. At the beginning of the expedition, we had several days of temperatures well above 20 °C. Towards the end of the month, temperatures were dropping toward zero. Unfortunately, when climbing at Passo Fedaia at 2,500 m we were caught out by this. As the sun went behind the mountain, temperatures dropped notably and the wind picked up. Unfortunately, James was on belay and unable to reach his warmer layers, which led to James becoming cold over a sustained period. This led (surprisingly rapidly) to symptoms of mild hypothermia. Thanks to our first aid training and an easy walk out of the crag, we were able to recognise this quickly, administer first aid and monitor James to make sure that further action wasn't necessary. This was an important first-hand example of how quickly a seemingly innocuous change in the weather can lead to serious consequences when in a remote area at altitude.

In future, it's abundantly clear that reading the weather patterns and the terrain around you are crucial skills which could have prevented this. Furthermore, better communication at the belay stance would have communicated the severity of the situation and would have led to safer outcomes (and a longer day climbing).

Checking Military Movements / Crag Availability:

During the first day of the expedition, plans were made to climb at Cinque Torri, however, the expedition team were not aware of the military training regime underway at the crag. This meant that no climbing was allowed in the area and led to a day with no climbing and a long approach to the crag. This was a good lesson to learn early on so that crag availability could be checked prior to climbing in future.

Travel During a Pandemic:

Travel during the Covid-19 pandemic was a significant consideration in planning this expedition. Not only did it lead to added expense in terms of testing prior to departure and return to the UK. It also led to last-minute planning and booking as the expedition team were uncertain the expedition would go ahead until a matter of weeks prior to the expedition.

To attempt to mitigate disruption, the team prepared a detailed contingency plan centred around a comparable expedition to be carried out in the Écrins region of the French Alps. After careful monitoring of travel regulations (both inbound and outbound) to over 10 alternative destinations, France was identified as a sensible contingency. A detailed proposal was prepared to include glaciated mountaineering routes and extensive multi-pitch climbing and we negotiated with our guide that he would work with us in either location. This speaks to the value of selecting a contingency location which was geographically close to the Dolomites, as it allowed us to plan an extremely comparable expedition with minimal disruption, similar budget and comparable analysis of risks.

Of course, due to the rapidly evolving situation, it was necessary to consider the requirements of our funding bodies and liaise closely with these. Gladly, we were able to go ahead with our initial plan, meaning that additional complexity here was largely avoided.

Climbing and Mountaineering:

The Value of Training Prior to Departure:

Training during the pandemic was a little different to what would usually be possible. Fortunately, it was possible to travel within the UK in the months leading up to the expedition, so the team was able to get some excellent time in climbing outdoors in North Wales, the Gower and the South Coast. Alongside regular indoor sessions and a consistent programme of cardio ensured we had the fitness for consecutive long days in the mountain on challenging terrain.

Dealing with Exposure:

The exposure was more difficult to prepare for prior to departure as few climbs in the UK offer exposure comparable to the Dolomites. The initial via ferrata allowed preparation for the exposure on the later multi-pitch climbs in a safer environment. This preparation was hugely valuable, especially for Tristan, as he struggled with some of the more exposed and unprotected ridges. Getting accustomed to the exposure early on meant that we were able to make the most of our time with the guide, climbing confidently on the longer multi-pitch routes.



Climbing Myriam (V+) at Cinque Torri.

The Value of a Good Guide:

Our guide, Fabio, was invaluable in helping us to push the technical limits of our climbing and mountaineering in a safe environment. Fabio allowed us to learn and tackle James' first multipitch routes and both of our first ever trad routes. Alongside this, Fabio taught the expedition team how to safely traverse glaciers, an activity that would have been impossible without a guide. Fabio was fantastic to have on the expedition on a personal level and a great contact to have for future expeditions.



Our guide Fabio coiling ropes at Sass de Stria (left) and on the Marmolada (right).

Trad Fundamentals:

Working with Fabio proved a fantastic opportunity to learn trad climbing. A lot of the multi-pitch climbing in the Dolomites is trad, ranging from excellent routes for learning the fundamentals of gear placement to true big-wall test pieces and classic faces such as the Cima Nord and the South Face of the Marmolada.

Working with Fabio, we learned how to place all key pieces of trad gear and also covered the guiding principles for selecting the *right* piece of protection. This culminated in Tristan leading 8 pitches of trad on the South Arête at Sass de Stria. Though low in grade, this was an excellent opportunity to put a lot of skills we had learned into practice.



The importance of good rope management.

