

The Professional **Mountaineer**

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The Association
of Mountaineering
Instructors

British Mountain
Guides

British Association
of International
Mountain Leaders

Mountain Training
Association



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Spring 2022 Tides for sea cliff climbing, The comfort zone and Flowers in the window: The botany of Hohe Tauern National Park

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Our front cover

Looking towards Eachla Mhór from the Muckish Gap. © Iain Miller

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EDITORIAL



ABOVE Author abseiling on Old Man of Hoy. © Anna Taylor.

Ignorance is bliss... but unfortunately it doesn't stand up in court! I'm thinking back to the halcyon days when my life was full of travel plans and expeditions.

Exploration has a long and proud history, but gradually the realisation that our carbon footprint is part of our legacy became increasingly clear. Some colleagues realised this long before me, others point out that stag parties in Ibiza seem just as popular, so why should we rein in our dreams...?

And so, to COP26... Governments know that market forces need to be nudged towards the science but are aware that an unpopular intervention can topple them. More than half the UK population have stated that they are unwilling to pay more for "green" alternatives. According to Bill Gates' *How to avoid a Climate Catastrophe* (Sure enough, it's an entrepreneur's blueprint, but the overwhelming message

is clear) if you reduce the "green premium" (finance or perception) anything is possible. Our profession has the power to lead and advocate for positive change, by pushing forward as ambassadors for wilderness and nature. Education is key: people only value the things they know.

Within your hands you are now holding the collective wisdom of an adult profession – we have all come through the last couple of years older and wiser. Metaphorically, we have experienced a journey from rock 'n'roll towards mindfulness, jet-setting towards stewardship, Instagram to empathy and mental well-being. In short, it is our Continual Professional Development that sets us apart, and this is what this magazine both celebrates and articulates.

Steve Long
Technical editor

OUR COVER



Iain Miller

Iain is a rock climber, guidebook author and hill walker living, working and playing on the sea cliffs, sea stacks, mountain ranges and uninhabited islands of County Donegal in the Republic of Ireland.

OUR WINTER ISSUE CONTRIBUTORS INCLUDE



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Alex is a Winter Mountaineering and Climbing Instructor trainee, and an International Mountain Leader, working predominantly within Snowdonia, the Scottish Highlands, and the Alps.



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Graham is a Senior Forecaster for the Scottish Avalanche Information Service. He has been writing Avalanche Reports in Lochaber for over 30 years.



Rebecca Williams

Rebecca runs Smart Climbing, offering performance psychology coaching for climbers and CPD for coaches and instructors. She runs regular free reflective practice workshops for coaches and instructors.

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Feeling inspired?
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Fancy advertising?
 If you would like to advertise in the next issue, please contact **Caroline Davenport** at caroline@media-solution.co.uk

NEWS



THE ASSOCIATION OF MOUNTAINEERING INSTRUCTORS (AMI)

Continuing Professional Development is high on the agenda for AMI as the requirement to hold appropriate CPD points for membership approaches as of next June. A weekend event is planned at Plas Y Brenin in November as I write this, and AMI are organising a winter workshop event at Glenmore Lodge 7th-9th January. In addition, increased regional CPD workshops are taking place, as well as at the AGM in April.

The Founder's Bursary, generously provided by AMI's original member and founder, funds one AMI member to undertake their Winter Mountaineering and Climbing Instructor training each year. This year's draw will be made during the Kendal Mountain Film Festival weekend.

Due to the success of the previous 2 years work, Alpkit Foundation have agreed to match fund a further year for the AMI Charity Tenders. This will allow AMI members to undertake targeted charity work that will influence the grass roots of our sports. Improved access to our sport will hopefully lead to greater diversity and inclusion at instructor/leader level.

Finally, the AMI Technical Advisers (TAs) register will be open for new entrants early in the New Year. To support this process new guidance has been produced for potential TAs, incorporating the changes to this work over the last few years. The guidance will be available on the AMI website before the end of December.

Have a safe and successful winter season.

Phil Baker (Chairman)



AMI is the representative body for professionally qualified Mountaineering and Climbing Instructors in the UK and Ireland and is committed to promoting good practice in all mountaineering instruction. Full members hold the Mountaineering and climbing instructors qualification or higher qualification the Winter Mountaineering and Climbing Instructor.

T 01690 720123
www.ami.org.uk



BRITISH MOUNTAIN GUIDES (BMG)

As I write we are in the interseason between the busy summer and winter guiding seasons. A time to reflect on the year ending and to plan the next one. The two challenges we faced at the beginning of 2021 are still with us but better understood now.

Covid 19 - As society has reopened our members have returned to work with clients. We have seen more guiding activity across the mountains in the UK as travel for clients across international borders has been complicated (to say the least).

Brexit - More complicated than envisaged because passport status and residency in different countries has an impact on the process to follow for registering to work. Nevertheless, we are finding ways to work in in Europe. We continue to work with other professions and have dialogue with government departments (frankly, the government has been unable so far to assist us).

We have held our courses this year so that trainee and aspirant guides are progressing through our scheme as normal and we are happy to welcome interest and have dialogue with prospective members from other associations.

To end on a brighter note this is also the time of year when Guides often get away for a climbing holiday in warmer climates and meet up often by chance with colleagues. The time to visit Greece, Spain or further afield. Enjoy.

Martin Doyle (President)



The BMG is a member of the International Federation of Mountain Guides (IFMGA), currently comprising 24 nations worldwide, with growing membership, it is the professional organisation that trains and assesses Mountain Guides in all disciplines. A British Mountain Guide operates to the highest recognised level throughout the world, in all terrain and in diverse roles.

T 01690 720386
www.bmg.org.uk



THE BRITISH ASSOCIATION OF INTERNATIONAL MOUNTAIN LEADERS (BAIML)

By the time you're reading this BAIML will have had its 2021 Annual conference in Llanberis – wonderful to be able to meet up face-to-face again. Writing this I can see that we've a sell-out program of CPD, so if you attended, I hope it was great. If you didn't, don't worry, we've a fantastic range of regional events happening via the Reps Team in 2022. Look out for newsletters with details.

Behind the scenes work continues to represent members in discussions with the UK Government, Embassies and other stakeholders as we try to find a way to navigate the many problems created for our industry by Brexit. Solutions to this won't be found quickly or simply, but we continue to make sure that BAIML are part of the discussions.

Finally, but importantly ... we've made the decision to reduce the 2022 full membership fee by 50% again for renewals in December (£100 reduced to £50). So don't delay and miss out as it will revert to full price from January 1st.

I wish you all an excellent festive season and a hopefully better 2022.

Kelvyn James [President]



THE MOUNTAIN TRAINING ASSOCIATION (MTA)

The Winter Conference on the weekend of the 22nd and 23rd of January at Glenmore Lodge is booking up well, but there are still some spaces available. This looks set to be a great weekend for everyone from the complete winter beginner through to the experienced leader. The Autumn and Winter regional programme of workshops and Continuing Professional Development (CPD) is out and available for booking, with sessions on managing hazards, rope work, archaeology and the weather, to name but a few.

Peer-led night navigations are gathering apace across the UK as the evenings draw in and become dark earlier. There are plenty already listed, and more being organised all the time.

The Mountain Training Association is in the process of formalising its strategic development, and to that end have recruited a new Membership Strategy and Communications Officer, Mike Riley. With years of experience in membership organisations, Mike has worked at senior manager level on strategy, planning and development as well as within communications and marketing. Mike is also a keen rock climber and scrambler and is currently working towards his Rock Climbing Instructor qualification, which gives him an insight into the Mountain Training schemes and what it's like to be a trainee member of the MTA.

I hope you have a great winter season.

Belinda Buckingham [Development Officer]



BAIML is the professional association for International Mountain Leaders (IMLs) in the UK. It represents the UK at UIMLA, the Union of International Mountain Leader Associations, which is the international governing body for IMLs. Full members hold the IML award and are committed to a dedicated CPD programme.

T 01690 720272
www.baiml.org

The MTA is a membership organisation providing support and development opportunities for all candidates of Mountain Training. Promoting good practice and providing continued personal development opportunities as part of a UK-wide community of outdoor leaders. Full members hold one or more of the Mountain Training Awards.

T 01690 720272
www.mountain-training.org/mta

SNOWSHOEING

in LAGORAI

WORDS AND PHOTOS BY
CECILIA MARIANI

Trentino is a world-renowned mountain region in the north-east of Italy and a favourite holiday destination for many people due to its natural beauty, cultural heritage, and culinary traditions.

First on the list of sights to see in the region is one of the most impressive natural environments on the planet: the Dolomites. A UNESCO World Heritage site, and filled with mountaineering history, the Dolomites are a *must-visit* for mountaineers and tourists alike. But in the heart of Trentino, a short drive away from the city of Trento and in the shadow of these world-famous limestone giants, there's a wilder and lesser-known mountain range that will take your breath away. It's called Lagorai, and it is a snowshoeing wonderland.

At 70km, Lagorai is the longest mountain range in Trentino, and it separates Valsugana to the south from the more touristy Val di Fiemme in the north. The chain of mountains is mainly formed of porphyry rock, and it boasts crystal clear lakes and deep conifer forests, vertical rock walls and green pastures. It is also, tragically, famous for being the site of many battles during World War I as its southern flanks, rockier and steeper than the northern side, were a natural barrier between the Austro-Hungarian and Italian soldiers during the war. It's a relatively low mountain range, with the highest peak reaching only 2754m, which is nothing compared to other areas in the region, but Lagorai has something that makes it unique. The number of ski

lifts in the area has remained low (only four in the whole range) and the only other human activities that have contributed to a change in the landscape are farming (with transhumance* still a common practice) and logging. For this reason, the landscape of Lagorai has remained relatively unscathed, making it one of the wildest mountain ranges in the whole of the Alps.

Last winter was a great one in terms of snowfall on the south side of the Alps. With ski resorts completely closed due to the pandemic and plenty of snow throughout the season, snowshoeing quickly became a favourite activity. As a non-skier, and with nowhere else to go, I had to make the most of it. I had moved to the area not long before and hadn't had the opportunity to explore it in winter yet, which meant I had a whole range of options to choose from. Here are some of the best.

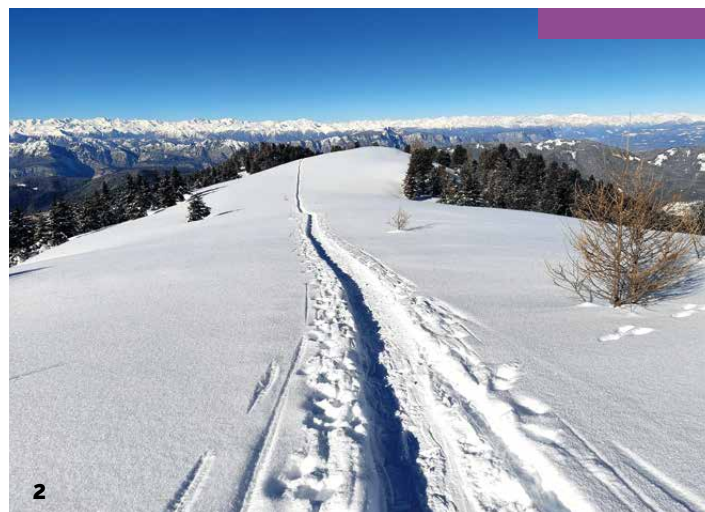
Rifugio Sette Selle

On the far western side of the mountain range, just a short drive from Trento, is a beautiful unspoilt valley called Valle dei Mocheni or Bersntol. The people of Mocheni are a language minority group who have lived in the valley for centuries and speak an old German dialect. The valley is not at all touristy, but is quite popular

with the locals. The easy access and rolling terrain make it the perfect spot for some easy ski touring and snowshoeing trips. Starting from the carpark at the top of the valley, in the village of Palai en Bersntol, it's possible to walk in a north-easterly direction to one of only four mountain huts present in the whole of the mountain range. The journey starts at 1453 metres and ends at Rifugio Sette Selle, just short of 2000 metres, making it an easy introduction to snowshoeing in this area. It takes you through beautiful conifer forests and past some 'masi' – traditional mountain huts in which people used to live, keep their animals, and dry hay, all in the same building. Some of the masi have now been renovated and are used as holiday homes or bed and breakfasts. The mountain hut is in a beautiful clearing just below some pretty impressive rock faces, a great place to stop and enjoy some hot chocolate or mulled wine while soaking up the winter sun.

Cima Socede

Val Campelle is another breath-taking valley found on the south side of the Lagorai range. Here some signs of the Great War can still be found, including trenches and an old burial ground for Austro-Hungarian soldiers. It's also the location of another one of the



MAIN PHOTO The view from Cima dei Paradisi. 1. Conifer woods on the way to Rifugio Sette Selle. 2. Beautiful views from the top of Monte Cogne. 3. A typical 'maso' in the distance. 4. Coming out of the woods in Valle dei Mocheni. 5. Surface hoar on the way up Monte Cogne.

four huts of the range, Malga Conseria, which offers great food and warm drinks in the winter months, although only at weekends. The hut can be reached in just over half an hour from the carpark at the top of the valley. From there it's then possible to reach Passo Cinque Croci and, a couple of hundred metres higher, Cima Socede at 2174 metres. The views from the summit are stunning, extending 360° around the whole valley and beyond. It might not seem much at first, but this small summit has it all and it's ideal for a quiet winter day out.

Monte Cogne

Moving away from the few huts of the range there's a whole lot of opportunities and areas to be explored. Back on the far west side of the range, Monte Cogne is an isolated mountain that might not look very promising from the first glance at the map. It is, however, one of the best hikes I did last year and highly recommended. The path starts from the village of Montesoverè, at only 1137 metres, and then meanders through thick conifer and broadleaf woods. As the height increases, the change in vegetation is very clear: the broadleaves give space to spruces and then eventually to larches, until a broad ridge opens up and stretches out to the summit cross at 2171 metres. Here again the views are quite spectacular, going from Marmolada in the East to Cevedale, the Brenta Dolomites and the mountains above Trento to the west. With over 1000 metres of ascent, however, it's definitely not a hike for the novice snowshoer.

Cima dei Paradisi

This was one of my last winter days out after the last heavy snowfall of the year. I had been snowshoeing for most of the winter, I was tired, and there was something in the air: spring was coming. After dreaming about warm rock and sunshine for a while, I 'forced' myself

out of bed and decided to tackle this ski touring classic route with my faithful snowshoes. As often happens in these cases, it was totally worth it. The snow was great (not only skiers like powder!) and the route brought me through a whole range of different landscapes, from dreamy chalets in the woods to the windswept top. It's about 1200 metres of ascent from the carpark at Rifugio Refavaie to the top, so again ideal for the more experienced winter hiker. On the way down I decided to go through some woods and properly run down through the powder. I got some weird looks from the skiers but had lots of fun. There were signs of life all the way through the trees, with plenty of animal prints and leftover half-munched pinecones. A great way of ending a successful winter season.

Sometimes Lagorai seems unreal – a hidden gem waiting to be discovered yet to be protected at the same time. The beauty of Lagorai lies in its unspoilt wilderness and remoteness, and there's no better way to discover it than in winter, than on snowshoes; keeping that slow pace that makes you notice every detail, listen to every sound, and allows you to soak up the wild side of this amazing part of the Alps. ■

* Transhumance is the practice of moving livestock from one grazing ground to another in a seasonal cycle, typically to lowlands in winter and highlands in summer.



Cecilia Mariani is an International Mountain Leader based in the Italian Alps. She works as a freelance leader in the Alps for both Italian and international groups, as well as leading trips in Scotland. You can read her blog on www.ceciliamariani.com and follow her on Instagram at [@ceciliamariani.mountainleader](https://www.instagram.com/ceciliamariani.mountainleader)

Winter in DONEGAL

WORDS AND
PHOTOS BY
IAIN MILLER



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The County of Donegal in the north-west of Ireland contains more climbable rock than the rest of Ireland combined, boasting two major Irish mountain ranges, over a thousand kilometres of coastline, one hundred sea stacks and as many diverse climbing mediums and locations as you will find in the whole of the rest of Ireland.

Donegal currently plays host to several lifetimes' worth of world class rock climbing and hillwalking in many of the most beautiful, remote and unspoilt locations in Ireland.

The winter climbing and walking available throughout the uplands of Donegal is quite simply frozen perfection. The county has vast areas of uninhabited mountains and undulating blanket bog which provide numerous frozen cascades and ideal underfoot winter walking terrain. As a comparison, the north-west of Ireland is identical to the north-west of Scotland with a dominant coastal position, relatively low-lying mountains, endless single-track roads, roaming sheep and a general sense of being present in a very beautiful rural location. Winter in Donegal can be a very fleeting affair with sudden drops in the ambient air temperature and an even swifter rise during the thaw cycle; as such winter conditions on the Donegal mountains can arrive and disappear in a single day. When a period of extended cold weather hits the Emerald Isle, it is then that the mountains are transformed into a true winter wonderland. Average temperatures need to be below 0°C for 5 consecutive days, and down to at least -5°C at night, yet an ill-timed dump of snow can spoil it all. To take advantage of these fleeting conditions you



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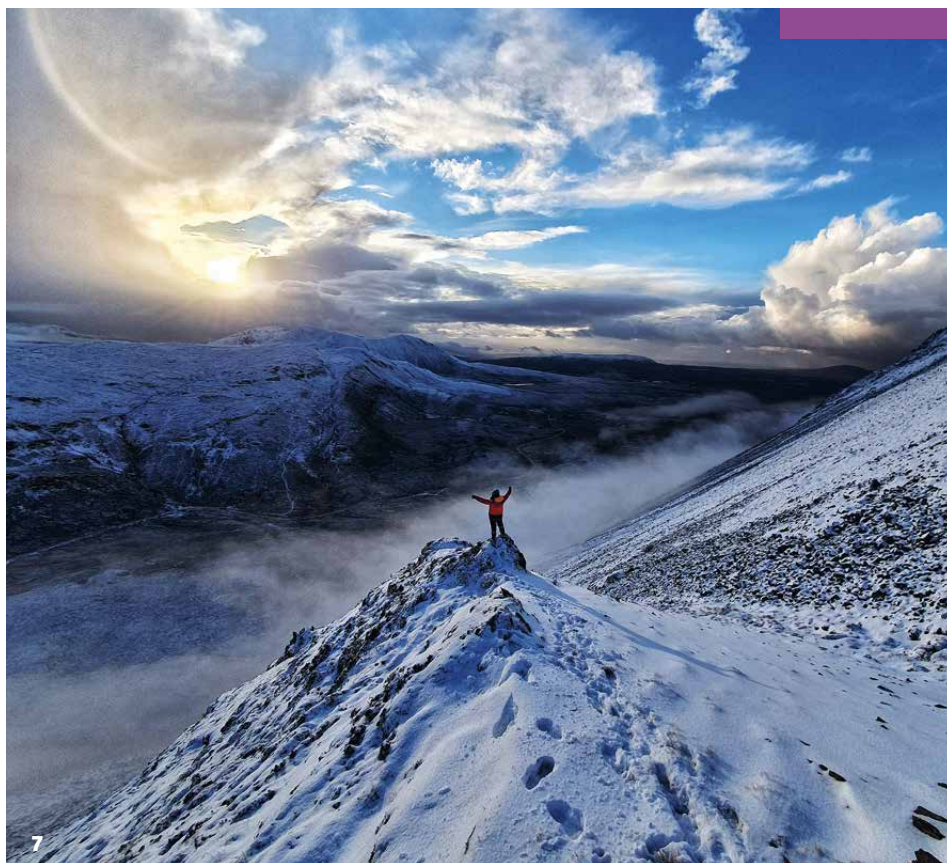
need to be able to drop everything and brave the inevitably appalling road conditions to get there; for, be assured, winter conditions rarely last long. When Donegal does come into prime winter condition the crux of your day will, without a doubt, be the travelling by road throughout the county to your chosen location, but it is safe to say you will be alone when you get to your chosen mountain.

At the northern end of the Derryveagh mountain range lives a huge flat-topped mountain called Muckish (anglicised from the Irish, *an Mhucáis*, meaning the pig's back). The south face of the mountain holds the easiest and most popular route to its summit. The north face of Muckish is a completely different beast as the entire face is dominated by a huge steep sided corrie. This corrie holds the remains of the ancient mining works used long ago to extract the high-grade quartz sand from the mountain which was used to produce high quality glass. It is this north-facing corrie that provides the most reliable winter venue in the county.

The old miners' track into the corrie provides an excellent and easy summer navigation route up onto the summit of the mountain. When winter hits, this corrie is transformed into an outstanding winter mountaineering venue. The steep, normally wet sides of the



MAIN PHOTO Errigal from Sea level. 1. Errigal and Mac Uchta from Lock Alltan, Luke Miller wading in the loch. 2. Steve Hodge and Jo-Anne Reid on the intro pitch to The Funnel III. 3. Looking out over Horn Head and Tory Island. 4. The North face of Errigal from Fána Bhuí. 5. Patrick McDermott on the Pick and Mix area of Muckish Mountain. 6. Winter walking around Caiseal na gCorr in the western Derryveighs. 7. Looking towards Eachla Mhór from the Muckish Gap.



corrie freeze and quickly become plastered with fresh snow. With a few freeze/thaw cycles this snow soon consolidates and is quickly transformed into pristine névé. This névé provides outstanding underfoot conditions for winter walking into this magnificent corrie. The miners' track is quite steep in places and a single walking axe and crampons are recommended as the track weaves its way up and through several amazing but steep gullies to the huge summit plateau. The winter climbing routes are found around all aspects of the corrie walls, with the easiest being many of the deep grade I gullies. The steeper faces currently hold winter mixed and pure ice routes up to grade V and all are easily accessible from the miners' track. This venue is very similar in a number of ways to the Northern Corries in the Cairngorms. From the summit of Muckish the views are vast, uninterrupted and breath-taking as far as the eye can see towards the Slievetooley massif to the south, the Inishowen Peninsula to the north and the surrounding Derryveagh mountains.

The mountain of Errigal is Donegal's most popular winter walking and climbing venue, with it being the highest point in the county. Errigal's summit views often result in cloud inversions and epic sunsets and as such its south ridge route is climbed by thousands of walkers on an annual basis. Under winter conditions this mountain provides exceptional winter mountaineering routes on its exposed north, west and east faces. The climbing is mainly mixed climbing on faces and arêtes, with the north face providing the excellent 200m long, grade III Tower Ridge.

Mac Uchta, Errigal's next door neighbour, provides an excellent circular walk combining a visit to its summit followed by a traverse of Errigal north to south taking in its summit to return you to your roadside vehicle. The north face of Mac Uchta provides a collection of steep snow gullies mainly in the lower grades and is in a spectacular and very lonely setting above Loch Alltáin far below.

To the west of Errigal, the north face of Mám an Leac lives high above the shores of Loch Croloughan and provides an easily accessible climbing venue with a reliable collection of water ice routes.