Multi-Pitch Rope Admin:

A key takeaway from multi-pitch trad climbing was the use of 2 half-ropes. This was new to both team members and meant that rope admin became notably more complex (and important). After a couple of stances where the ropes really slowed us down, we were able to refocus on how to build a multi-pitch belay stance for 3 climbers so that we could transition efficiently between pitches with minimal rope admin.

Multi-Pitch Lead Techniques:

Leading a multi-pitch route can be daunting. The exposure is challenging, and reading the route is vastly more important (and more difficult) than when climbing single pitch. This is equally applicable in ascent as it is when descending safely. As such, efficiency and proper planning are crucial.

Once at the belay stance, setting up a safe belay from above was a key skill we were able to practice whilst on expedition. Interestingly, the Italian convention is to use a 'plaquette' (a planar belay device) rather than the more widely used guide-plates such as the Petzl Reverso which we were accustomed to. With input from Fabio, we learned how to belay in this way and Tristan led the entire route independently.



Tristan and James take a rest under a roof on Myriam.

Non-Standard Descents:

Simul-climbing and scrambling can be common. This was the key takeaway from the descending the multi-pitch routes we climbed with Fabio. Despite the presence of good abseiling anchors, there were large sections of unprotected traverse or easier downclimbing that were required on some of the descents, especially on Cinque Torri. Under Fabio's guidance, we did this safely by simul-climbing these sections. This was the first time that either team member had simul-climbed so we directly under Fabio's leadership.

This was a valuable lesson when considering future routes to climb as the descents were at times more technical or challenging than the climb itself. This would be a vital factor when planning longer days out on big walls or larger multi-pitch crags with no clear walk-off.



Ascending the Marmolada via the via Ferrata on the West Ridge...



...and back down via the via normale.

Glacier Fundamentals:

Working with Fabio, we spent an afternoon off the mountain going over key techniques important for glacier work. This included how to rope a group of climbers for glacier traverse, including the key knots, spacing considerations and rope etiquette.

We also covered the theory of self-arrest using an ice axe and crevasse rescue. Once on the glacier, we were able to touch on the finer points of navigating around crevasses, different snow and ice conditions, and techniques to find a suitable path both for descent and ascent.

Unfortunately, sparse snow cover and rather more crevassing than anticipated meant it was not possible to safely practice self-arrest when on the glacier. However, this is something we would look to do in future through further training. Overall, the expedition was a fantastic to glaciated mountaineering, with the team traversing 3 glaciers across a single day on the Marmolada.



The route taken when traversing the glacier on the descent of the Marmolada.

Financial Summary

A full financial summary is included overleaf, however overall, the expedition costs were higher than anticipated. This was driven primarily by the following factors:

Costs Associated with Running an Expedition During a Pandemic

in part due to unforeseen costs associated with the ongoing pandemic. Items such as car hire were more expensive than predicted due to the need to wait until 2 weeks prior to travel before it was confirmed that it would be feasible to travel to Italy. Furthermore, testing costs came to nearly £150.

Guide Costs

We decided to work with a guide who was based in France such that it would be feasible to work with him if we needed to default back to our contingency plan of mountaineering in the Écrins region of the Western Alps. He was willing to travel to Italy however only for a minimum of 3 days (rather than the 2 we had budgeted for), which drove a marked increase in cost.

As James was new to multi-pitch climbing, we decided to do a day of multi-pitch training with Head on Out (a Bristol-based climbing organisation) in preparation for the expedition. This also increased costs associated with guides / training.

Accommodation Costs

Finally, accommodation in rifugios cost more than anticipated. BMC Reciprocal Rights rates were only accepted in properties belonging to the Club Alpino Italiano (CAI). The majority of huts were privately owned, so we endeavoured to cut costs by staying only in CAI rifugios where possible. We endeavoured to counteract the higher spend on accommodation by being frugal with food costs.

In summary, both team members spent significantly more of their own money than anticipated in order to cover these increases in cost. This will be a valuable learning experience when budgeting future expeditions, especially in more developed areas where it can be difficult to reduce costs.