The Poisoned Glen in the Derryveagh mountains is by far the most outstanding winter climbing venue in Donegal, and a contender

for one of the best in Ireland. This wall of north facing cliffs stretches for over a kilometre and reaches a height of 400m at its highest point on The Bearnas Buttress. The cliff is seamed with deep wet gullies and hidden vertical water courses and given the correct winter conditions it will provide many lifetimes of icy climbing potential. Alas, when the glen comes into perfect winter conditions it is prone to a temperature inversion, which in turn allows a great underfoot walk-in but requires an early start to avoid the midday thaw on the high faces. Currently, the water courses and gullies in the Poisoned Glen provide routes up to grade IV and 450m in length.

Inland in the western Derryveagh lives the huge Horseshoe Corrie just above the roadside Loch Beara. This south-west facing corrie provides several regularly-forming ice cascades, found on its steep walls and waterfalls. The corrie also provides the best access point to the western Derryveagh and the summit plateau of Slieve Snaght. The huge, remote and mildly intimidating north face of Slieve Snaght provides a selection of excellent low grade winter climbs in a superb and atmospheric location. The summit of Slieve Snaght from a clockwise circular traverse of the Horseshoe Corrie in full winter conditions is easily one of the best walking routes in the county.

In this article I have focused on the above locations as a small sample of the winter climbing and walking available in County Donegal when conditions allow. These are the most reliable and usually quickest to form locations with Muckish and Slieve Snaght's north face holding their snow and ice the longest. There are many more less reliable winter venues scattered throughout the county's mountain ranges from the Urris Hills of Inishowen to the Bluestacks in the south of the county. ■



Iain Miller is a rock climber, guidebook author and hill walker living, working and playing on the sea cliffs, sea stacks, mountain ranges and uninhabited islands of County Donegal in the Republic of Ireland. The climbers guide to Winter in Donegal <https://www.uniqueascent.ie/donegal-winter-climbing>



navigation basics

WORDS AND PHOTOS BY CHRIS WRIGHT
UNLESS OTHERWISE CREDITED

Navigation in the winter mountains is generally more challenging than in the summer and potentially far more consequential if it goes wrong. Snow cover concealing features such as streams, footpaths, cairns and small re-entrants deny us use of the navigational aids that we can take for granted in the summer. Along with the often much poorer visibility and potential white out conditions, we have to pay greater attention to our surroundings and tick-off points, take extra care with bearings and keep track of time and distance travelled.

Bigger packs, more clothing, high winds and deep snow also combine to make winter walking and mountaineering much more tiring. Add in freezing temperatures which can often hamper simple tasks and decision making, so knowing where you are at all times requires effective navigation through well practiced techniques. Faced with the shorter day length, good navigation will reduce your chances of getting lost and ending up in the wrong valley or becoming benighted. Many people have become reliant upon digital technology and mapping apps but these are not failsafe and may be compromised in cold and wet conditions, and are not exactly big-glove friendly.



Chris Wright has been leading groups in the Mountains for 30 years, the last 12 as a Winter Mountain Leader.

He has also recently qualified as a Mountaineering & Climbing Instructor and has developed his own Outdoor business, www.mountainmastery.co.uk, which is a provider for Mountain Training's Hill & Mountain Skills courses. In addition to teaching navigation, Chris instructs and guides climbing and mountaineering activities. Formerly a secondary school teacher and Head of Outdoor Pursuits, Chris is now a volunteer with Penrith Mountain Rescue Team and the Adventure Training Officer for Nottinghamshire Army Cadet Force.

Preparation and strategy

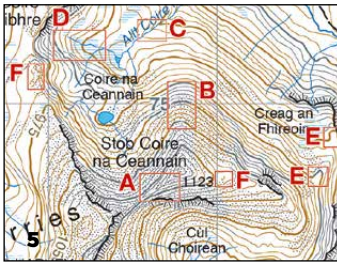
We usually carefully consider clothing and equipment choice when heading out into the winter mountains and even what we put in our flask and sandwiches, but navigation is often overlooked at the planning stage. Navigation is a holistic process that should start before you set off and arguably finishes after you have returned, when you can sit down and review the day as to what worked well and what didn't quite go so well. Looking at the map prior to going out in conjunction with a current weather forecast, snow conditions information and route details will help to build a picture of the terrain and hazards etc., but will also help you to consider the types of navigation legs, strategies and techniques that you might need to deploy during your day.

Knowing that you might have to pace or time a leg in a potential white out might mean that you can take steps to plan your equipment (goggles!) and strategies beforehand rather than being taken by surprise, or even make adjustments to your intended route. It also might make you think twice about whether you have the skill set for your plans before finding yourself in a situation where you have bitten off more than you can chew!

Timing & Pacing: The bread and butter of the winter navigation armoury

It is difficult to transfer our summer walking timing rubric for distance estimation into winter conditions. Due to snow conditions, foot penetration, pack weight and using crampons, Naismith's rule is useful when planning a journey but is less reliable on short legs and harder to apply accurately unless you are a seasoned practitioner and a good judge of your pace and speed. Of course, still do use timings as it's very useful to estimate when you should reach the destination of your leg, especially if a kilometre or more, and particularly if you overshoot and have that 'we should be here by now' feeling. Having your watch strapped on the outside of your jacket sleeve (if possible) is more helpful in inclement weather and when wearing big gloves, as it is easier to keep track of time which is more important in the winter since it can indicate whether you are making slower progress than planned and thus may need to adapt your route.

However, you should not rely on timing alone, even on those shorter legs between points. In combination, timing and pacing, can provide a more reliable method of estimating distance travelled. Pacing in winter conditions requires more practice, including allowances for slope and snow conditions, but if you get it right it can prove to be pretty accurate over shorter distances. When walking in the winter, whether in big boots alone or with crampons fitted, our normal stride is often reduced, especially in snow with an element of



MAIN PHOTO Route checking, Northern Corries, Cairngorms. 1. Full stride. 2. Boot length gap. 3. Half boot gap. 4. No gap. 5. Fine detail contour definition. © MTUKI. 6. Using knuckles and a pen to illustrate contours. 7. Route checking Helvellyn Range.

foot penetration. In some instances when walking up a steep slope in snow there is barely a gap between the toe of one foot and heel of the other. Therefore, it is useful to adjust the number of double paces per 100m based on estimating the gap between heel and toe in terms of boot lengths. For me, for example, based on my usual stride of 60 double paces/100m, if the gap is reduced to one boot length, this is equivalent to approximately 80 double paces/100m and if half a boot length, approximately 110 double paces/100m. No gap, if going up a steep incline, is equivalent to 160 double paces/100m (Figures 1 to 4).

Other than practicing in real conditions on different slopes in the winter, you can develop a pacing rubric at home on the flat which can prove to be a useful tool for estimating distance in varying conditions. Of course, it would be sensible to try it out in actual conditions before having to do it for real when up against the elements!

Contour Interpretation

In a snow-covered environment when all you can see are undulations, bumps and depressions in the ground, a sound understanding of contours and their interpretation into 3-D features is an essential skill in the winter which you should actively practise throughout the year.

We may be used to looking at contour interval spacing to judge the steepness of a slope and whether it is concave or convex but are perhaps less familiar with the intricacies of the topographical features that they represent (Figure 5). An exhaustive examination of such features is out of the scope of this article and there are some good reference books¹ for more detail. However, a grasp of the basics and how to interpret contours is an essential skill for winter navigation.

When we look at our surrounding features and try to apply these to contour shapes on the map, one way to help our understanding is to imagine the ground in 10m slices or layers. This can be visualised on a small scale by drawing on your knuckles (Figure 6). You should practice contour interpretation using a 1:50,000 map since a minor indentation in a contour line can represent a fairly significant feature. It is particularly useful to build on this in the winter and seek out features which are snow covered to see how this affects them e.g., small re-entrants may be completely filled in.

Spend time studying contour shapes on a map whilst out on the hill in the winter, orientate the map and then relate it to the surrounding features. This is particularly important when confirming your location or relocating.

Taking and walking on bearings

Taking accurate bearings on a map and being able to walk on a bearing are essential skills, particularly on featureless plateaus such as the Cairngorms and Cross Fell in the northern Pennines. Make sure that you have a good quality compass and know how to use it before setting out in the winter mountains and ideally carry a spare in your rucksack. Attach your compass to yourself with a suitably

long lanyard, sufficient to hold it comfortably at mid-torso and out in front of you, and make sure that there is no metal near it, such as an ice axe. You want to guesstimate a ballpark figure before you take the bearing to reduce the chance of a 180° error and take a knee to give you a stable platform when taking the bearing from the map.

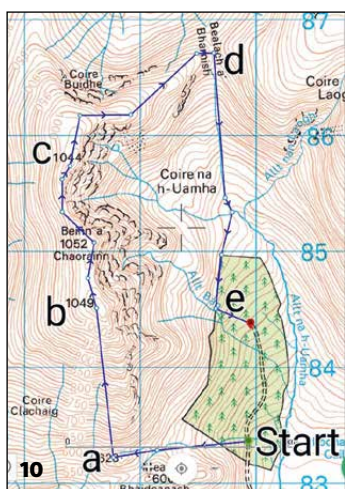
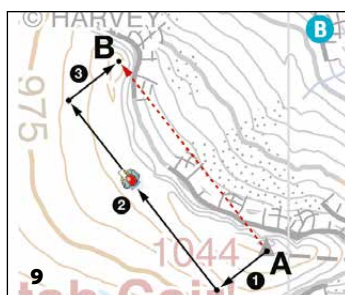
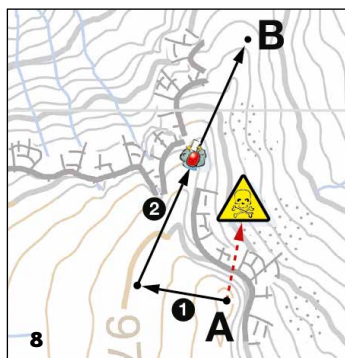
Following a bearing in winter is essentially the same as in summer but there are usually fewer distinctive points on which to sight as the boulders and vegetation of summer may be hidden by snow. Sight along the direction of travel arrow and try to fix on an object directly in line with the bearing, in the mid-ground and far distance if visibility allows. Then walk in as straight a line as possible towards the object. You may have to focus in on more subtle features such as different shapes of snow footprints and lumps of ice. It is easy to ‘drift’ left or right, particularly if traversing a slope. Remember to keep navigational legs as short as is practically possible and bear in mind that on a 1km leg, the combined effect of errors can result in a destination area approximately twice the size of a football pitch.

Be Avalanche Aware

Before you even set foot in the mountains, it is important to do some research on current snow conditions, including the recent history of snow and weather conditions in the area as well as both a weather and avalanche forecast, when planning a route. If a Scottish Avalanche Information Service (SAIS) forecast is not available for the area that you plan to go to, you can alternatively read blogs written by experienced and qualified mountaineering professionals. Based on the previous few days’ precipitation, temperatures and wind direction, you should be able to identify which slope aspects on your intended journey may be loaded with snow with potential instabilities and thus aim to avoid these at the route planning stage. For more information on snowpack and avalanche hazards see the article, *How to Cope with No Avalanche Forecast* by Graham Moss in this edition (page 30), and further details in the references below.^{2,3} There is also a useful leaflet called ‘Be Avalanche Aware’ (BAA), an initiative funded by Sport Scotland, which you should look out for before you ‘hit the hill’. Alternatively, or in addition, you could download the BAA App on your phone which gives you very useful information and prompts regarding decision making in the winter mountains.

Cornices can pose a dangerous hazard in the winter, whether you are at the top of a mountain near a corrie edge or at the bottom of a steep slope below a corniced corrie rim. If you know that your intended route must skirt round a corrie rim, where a cornice is present and particularly in poor visibility or white out conditions, it’s imperative to use navigational skills to avoid walking too close to the edge. This can be achieved by anticipating the hazard and using techniques such as ‘boxing’ or a ‘dog-leg’. The technique of using dog-legs involves walking on one bearing for a set distance and then turning to walk on another bearing for a further set distance to reach

- 8. A dog-leg. © MTUKI.
- 9. Boxing a corrie. © MTUKI.
- 10. Worked example – Traverse of the ridge of Beinn a Chaorainn.



your desired destination. A well-known example of this is when descending Ben Nevis to avoid the precipitous north face close to the summit trig point. (An illustration of this can be seen in *Figure 8*.) Boxing is essentially two dog-legs one after the other and is particularly useful for avoiding corniced edges (*Figure 9*).

Worked example (*Figure 10*)

A traverse of the ridge of Beinn a Chaorainn on the north side of Glen Spean is potentially particularly hazardous. An example of the whole route with possible strategies could involve handrailing the stream west to just below 628m spot height then take a bearing directly up the slope, calculating an approximate time to spot height 1049m (known point). In poor visibility/white out conditions, the ridge traverse requires extreme care including accurate bearings and pacing using dog-leg tactics, noting changes in slope angle along the way: aiming off west slightly keeps you away from the corrie edge on the east and the steep slope on the west acts as a catching feature. From the 1044m spot height to Bealach a' Bhamish, stick to the ridge line as close as possible using different bearings and accurate pacing for the first dog-leg. Hazards are overshooting above Coire Buidhe and drifting south-east into Coire na h-Uamha on the second leg of this section. Once at the Bealach, it's straightforward handrailing followed by a short contour round the corner of the wood.

Pulling it all together

It is easy to become complacent and relaxed, defaulting to using techniques that you are comfortable or confident with such as pacing everything rather than including timing; or focus on taking a bearing and forget about the shape of the terrain en route (and whether there are any hazards!). Having a 'navigation strategy' in place allows you to consider all the options and often provides a prompt to consider appropriate techniques you might sub-consciously overlook. There are other useful techniques for ensuring effective and accurate navigation or for relocating when in doubt including: taking a bearing

along a linear feature; slope aspect; attack points which should all be practiced and in your 'winter toolbox'. When planning a route or a leg, the 5 D's (Distance, Direction, Description, Duration, Dangers) and the 5 'Whats' are useful ways to remember the key points: **What** are you going to see en route; **What** are you going to see at your destination; **What** are you going to see if you go too far; **What** are the potential hazards and **What** are the appropriate skills to use. Relocating or confirming location, using a combination of different pieces of information such as distance estimation and direction of travel from last known point, ticking off features along the way, noting whether you have been going up, down, flat or undulating is also important. And crucially, if visibility allows, contour interpretation of the surrounding features should complete the picture, remembering to make the ground fit the map. Skill fade is one of our biggest enemies with many aspects of outdoor activities, and navigation is perhaps something that can be affected more readily than other hard skills. Skill fade will most definitely have been accentuated in many of us during the last two winter seasons due to the pandemic and lockdown restrictions. Therefore, it would be prudent to ease our way back into the winter mountains and perhaps exercise more caution than usual until we find our feet again. ■

Additional reading

- 1 *Navigation in the Mountains*, Carlo Forte. Mountain Training UK 2012
- 2 *Winter Skills 3rd Ed*, Andy Cunningham and Allen Fyffe. Mountain Leader Training UK 2020
- 3 *A Chance in a Million? Scottish Avalanches*, B Barton & B Wright. Scottish Mountaineering Trust 2000

Useful websites

- www.sais.gov.uk
- www.mwis.org.uk/areas.php
- www.metoffice.gov.uk/public/weather/mountain-forecast/
- www.mcofs.org.uk
- www.thebmc.co.uk

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WORDS, PHOTOS AND GRAPHIC BY JAMES THACKER

CASM

A human factors tool

CASM is a proposed Human Factors tool which is based on Crew Resource Management (CRM) training from the aviation sector and stands for **C**ommunicate, **A**lter Command Gradient, **S**ituational Awareness and **M**inimise Disruption. Established research into avalanche incidents and the applied psychology of Human Factors in safety critical industries have both formed the basis of CASM.

Guides, instructors and leaders operating in the UK in avalanche terrain frequently travel in groups, yet there remains very little research into the 'Non-technical Skills' required to mitigate the risks of avalanche terrain. CASM is described here through the lens of work in avalanche terrain, but the concepts will be useful in many contexts, summer or winter.

Many guides, instructors and leaders will already carry out some of the practices that the CASM headings aim to capture. There is no intention to negate existing behaviours or propose it as a single option. CASM is a Human Factors tool that can be used with others, or in conjunction with decision-making frameworks such as **Be Avalanche Aware (BAA)**.

It is hoped that CASM can be used alongside other established technical skills to reduce the risk of lapses in non-technical skills such as 'heuristic traps' which are often referred to in avalanche education. The aim is the safe conduct of a mountaineering, climbing or skiing day.

Communicate // "Say what you see"

Communication is arguably the non-technical skill from which all the other headings flow. In fact, it is an essential element of all the others listed. Communication is regarded as critical for groups to perform effectively in winter snow sports (Trempler 2008, Zweifel 2014) and in aviation (CAA 2016). The aim is to establish and maintain lines of communication between members of the group, and also between the leader and the group and vice versa. Discussion of the avalanche (or other) hazard is useful, along with the mantra of "saying what you see".

We should:

- Share information actively
- Clearly state our plans
- Express uncertainty or ambiguity
- Assure understanding

A leader using a logical structure to communicate demonstrates the legitimacy of authority due to competence. i.e. you have thought about your work and presented it in a rational and organised manner.

The use of appropriate language is useful to establish credibility and trust (Ginnet 2019).

Example: Clothing and the elements in which we work can make communication difficult. Ensure that people are ready to receive information and that you can be seen and heard. It is also essential to make sure that information has been received and understood by humble enquiry and observation.

Alter Command Gradient // "Disavow perfection"

The aim is to flatten any hierarchy between the leader and the group. Although leaders will have established legitimate authority having been engaged to carry out their role, there will be times when it is appropriate to carry out tasks as a group. A leader is building a relationship by saying that although they have overall responsibility for the enterprise, members of the group can take on some of that responsibility as well. This is particularly important to create a situation where the leader is not relied upon entirely without question, especially if they make an error.

We have probably all felt unable to express an opinion or share our observations in some groups to a guide, instructor or leader who is perceived as more senior. It is easy to think our observation might already be known or dismissed as unimportant. A worse situation would be if our views have been met with a negative or uncivil response in the past.

Example: The aim is to avoid these situations and a frequent briefing for off-piste skiing in avalanche terrain is a good place to start: "Any avalanche or snow observations that you think might be useful, I would really appreciate having my attention drawn to it. I will be keeping my eye out as well, but there is always the potential for me to miss things".

This simple statement is an example of disavowing perfection, by sharing a personal shortcoming (e.g. everybody can be looking in the wrong direction), you demonstrate that you are not only human but can deal with your own vulnerabilities (Ginnet 2019, McKenna 2019).

Nobody feels comfortable in a group where the leader is always right. With a flatter hierarchy you empower people to speak up if they are uncomfortable or concerned.

Situational Awareness // "Anticipate what may happen next"

Situational Awareness is a broad concept which simply means having an idea of what is going on, but also being able to project into the



Improve your decision making

- 

Communicate
Establish and maintain lines of communication // "Say what you see"
- 

Alter Command Gradient
Flatten hierarchy as the leader of the group // "Disavow perfection"
- 

Situational Awareness
Strive to achieve a shared mental model for the day // "Anticipate what may happen next"
- 

Minimise Distraction
Focus on tasks and decisions that enhance safety // Establish a "sterile cockpit"

MAIN PHOTO British Mountain Guide, drip fed constant communication essential for short roping. 1. Improve your decision making. 2. British Mountain Guide, Andy Townsend, and client near Aiguille du Midi.



future and anticipate what may happen next. A common term in aviation; it is a broad catch-all.

Watch for the cues of loss of Situational Awareness (CAA 2016): Ambiguity, fixation, confusion, not prioritising the task, 'being head down', and being unable to resolve discrepancies. Effective communication between members of the groups can reduce confusion, ambiguity and avoid being focussed on one task.

Manage the factors which reduce awareness (Zacharias 2019) such as wellness, fatigue and distraction.

Example: In the mountains we can strive to achieve a shared mental model for the day and anticipate what may lie over the horizon. Start by having plans a, b and c along with contingencies.

Minimise Distraction // "Sterile cockpit"

Focus on tasks that enhance safety. The perception of danger requires focus and attention. Chatting, texting and checking social media at the wrong time can detract from the environment and decision-making.

The term 'sterile cockpit' is used to describe any period of time when crews or groups should not be disturbed except for matters

critical to the safety. Additionally, leaders should focus on their essential operational activities (Pollitt 2021).

As such you might plan to call for a sterile cockpit at certain points in the day, or alternatively foster all group members to request it if they are stretched or distracted (Hearns 2019).

Example: At key places during your day you may request not to be disturbed by anybody while decision-making, and it is a two-way street, don't disturb others. Conversation should be purposeful and relevant. It is ok to ask for silence to concentrate on navigation, technical tasks or making observations. ■

References and supporting documentation at <https://mountainassurance.co.uk/casm-v3-0/>



James Thacker is an IFMGA Mountain Guide and Mountaineering Instructor (WMCI). James has an interest in Human Factors in the mountains and is a member of the Applied Psychology and Human Factors (APHF) research group, Aberdeen University. Image © Ollie Bowman Photography

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WORDS BY ALEX KAY



A piece of footwear for every occasion. When it comes to climbing and mountaineering there are many types of footwear to choose from.

ABOVE Sam Mace soaks up the view from the summit of the Weissmeis after a chilly alpine start. © Johnathan Goves.

Fortunately, although there may be some overlap, most types of footwear can be categorised easily and best-according to their role and suitability for the various types of terrain you wish to encounter. Most are self-explanatory, yet delve down to the sole of the topic and you will find a number of styles that may not be as obvious at first glance. This quick guide will help put a new spring in your step, in readiness for your next winter adventure.

Before heading to the shops and buying the first thing that is recommended, ask yourself this:

Where do I intend to go?

Ultimately this will dictate what kind of footwear you choose.

How often can I see myself using this kit?

If the answer to this question is 'loads!' then you have a decision to make – do you go for the more expensive pair and find yourself with the need to maintain them, or do you make use of a cheaper pair until they literally fall off your feet, possibly having to buy a second pair early? Ultimately, every boot and crampon will fall apart at some stage, so it may be worth seeking out reviews on the reliability of certain brands before you commit.

What is my budget?

Knowing how much you are willing to spend will help to eliminate some items. Having less choice may make it easier for you to come to a decision.

BOOTS

Trekking boots

When we think 'trekking', we picture journeying over lengthy periods in warmer, stable climates, such as below the glacier-line

in the European Alps, in the foothills of the Himalayas, or even jungle terrain. A trekking boot is not designed for use in wet conditions or on frozen ground or snow, and so, for much of the winter season, that rules out most mountain terrain.

Mountaineering boot ratings

There are 4 manufacturer ratings of mountaineering boots and these are a good starting point. Generally speaking, the lower the number of boot rating, the less amount of warmth, rigidity, and weight provided. Crampons are compatible with B1, B2 and B3 rated boots, but not with B0.