Funding Body Conditions

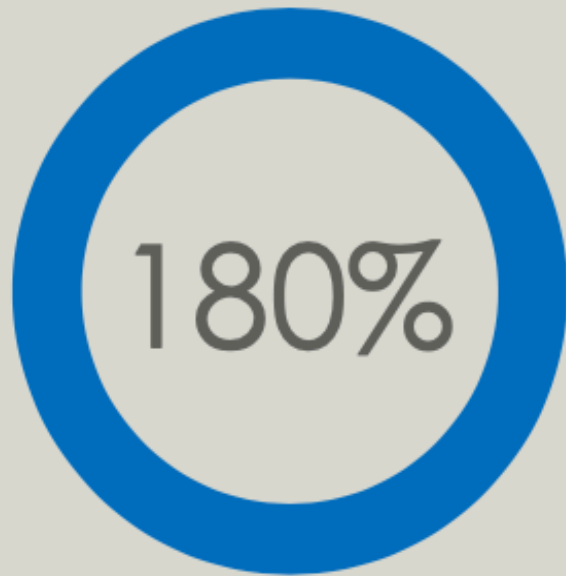
Imperial College London Exploration Board: Submit detailed proposal incl. information on budget, itinerary, training schedule, risk assessment. Participants must make a personal contribution of at least £500 each to the expedition.

Old Centralians' Trust: Submit a report giving news of how well the trip has gone, accompanied by photographs to illustrate the conditions, views, and anything else of interest.

Royal School of Mines Association (RSMA) Trust: Full approval by the Exploration Board required. Produce short, 750-word report including 3 photographs. This may be published in the Imperial Engineer.

Expedition Financial Report

Percentage of Income Spent



Grant Income

ITEM	AMOUNT
Imperial College Explorc	£1,000.00
Old Centralians' Trust	£1,000.00
RSMA	£200.00
First Aid Grant	£200.00

Expenses Prior to Travel

ITEM	AMOUNT
Covid Testing	£146.00
Shared Equipment	£151.15
First Aid Training	£360.00
Multi-Pitch Training	£350.00
Insurance	£154.00
Reciprocal Rights Cards	£112.00
Flights (inc. offsets)	£243.97

Expenses on Expedition

ITEM	AMOUNT
Food	£300.00
Accomodation	£910.00
Guide Fees	£900.00
Car Rental	£566.00
Fuel	£60.00
Public Transport	£37.00
Maps / Topos	£35.00

Summary

TOTAL GRANT INCOME

£2,400

TOTAL EXPENSES PRIOR TO TRAVEL

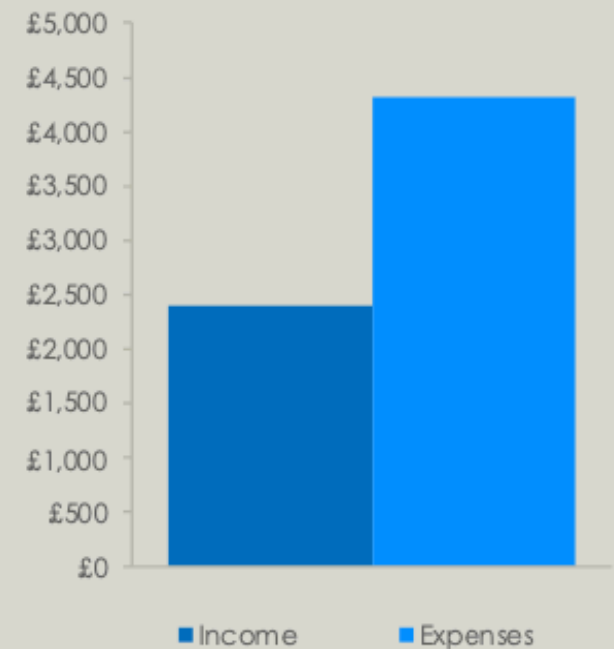
£1,517

TOTAL EXPENSES ON EXPEDITION

£2,808

PERSONAL CONTRIBUTIONS

-£1,925





Concluding Remarks:

The expedition allowed James and Tristan to further their climbing and technical skills whilst gaining their first experience of trad climbing and glaciated ascents. The objective of the expedition was to equip both team members to take on more ambitious expeditions in future. In this respect, both team members agree that the expedition was a success.

The financial support of our funders made it possible to work with a guide, allowing the undertaking of more ambitious climbs in a safe environment and offering us an experienced teacher to show us the correct protocols for the glacier traverses. This was transformative in ensuring that we learned a huge amount while in the Dolomites. Alongside the technical aspects, the expedition allowed the team to gain valuable experience in the planning of expeditions, with Tristan leading an (albeit small) expedition for the first time.

Both James and Tristan thoroughly enjoyed the expedition and would like to wholeheartedly thank funders for all the support they offered, without which the expedition would not have been possible. The experience gained has prepared the team well to pursue further, more challenging expeditions with confidence, something which we are sure to put to good use in future.