B0 (Hiking)

B0-rated/hiking boots are your traditional walking boots, and great for venturing into the hills and mountains below the snow/glacier line. Typically referred to as 'three-season boots', B0s offer the rigidity and warmth required to take you off-path, over non-technical terrain, and onto the mountain summits of the UK, during spring, summer and autumn. In warmer climates overseas, B0s are comfortable at altitudes of up to 3000–3500m. However, they usually have less breathability than a trekking boot. Made of waterproof materials, B0s provide suitable protection from all but the harshest of elements; anything more than an aesthetic, light dusting of snow would cause the wearer chilly toes. The clue is once again in the name – finding yourself doing anything more technical than walking in these boots and you are not using the correct tool for the job.

B1

B1s are all round four-season walking boots, offering enough rigidity and warmth to take you off-path and onto the mountain summits of the UK during spring, summer and autumn months, as well as offering the opportunity for easy winter hillwalking on non-technical

TECHNICAL

	C1	C2	C3
B0			
B1	***		
B2	**	***	
B3	*	**	***
B3 HA	*	**	***
Ski		**	***

TABLE Boot vs Crampon Suitability Comparison Chart. © Alex Kay. 1. Examples of C1-, C2- and C3-rated crampons (right to left). © Alex Kay.



terrain when combined with a C1 crampon. B1s offer enough warmth to venture overseas to altitudes of around 3500-4500m, ensuring all but the harshest of winter conditions are present. B1s are also made of waterproof materials, providing fair protection from the elements, and usually contain a slightly flexible sole and a stiff toe. B1s can also be put to use on technical ground such as easy, un-roped scrambling terrain.

B2

B2s offer enough comfort, protection and warmth for venturing out confidently over long periods in the UK mountains in winter, and overseas to high altitudes. Stiff and supportive, yet with enough flexibility in the upper to sustain a regular walking action. A sturdy sole and a heel ledge allow for compatibility with a C2 crampon, and thus, use on simple, technical terrain. B2 boots may be uncomfortable in high temperatures during the summer months in the UK and are most suited to the winter Munro bagger, the low or mid-grade Scottish winter climber, and the summer Alpinist. Suitable overseas between 4500-6000m on non-glacial terrain, provided that harsh winter conditions/temperatures are not present. Recommended use on glacial terrain not-exceeding 4500m.

B3

B3s are designed for full-on winter mountaineering and mixed/ice climbing. B3 boots are extremely stiff throughout, giving solid lateral and medial support for use in hard, technical terrain in winter months in the UK, and on fairly technical terrain above the glacier line overseas, not exceeding 5500m altitude. Heel and toe ledges provide C3 crampon-compatibility. A B3 boot would offer too much warmth and stiffness to be comfortable on non-glacial terrain overseas and during summer months in the UK.

B3 HA (High Altitude)

Designed for full-on winter mountaineering and mixed/ice climbing at high altitudes.

CRAMPONS

What activity are you most likely to do?

Are you purely planning on winter walking? Do you need something to take you to the highest peaks, or fit onto your ski boots for your next big trip? Or, are you intending on scaling frozen waterfalls and/or mixed, technical terrain? The answer to this question will guide you to the amount and configuration of crampon points that you'll need; the more crampon points, the more technical terrain you can tackle.

Which rating of crampon, i.e. which style of attachment, will work with your boots?

You will need to investigate which style of binding system is

compatible with your boots – Do your boots have toe/heel welts or not? Are your boots B1, B2 or B3 and therefore do they require C1, C2 or C3-rated crampons?

If your boots are only B1-rated but you wish to purchase a set of crampons for technical climbing (C3-rated), then you will require new boots.

How big are your boots?

Certain crampons may only fit certain sizes and you may also need to consider purchasing a longer linking bar if you have big feet.

Crampon ratings

Crampons can be separated into 3 ratings: C1, C2 and C3. However, it is not as simple as matching the crampon ratings to the boot ratings (see the table below for combinations, using star ratings for partnerships), to get your perfect pair. In fact, the C-rating only relates to the style of attachment, and flexibility of the crampon, and not necessarily to the amount or configuration of crampon points.

C1 – Strap-on crampons utilising a toe basket/cage and a heel cradle; Basic crampons, high flexibility, and compatible with B1-B3 boots; 10-point crampons, with less aggressive, typically horizontal, points. Ideal for winter walking or glacial walking.

C2 – Hybrid or Semi step-in crampons (not to be confused with hybrid points) utilising a toe basket/cage and a heel clip; Technical crampon, semi-rigid, and compatible with B2-B3 boots; 12-point crampons, with longer secondary points, and sharper, typically horizontal, front points. Easy to walk in but can still 'climb hard' when needed.

C3 – Step-in crampons utilising a toe bail and heel clip. These only fit to B3 boots; Highly technical crampon, stiff, and compatible with B3 or ski boots only; 12-14-point crampons, with longer secondary and tertiary points, and sharper, typically vertical front points; Offer high performance on steep ice or hard, mixed terrain. From UK grade V upwards, their offer of higher footwork precision will pay dividends. ■



Alex Kay is a Winter Mountaineering and Climbing Instructor trainee, and an International Mountain Leader, working predominantly within Snowdonia, the Scottish Highlands, and the Alps. Alex works privately, providing authentic and adventurous experiences tailored to his clients' aspirations. Alex also

operates on a freelance basis for numerous reputable organisations across the UK and overseas. For bespoke guiding and skills tuition, head to www.alexanderkay.co.uk.

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Countryside changes: *regenerative agriculture*

WORDS BY BEL MYERS, PHOTOS BY SHUTTERSTOCK, UNLESS OTHERWISE CREDITED

Part 1: What lies beneath?



SOIL: Our Hidden Resource

There is a growing realisation that healthy soil is as vital to life as clean air, water and thriving ecosystems. It provides us with food and helps to safeguard those other vital resources. The trouble is, that after thousands of years of human activity, accelerated by farming practices in the last few centuries, soil has become degraded and lost from the land. This is threatening our ability to feed the world, cool the planet and protect our life-giving ecosystems, it is also damaging human health through pollution!

Many farmers believe that by putting the **regeneration of soil** at the heart of their way farming, rather than treating it as just another input along with chemical fertilisers and machinery, they can help solve these global threats rather than compound them. You can spot the signs of this changing approach on farms in lowlands and uplands if you know what to look for. First though, what is the problem and why is change so desperately needed?



MISSING: Muck and Micro-organisms

The key factor underlying soil degradation is the decline of **organic matter** in and above the soil from decaying plants and animals. This matter contains key growth nutrients, which are needed by plants and animals, such as nitrogen and phosphorus. It also feeds what some farmers call '**underground livestock**' – the earth worms, beetles, nematodes and smaller organisms such as fungi and bacteria – which break down the organic matter and turn the nutrients they contain into more readily accessible forms for the next generation of plants to take up through their roots. In exchange for sugars, mycorrhizal fungi (which grow in association with the roots of a plant in a symbiotic or mildly pathogenic relationship) help plants

access the processed nutrients and moisture through thin white cobweb like fungal strands acting as root extensions.

The soil nutrient cycle is entwined with the carbon cycle and is also essential for plant and human life. Plants absorb CO₂ from the atmosphere through photosynthesis then pass the carbon into the soil via decaying organic matter. The soil acts as the second largest carbon sink after oceans. The top 30cm of the soil contains twice as much carbon as that in the atmosphere, so changes in the organic matter content of the topsoil can have a significant impact on the amount of carbon held in the atmosphere.

Human activity from the start gradually removed organic matter from the soil, reducing its micro-organisms and weakening soil structure and its capacity to store carbon.

Hunting, animal husbandry and the evolution of transport and settlements, killed off or restricted the original migratory feeding patterns and movement of animals grazing on grasslands. These activities stopped the distribution of dung and carcasses that had provided organic matter for the soil from animals over large areas, and also reduced the spread of plant species.

The practice of **ploughing**, adopted during the Bronze Age or even earlier, and the removal of plant matter at harvest time, destroyed the extended root systems and deprived the soil of organic matter from plants, which weakened its structure and ability to hold moisture. Leaving the soil bare for long periods between harvest and replanting also made it more prone to heat up, dry out and become subject to erosion. Over time this dryness affected the micro-climate in many areas, as hotter land drove clouds away, and resulted in the desertification of the soil. The catastrophic 1930s dust bowl of the United States mid-



MAIN PHOTO Wild flower border on the South Downs
© Bel Myers. 1. Grass with roots and soil. 2. Soil in hands. 3. Ploughed field in Scotland.

west resulted, in part, from the uprooting of long-established prairie grasses in favour of shallow rooted crops that were more susceptible to the droughts experienced thereafter. Even outside these devastated areas, soil fertility had started to fall and net carbon emissions increase.

The application of **chemical fertilisers** from the late 1800s, boosted crop yields on degraded soils but could not replace the vital, lost organic matter and underground organisms. So, farmers became reliant on continuous application, leading to soil hardening and a further decline in organic content, ecosystems and fertility. The degraded soil structure allowed air and water borne pollution from excessive applications of chemical fertilisers to damage surface vegetation and aquatic life far and wide. The later introduction of **pesticides and herbicides** was similarly damaging.

The rise of **intensive industrial scale monoculture farming**, which used bigger machinery requiring larger fields and the removal of hedgerows, has continued to reduce organic matter in the soil and increase soil erosion. 18% of organic matter was lost from UK's arable soils between 1980 and 1995 alone. Decoupling arable and livestock, and focusing production on a single crop, has reduced biodiversity above and within the soil, which has also weakened natural pollination and a resistance to crop disease. Carbon emissions from heavily cropped fields have increased at an accelerated rate and, to compound the impact on the environment, more fossil fuels are being used to support the making and application of agricultural chemicals and associated machinery.

THE COST: Environmentally and financially

Our food supply: Some experts believe the world has already lost about a third of its topsoil and there are areas in all continents where soil now has a lifespan of less than 100 years. Around 17% of land in England and Wales is affected by soil erosion, with the annual loss of 2.2m tons of topsoil and its associated productivity and nutrients. Food production, especially on degraded soils, is already being adversely affected by the changing and more extreme weather patterns brought about by global warming, and there has been an overall drop in yield of 1% a year. With the world's population estimated to grow from 7.7bn to 9.8bn by 2050, food supply may soon become an issue affecting every country.

Decline of ecosystems: Above and below ground, especially on arable farmland, ecosystems are being seriously impacted. We have lost a huge chunk of wildlife, in falling numbers and species, that used to support farmers to grow a wide range of healthy crops and create healthy environments for livestock. These losses include: the decline of about a third of all species of wild bee and hoverfly

populations between 1980 and 2013, which acted as key plant pollinators; a reduction in nearly half of farmland bird populations since 1970, which helped keep pests in check; wildflower meadows, promoting biodiversity, have all but disappeared since the 1930s; and worms, essential for soil health, are rare or absent in two out of five fields in England.

Pollution: Despite recent reductions, further damage to ecosystems from agricultural chemicals is still significant in the United Kingdom. Agriculture is the leading cause of total nitrogen pollution in the UK's water systems and of air borne ammonia pollution, which adversely affects human and animal health.

Contribution to global warming: Worldwide, agriculture is the second highest contributor to climate change gases which trap heat in the atmosphere. Carbon Dioxide is the longest living of these, potentially locking us into global warming for centuries. 31% of CO₂ from agriculture is generated by livestock and 27% by crop production. An additional 24% is generated from soil disturbance, most of this is through changing grassland to cropland and pasture or by ploughing. The result of this is the release of carbon from the soil at an accelerating rate, and that '[i]ntensive agriculture has caused soils to lose 40% to 60% of their organic carbon' (Defra 2019).

Reducing Farm Incomes and Destroying ways of life:

With higher costs and intense global competition driving down profits and wages, and the increasing number of extreme weather events wiping out income, making a profit from farming is tough and unpredictable. Worldwide, land unsuitable for intensive cultivation, such as in many upland areas, is being abandoned along with local communities. In the UK many smaller farmers rely on non-agricultural activities to supplement their income such as eco-tourism and horse riding.

All this makes for gloomy reading. The good news though is that many farms in the UK and around the world are using a simple approach to tackle these crises with amazing results. It is called **'Regenerative agriculture'** and in Part 2 I'll be digging deeper into how it works, with the help of dung beetles, drones and herb eating cows and sheep. ■



Bel Myers is a walks leader, trainer and writer on the outdoors, personal and global health.

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CLIMATE CHANGE

What we can do to mitigate climate deterioration

Prior to my studies in sustainability solutions, I never saw the relationship between the outdoors and politics. I believed that politics did not belong in the mountains. Walking along Aonach Eagach above Glen Coe, one feels immune to issues outside of foot placements and the study of gathering clouds. We have the privilege of turning our backs on society's problems due to the remoteness of our place of work; yet if we opt into societal empathy, we can evoke powerful change to provide a safe and just space for current and future communities. My previous article evidenced how climate breakdown is irrefutable, then explained the reasons why we must act. I then introduced how professional mountaineers have the ability to protect the natural world. We have the knowledge and skills to perform in difficult locations, so why shouldn't climate awareness become part of our remit?

This article will provide an overview of how we, as professional mountaineers, can act to mitigate climate breakdown. There are two routes to achieve this. First is a top-down approach, whereby government policies dictate the options society has to live; such as subsidised provision of transport, large-scale shift to renewable energy, and investment in pro-environmental organisations. The second is a bottom-up, individual approach: what can we each do to reduce our personal carbon emissions?

The top-down approach

The first approach appears out-of-reach for individuals. How can one person impact government decision-making? The most powerful action one person can take is political leverage achieved through collective action. Pro-environmental campaigns are a proxy voice for communities who cannot vocalise the quality of earth they want to live in. It is a human right to live in a safe and just space. To achieve this, action needs to happen. No human right has ever been freely given by those in power; every example has been taken by the people¹. The abolition of the slave trade through freed slaves speaking publicly in Britain, women's rights and the suffragettes,

and awareness of institutional and individual racism through the Black Lives Matter movement are examples of how systemic change was initiated by a ground-up approach. Certain media outlets argue that the efforts of Extinction Rebellion are fruitless, but since their conception in 2018, public and governmental awareness and endeavour for solutions has rocketed². We have the ability to impact governmental decisions. Read about climate issues from reliable sources (published journals, not the news), build an opinion, use it to fuel your purpose.

The bottom-up approach

There is a narrative suggested by some that to be climate-aware, one must eat nothing but seaweed, live under an Oak and not partake in anything one enjoys out of fear of releasing one gram of carbon, otherwise they are deemed a hypocrite. This should not be the case. We should continue to do the outdoor activities that make us who we are, motivating us to interact with others, build trust and improve the world around us. If we stop doing what we love we will become husks of people unable to perform at our best and in turn hinder positive progression, especially efforts towards mitigating climate degradation. Our roles to facilitate adventure are valuable in today's society; we are the guardians of the outdoors. To allow ourselves to be content will have a greater positive impact on society and the environment than any number of solar panels³.

Positive action

A popular method to reduce one's carbon emissions is to purchase 'environmentally-sound' goods such as reusable cups and refillable hand soap. These work but at a small scale. Some scientists argue that micro-consumerism creates a sense of moral licensing: the idea being that if someone purchases something environmentally-friendly, they feel less inclined to make further efforts to reduce their emissions because of an assumed sufficient effort^{4,5}. It also reinforces a consumerist lifestyle, whereby there is a necessity to buy something



MAIN PHOTO Aonach Eagach. 1. Leading a group in the Picos de Europa. 2. Climate Action Movement. © Marcus Freeman.

that will perform better than what you already have. Therefore, I feel there needs to be an awareness that a purchase like this is an educated decision: do you know the extent that this will benefit the environment? On the other hand, I believe that any positive action, irrespective of its size, is beneficial. Pro-environmental behaviour empowers us to make us think we have the agency to control the quality of the earth for vulnerable communities. This will escalate towards greater alterations in the future.

Flying

So far, I have avoided confronting the elephant in the room. Behind apathy towards climate breakdown, flying is the second most damaging action we can do as individuals. Return flights from London Gatwick to Munich create about 300kg of CO₂e (the 'e' stands for equivalent as not all emissions are in the form of carbon dioxide) and this doesn't take into account the exacerbated impact of emissions released at high-altitude. 300kg of CO₂e also equates to driving from my home in the South West to Fort William and back in an estate car, which also highlights the impact of driving within our lifestyle emissions. My hesitancy towards addressing flying is that I often use planes to access international adventures and work and, as an aspirant International Mountain Leader, I evidently plan to spend more time abroad. I am a hypocrite. Although, there are a few solutions to this enjoyment-versus-environmental conundrum. Firstly, look at other options to reach your destination. A combination of trains, ferries and buses significantly reduce emissions for a trip abroad. Secondly, go for longer to make your flight count: extend that 4-day hut-to-hut route. Clients would happily traverse more of a Via Alpina before flying home. Another option is to flight hop. Longer flights require more fuel to be carried on planes, which is the largest inefficiency of flying due to the additional weight. Shorter flights are more fuel efficient, even when taxiing, queuing and take off are considered³. An effort to reduce flights combined with conscious plane travel can significantly reduce emissions for a mountain-seeking individual.

Carbon offsetting

Carbon offsetting is often perceived as the silver bullet to solve the climate crisis. Offsetting funds a method of carbon sequestration or carbon capture and storage to remove the amount of carbon released by the original activity. A popular example is the planting of trees, which absorb carbon during photosynthesis. Yet it takes trees a long period to reach a stage of growth where they begin to sequester significant amounts of carbon: averaged at about 50 years. If offsetting is to be relied on, emissions should firstly be reduced as much as possible, and the amount of carbon removed must be considerably more than the original activity to provide an overall positive impact.

Conclusion

I hope this brief overview of my thoughts on how to achieve a more sustainable profession is of use. The main takeaway from this article is that we have the ability to reduce climate deterioration. We do not have to sacrifice our passions, but instead look at the world to cultivate empathy and make educated decisions on the extent that we wish to protect current and future generations. We must use politics to achieve our goals, leveraged by our efforts of awareness, discussion, and campaigns. For any queries, thoughts, or arguments, feel free to contact me on Instagram or email. ■

Further Reading

If you wish to explore the topic further, here are a handful of enlightening books. To create a sense of urgency to combat the climate crisis, read *The Uninhabitable Earth* by David Wallace-Wells, who depicts the severe current impacts of climate degradation. To create a sense of hope, read *Climate Justice* by Mary Robinson, who tells the stories of normal people around the world creating positive change. To build sympathy towards future generations, read Roman Krznaric's *The Good Ancestor*, arguing the case for their protection. Some of the data above has been used with Mike Berners-Lee's book *How Bad Are Bananas?*, an entertaining and educational book on lifestyle emissions.

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The IMPORTANCE of ACCURATE and PROMPT incident reporting

WORDS BY DANIEL THOMPSON

ABOVE Summit is Optional. © AMI.

Mountaineering presents some of the greatest challenges, rewards and sense of achievement of any activity, often coupled with breathtaking views, which cannot be described with words. However, whether you are practicing at your local climbing wall, exploring your nearest hill or tackling an ice wall the risks involved will be ever present.

It's important for leaders, instructors and mountaineers to be diligent of the risks associated with mountaineering but to also understand what to do in the event of an incident and the steps to take to protect yourselves from a legal perspective in the event of a claim.

The majority of instructors/leaders will have arranged a public liability insurance policy that protects instructors and members against potential liability in the event of injury to a third party or damage to third party property. This provides invaluable financial security for instructors and leaders.

The insurance coverage is designed to protect instructors/leaders in the event of a claim and as part of this contractual agreement with an insurer, it is your responsibility to mitigate future losses and to support the insurers in defending a claim brought against you. We have listed below a set of guidelines outlining what to do in the event of an incident to aid the defence of any claim brought against you.

Within the insurance sector, you will often hear the term 'Golden Hour' which refers to the hour immediately after the incident. In this hour, it is vitally important to gather all of the material information, including statements and reports, as you can, because trying to recall key information after the first 60 minutes can often be extremely difficult due to various emotional states you as an instructor/leader may go through following an incident.

It is important to remember that any liability insurance is there to defend you and your actions. Clearly, there may be times where accidents occur and fault may be with the instructor, however it is crucial to ensure that a true and accurate reflection of what happened is provided to the insurers and solicitors. Unfortunately, we live in an increasingly litigious world and often mistakes made after an incident occurs have led to claims being overly inflated or paid in error.

5 Key Steps immediately following an incident.

- 1 Injure party safety:** First and foremost, ensure that all first aid and safety guidelines are followed, that the injured party is safe, and there is no possibility of further injury or harm.
- 2 Complete an incident form:** record, log, and preserve the evidence of the event within the incident/accident form. An example of a generic incident report form can be found on the MTUKI website for their courses: <https://www.mountain-training.org/england/incident-and-near-miss-reporting>
- 3 Witness statements:** (independent and injured party) – after a serious event, most individuals will encounter shock; therefore, sensitivity is required when taking witness statements from the injured party or parties and any independent person/s.

It is vital that these statements are completed independently of each other as it can quite often be the case that each person has a different account of the incident in question. To provide a true and accurate reflection of what happened, taking the statements independently allows each party to disclose their version of events. When taking the statements from each party we would recommend stating clearly on the document that this is the 'opinion' of the witness to ensure you do not prejudice your position as you may not agree with the version of events being described.

- 4 Evidence and documentation:** Pictures paint a thousand words, therefore (where appropriate) take photographs of the site where the incident took place, including any equipment or apparatus that may be called upon as evidence at a later date. If the incident occurred in an indoor facility with CCTV cameras, make a copy and retain the CCTV footage.
- 5 Reporting the incident to your brokers:** within every insurance policy are conditions, which must be adhered to enable the insurers to indemnify you under the policy. One of these conditions in a policy is regarding the reporting of an incident either 'as soon as reasonably possible' or in some circumstances within a time restraint such as 48 hours. If these conditions are

not adhered to, it may prejudice your position and could lead to an insurer declining a claim.

Any incident where someone suffers an injury requiring the attention of a medical professional should be reported as precaution.

In addition to reporting this to your insurance broker, you must report this to your association so they are aware of the incident.

In our next article, we will explain the claims journey – the key evidence documents needed and what this entails. ■



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WORDS BY JONATHAN KATTENBERG

Mental HEALTH

Can we do more?



ABOVE "It is not the mountain we conquer, but ourselves." – Sir Edmund Hillary. © Shutterstock.

Are we at a crossroads of discovery to understand what may best suit our expanding toolkit when working with clients and their mental health needs?

Mental health wellbeing and awareness is just one key aspect of working on mental health needs. Other elements that contribute to a stable mind include:

- Psychotherapeutic techniques and how we determine which are most suitable for a client and the right time to refer them to a specialist.
- The possibility to teach and empower clients to attain mental resilience and tenacity to overcome anything they desire.
- Understanding how a client can attain inner peace through clarity on their life journey can mean understanding how to create a strategy to focus their attention and emotional drivers to overcome perceived challenges.

Mental health first aid is vitally important. It teaches us to recognise a problem that is potentially beyond our scope of expertise and signpost people to where they can get the right help, whilst also bringing a sense of calmness to the individual in need. However, like a lot of first aid it can be a 'quick fix' and temporary.

Imagine for you have a cut on your arm. The cut has been left and become septic. Would you put a plaster over it and hope for the best? Or would you clean the wound and then put a plaster on it?

You would hopefully clean the wound first – otherwise the plaster is only covering the wound and not dealing with the real issue of the injury leaving it to fester out of sight.

Another way to visualise it is to think about how tectonic plates shift under the ground. You would not look to build a house on those shifting and colliding tectonic plates, would you? You would aim for solid foundations.

So, why is this analogy useful? Simply put, the mind can work in similar ways. Individuals can leave issues resting for many years (just like sedimentary particles settling deep in the ocean), building a toolkit of coping strategies and escapism in lifestyle choices to get by. Then suddenly something arrives and causes the earth to shake. With their defences weakened the next thing they know all the issues they thought had been laid to rest come back to haunt them! Like sedimentary rock being forced to the surface by those colliding tectonic plates when mountains are formed.

The choice then becomes:

- Expand the coping strategies to try to cope
- Try and change the current situation that has caused the disturbance
- Deal with the underlying causes and all elements that can connect the mind to the triggers of the unwanted ways of being

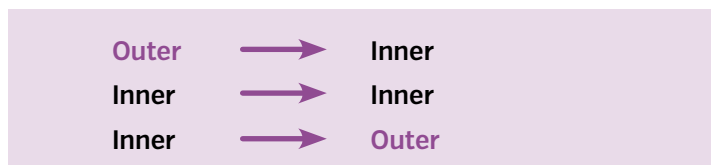
Whilst mental health first aid will help identify what to do at a set moment in time, it is only through a therapeutic process of understanding how an individual is programmed that they can attain mental resilience, tenacity and the strength to achieve outcomes beyond their perceived limitations.

An example of how our outer world influences our inner world through our learnings

Whenever we experience something in the outer world, our unconscious mind translates this through our prior learnings. The diagram shown opposite illustrates the four stages of processing that happen.

We must also address the Locus of Control. It's all very well and good to help someone to understand how their mind is working, but if their internal dialogue is to place the ownership of taking back that control on someone else, they may struggle with lasting change.

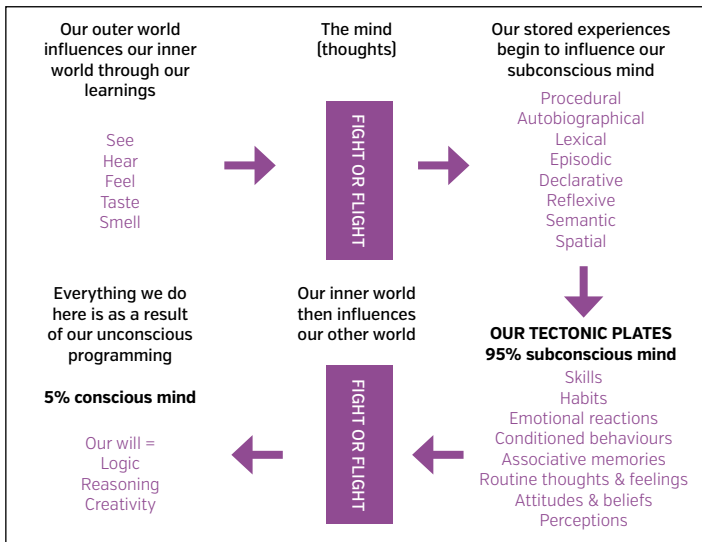
- 1 Our outer world begins to influence our inner world
- 2 Our inner world begins to store this information and ways of living that subsequently influence our deep unconscious programming within our inner world
- 3 That then influences the majority of what we do in our outer world



Equally, understanding any secondary gains for change is also crucial. For some, retaining a state of mind in a low mood state, for example, can bring hidden benefits such as attention, sympathy, etc.

Navigating life for you and your clients

Just like having a map and compass to navigate the hills, do you or your clients have a map and compass of their own personal journey, a sense of direction and goal? If not, this can cause stress, anxiety and



How the stages of processing Information can influence our way of being.

depression, leading to poor life and business choices!

This is an ideal opportunity for outdoor specialists. Those who would be interested in working with clients in this area could consider more specific training to enhance their toolkit with effective mindset therapeutic techniques that are not a one shoe size fits all approach. This has a further benefit of the potential for increased earnings.

The reason for the dual potential here is that many people open up in the outdoors when being guided. Why? Because they become relaxed, their fight or flight mechanism has eased off and they may have a heightened sense of safety and confidence in the leader.

As more people become aware of the health benefits from being in the outdoors, and not just from an escapism point of view, forms of Outdoor Therapy will become more in demand, with specialists working with clients in the outdoors. Yet not all will have the relevant qualifications or experience to lead the client.

The Institute for Outdoor Learning have set out a competence statement with the goal to develop a model that could support organisations and individuals who provide and utilise services for mental health and well-being in an outdoor setting.¹

You can read more by visiting this link:

<https://www.outdoor-learning.org/Good-Practice/Good-Practice/Outdoor-Mental-Health>

This growth area gives scope for those from a more specialist therapeutic background to consider gaining experience as a leader and enhance their offering to clients, as well as for outdoor leaders to consider increasing their therapeutic skills to support their ability to offer effective therapeutic techniques in the outdoors.

One thing is for sure, if the individual hasn't resolved issues of deep routed programming, this can rear its head at the most unexpected moments. When the individual deals with this programming on a deep level, they will perform mentally and physically far better throughout their life.

And, as leaders, we can help. ■



Jonathan Kattenberg is the founder of Walking With My Bear & Life Wealth Coaching and an experienced clinical hypnotherapist with a postgraduate in clinical hypnotherapy. If you wish to explore more details, you can visit www.lifewealthcoaching.com/navigate-your-future/

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How to cope with *no* avalanche forecast:

A guide to writing your own

WORDS BY GRAHAM MOSS

As some readers will be aware, the Scottish Avalanche Information Service (SAIS) produces daily Snow and Avalanche Reports for six areas in Scotland. There are, however, many winter enthusiasts who operate outside these areas, so it seems reasonable to discuss how we can understand the avalanche hazard where there are no formal reports.

The 'Be Avalanche Aware' process is a good place to start. As a reminder, 'Be Avalanche Aware' is an aid to decision-making when operating in the mountains in winter (See Figure 1). The principle is that we consider 3 main factors:

- Avalanche hazard, weather and mountain conditions
- You and your parties' personal skills and experience
- The landscape you intend to visit

Each of these factors are considered during the main phases of our activity:

- Planning – At home in the weeks, days and hours before setting out
- Your journey – Throughout your mountain day
- Key places – At key decision-making times during your journey

In this article we will consider only the avalanche hazard, weather, and mountain conditions as factors for the planning stage, and how we can maximise the benefit of this in the absence of a formal Avalanche Report. This part of the process should account for 75-80% of your hazard evaluation, so is exceedingly important.

Why do we need to know about avalanche hazard?

If we understand **what** the hazard is and **where** it is, we can then plan our journey to avoid these areas. It's really that straightforward. In a formal Avalanche Report, this information is presented in an easy-to-understand format, but, in its absence, we just need to look a bit closer at the information that underpins the Report.

Firstly, where does this information come from? There are two main sources:

Historical Information: A collection of real data taken from personal observations or from weather stations on the ground.

Forecast Information: From a variety of available weather forecasts.

Personal observation from being on the hill is probably the most reliable source of data as it needs little interpretation – you have been there and experienced it! This is understandably less use on your first day out, but after that it can be invaluable.

Second-hand personal experience, obtained either from talking to a friend or colleague who has been out or looking at online forums, can present more of a challenge as the information is somebody else's interpretation of conditions and they may not have the same level of perception or experience as you, which can sometimes make it somewhat misleading.

Weather stations present actual physical data which can be pretty useful, although again may need some interpretation. At a basic level it is relatively straightforward to record the reported temperatures, which can be useful information for understanding snowpack development.

There is a wide network of weather stations operated by organisations such as the Met (Meteorological) Office and the BMC (British Mountaineering Council) as well as by private individuals. An online search will highlight which ones are relevant to the area you want to visit – although that could be an article in its own right!

Forecast data

Again, there are many online weather forecasts available, and everyone has their own favourites. I personally struggle to find one more accurate than the Met Office. They provide computer-generated forecasts for the summit of most mountains in the UK.

The three key influences to look for in any data are temperature, precipitation, and wind (speed and direction).

When should I be looking at the information?

There is little point in starting to look at weather influences on the morning of your trip. What you need to do is build up a picture of the weather history leading up to the day of your activity. Crucially, you should have a good knowledge of the trends in temperature, precipitation, and wind, as these all impact the snowpack and what routes may be safer.



Graham Moss is a Senior Forecaster for the Scottish Avalanche Information Service. He has been writing Avalanche Reports in Lochaber for over 30 years.



FIGURE 1.

What does the information mean?

The crux of the matter is interpreting all of this data, but by going back to essentials, it can be relatively straightforward.

Firstly, we need to understand the relationship between temperature, precipitation, and wind, and how this affects the snowpack.

When we have temperature and precipitation, we can easily work out what type the precipitation is likely to be i.e., snow or rain. When looking at any real-time or forecast temperature, it is important to know what altitude these temperatures refer to. I much prefer talking about freezing level rather than temperature, as this is far easier to relate to the mountain environment. Knowing a temperature and the altitude, it is a fairly simple task to convert these to a freezing level i.e. the altitude at which the temperature is 0°C. We can do this by using the lapse (gradual fall) rate of temperature, which in moist conditions (when there is precipitation) is a drop of 0.5°C per 100m of ascent.

For example, if we use the BMC temperature sensor on Great End in the Lakes at an altitude of 750m, a temperature reading here of 1°C would imply a freezing level of around 950m. If we then combined this with precipitation data, either from rainfall radar or forecasts, we could deduce that we would expect snow above 950m and rain below this level (there will be a band of wet snow probably between 850m and 950m).

Wind is also an important factor in understanding snowpack development. If there is dry snow on the ground, this can be transported by the wind and deposited as unstable windslab in sheltered locations. Any windspeed above 15mph can transport dry snow. So, if we have a freezing level of 950m and some dry snow above this altitude with a 25mph west wind, we can expect snow transportation and probably accumulation of unstable windslab in sheltered locations, which would typically be on eastern aspects.

The key to understanding what conditions to expect is to build up a timeline of the relevant weather influences leading up to your activity. It would be reasonable to start looking at the key influences at least a week before you plan to go out. This should allow you to build up a proper understanding of snowpack development and hazard evaluation prior to your trip.

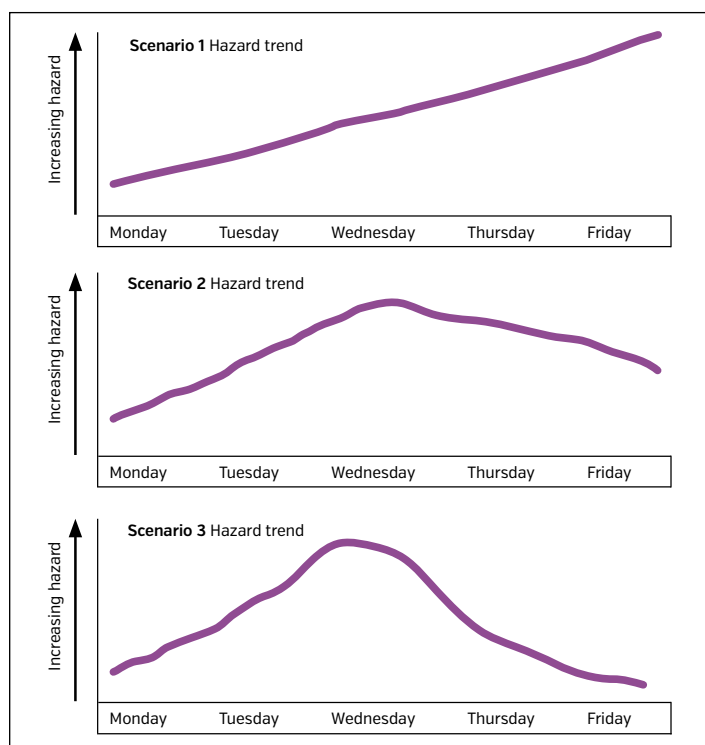


FIGURE 2.

Let's look at a couple of examples:

Imagine you are heading out on Saturday for a day in the winter hills and you start to look at the weather influences during the preceding week. It's mid-winter and you can see from various blog posts that there is a reasonably good cover of snow above 700m, so conditions look promising!

SCENARIO 1

During the week, the wind at summit level is around 20-25 mph from the south-west and there is light to moderate precipitation most days. The freezing level is fairly constant around 850m.

What would you expect the snowpack to be like?

Above 850m on windward aspects (south, south-east and east) you could expect most of the new snow to have been blown off these slopes and that there will be an older and frozen snow surface.

On leeward slopes (north, north-east and east) you would expect windslab development due to new snow and wind transportation. As it has been snowing and windy all week you could expect these windslab accumulations to be fairly extensive and probably unstable.

Below 850m you could expect any remaining snow to be gradually thawing.

From a hazard point of view, you would expect it to be gradually increasing during the week on the aspects you have identified (see Figure 2).

From a route-planning point of view, come Saturday, windward slopes will be frozen and leeward slopes will be unstable, so some careful route choice will be important and it may be worth considering avoiding lee slopes with a greater than 25-30 degrees inclination. You would likely have to wear crampons if travelling on any windward snow slopes above 850m. You would also expect to see evidence of avalanche activity on steeper north, north-east and east aspects.

SCENARIO 2

On Monday there is heavy precipitation with the freezing level at 800m. From Tuesday onwards, it is dry. Winds on Monday to Wednesday are 30mph from the west then on Wednesday evening the winds become light and variable and stay that way for the rest of the week.

What would you expect the snowpack to be like?

On Monday we have heavy snow falling above 800m with relatively strong winds. So, you would expect the fresh snow to be transported on to the leeward aspects where it would form unstable windslab. On Tuesday and Wednesday the fresh snow from Monday is still being transported in the wind, so further windslab development will take place. From Thursday onwards there will be no snow redistribution and the windslab will be gradually stabilising during this period.

From a hazard point of view, you would expect this to increase during Monday's precipitation and then continue to increase throughout Tuesday and Wednesday due to further windslab development. From Thursday onwards you would expect the hazard to gradually reduce (see *Figure 2, page 31*).

From a route-planning standpoint, come Saturday, the windward slopes will be frozen (as in Scenario 1) and there will be fresh windslab on leeward slopes, but you would expect a reduction in hazard as time goes on so it may be possible to travel safely in these locations, although local variations may dictate careful route choice. You would expect to have to wear crampons if travelling on any windward snow slopes above 800m. You might also see some older avalanche debris from earlier in the week.

SCENARIO 3

On Monday through to Thursday there is heavy precipitation before it becomes dry on Friday. The freezing level is at 750m during Monday and Tuesday then rising to 1500m on Wednesday morning and remains above the summits throughout the remainder of the week. Winds are strong from the north earlier in the week before becoming light and variable.

What would you expect the snowpack to be like?

You would expect to see significant windslab development early in the week especially on leeward slopes above 750m. As the freezing level rises, the snowpack will become wet at all levels.

From a hazard point of view, you would expect it to increase during Monday and Tuesday due to fresh windslab development and further increase on Wednesday morning as the freezing level rises. This will be the period of highest instability. After around 6 hours of rain, the hazard would start decreasing and when the precipitation stops it will further decrease (see *Figure 2, page 31*).

From a route-planning point of view, come Saturday you would expect a thawing snowpack at all levels with very little hazard, so safe travel on all aspects should be possible. You would also likely see old wet snow avalanche debris from Wednesday.

Planning and recording

There is quite a lot of information to try to remember so it's easier to write things down. Various planning sheets are available (see *Figure 3*), or you can make up your own. These are especially helpful for getting information down in a logical manner and can be good to share and discuss with your companions so they can understand your decision-making process.

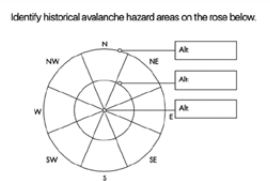
It's also quite easy to practise these skills. To have a go, use the published SAIS reports for a specific area as the starting point.

03
PLANNING

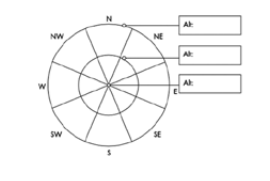
At home in the weeks, days and hours before setting out.

❄️
Avalanche hazard, weather and mountain conditions.

Historical snowpack and weather information history

What has happened in preceding months/weeks/days?	Identify historical avalanche hazard areas on the rose below.
Have you identified any historic and relevant problems or key stability factors from the past?	
Have you identified any historical key snow stability factors/problems from avalanche reports and other information sources?	
Have you seen any relevant icons (eg persistent weak layers) in avalanche reports that identify historical key snow stability factors/problems.	

Current snowpack and weather information

Public Avalanche Hazard Forecast or your forecast considerations?	Identify any current avalanche hazard areas on the rose below.
Wind direction	
Wind speed	
Temperature	
Freezing level	
Precipitation	

Circle any relevant key snow stability and hazard factors for your excursion.

FIGURE 3.

Then, without looking at the Avalanche Forecast, obtain a weather forecast for the specific region and try to determine what the snow conditions are likely to be the following day. You can then compare what you have worked out with the published forecast. As your confidence and experience grows, you could try the same exercise but working out what is happening to the snowpack over a number of days, before looking at the published report.

As mentioned earlier, the planning phase accounts for 75-80% of what is required to do a good hazard assessment. The remaining 20-25% comes from observations on the hill when doing your activity. This information is equally as important. What we are looking for are visual clues as to what snow conditions and hazard distribution are like in reality. It is essential that we approach this with an open mind. What we don't want to do is use visual clues to reinforce our original assumptions. Instead, we should be questioning, challenging and testing our assumptions and then adjusting them as we go along. On the smaller scale, we would also be looking for localised anomalies in hazard and snow distribution caused by local weather and terrain features.

As you can see, the process described above for evaluating avalanche hazard is very logical, and is the same process forecasters use when preparing to go on the hill to write a formal Avalanche Report. The advantage of the SAIS Avalanche Report is that it is written using a wealth of experience and local knowledge with a continuous understanding of snowpack development throughout the winter. If there is a SAIS Report available for the mountain area that you are planning to visit, then it is a very useful resource. But if you are planning to visit an area not covered by the SAIS then hopefully you will now be better prepared! ■

This article was prompted by materials submitted by Mountain Training Association member Tony Page and we asked the Scottish Avalanche Information Service to produce some guidance for avalanche hazard forecasting, particularly for areas not covered by avalanche forecasting areas.



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Libby Peter
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 and mother of two





Winter wildlife PHOTOGRAPHY

WORDS AND PHOTOS BY GARY HODGSON

Winter in the Scottish mountains has long been a passion of mine. Dealing with the challenges presented by harsh winds, deep snow and plummeting temperatures has been part of my development as a mountaineer as well as a photographer. Spending time in the Cairngorms (in particular) has meant that I have had the pleasure of getting to know those creatures that have no respite from those same wintry conditions and yet continue to thrive.

You may think camera-related skills would be the first thing to consider before venturing out to capture wildlife in the mountains. However, there are a few other areas we need to think about: Navigation, Fieldcraft, Clothing, and Equipment.

Navigation

It is unlikely that wildlife will be found near the well-frequented routes you take to gain the summits. You will probably have to venture off recognised paths to find your subjects. For this, you need to have confidence in your skills with a map and compass. In an ideal world you will be taking photos on a nice clear day but, as we all know, the weather can change very quickly. I spend a lot of time 'micro navigating' using specific boulders, rocky outcrops and the steepness of ground to reach the wildlife locations I visit on a regular basis.

Fieldcraft

In general terms, fieldcraft can be described as 'the techniques involved in observations in the field while remaining undetected'. However, being seen by your subject is often an advantage, particularly for the mountain hare. A slow, cautious but visible approach is vital in order to gain their trust.

When I first catch sight of a potential subject, they may be over

200 metres away. Moving quietly and slowly and keeping as low to the ground as possible, it can take up to 30 minutes to reach them. The comfort and wellbeing of the animal is paramount and certainly more important than getting that great shot.

Clothing

Whilst on the hill you will be sitting or standing about for long periods of time, therefore lots of warm clothing is essential. I usually wear winter mountaineering boots for warmth. I take several pairs of gloves and, depending on the conditions, I might even take a pair of crampons. A piece of sleeping mat can be useful if you need to lie down in snowy and wet conditions. I usually have a hot flask of tea too.

The Equipment

Photographing wildlife can require a bigger financial commitment. A good telephoto lens is essential, and they can be expensive. I use a mirrorless camera and telephoto lens. Mirrorless cameras now offer equal or even superior image quality to the traditional DSLR (Digital Single-Lens Reflex). Mirrorless camera bodies and lenses are lighter and less bulky. For close-up work on smaller species, the telephoto lens should be 100-400mm. Personally, I never carry a tripod as I find them noisy and time-consuming to set up. Most modern cameras and lenses have image-stabilising technology. On windy days, I use my rucksack to keep the camera steady.

You can often get good deals buying second-hand equipment, as many photographers regularly upgrade, selling their cameras and lenses as soon as the latest versions appear on the market.

A good pair of binoculars are also an essential item to have with you.



MAIN PHOTO Mountain hare running. 1. Male ptarmigan with supremely adapted 'snow shoes'. 2. Snow bunting high up on Ben Nevis. 3. Getting down low is a great perspective of their world. 4. Our fastest mammal taking it easy for a change 5. Crested Tit. Another specialist of the Caledonian Pine forest. 6. Hen Ptarmigan. Good contrast of background colours gives some nice images.



The Subject

Given the natural habitat, the terrain and the weather conditions, it is essential we manage our expectations before we set out. It is a good idea to do some research. The snow bunting might be found in a very different place from the ptarmigan or the mountain hare. Wildlife guidebooks and websites are an excellent resource to get an idea of locations. There are also plenty of blogs and social media posts of fellow wildlife enthusiasts to inspire and inform. I still think the best way to gather information (and the most enjoyable) is to put the hours in and do the fieldwork yourself.

Mountain hare (*Lepus timidus*)

This is one of the most photographable animals in the hills and mountains. They are true characters, and everyone loves them. The mountain hare is our only native species of hare. The pelage (or fur) changes throughout the year and is almost completely white from November to March. Unlike rabbits, hares do not live in burrows or underground.

Instead, they rest and sleep at a 'form' out in the open. These forms are little more than ledges, peat hags or gaps among boulders.

Ptarmigan (*Lagopus muta*)

The ptarmigan (also known as the rock ptarmigan) can only be found above 500 metres in the Scottish mountains. Their plumage changes throughout the year from brown/grey in the autumn to almost completely white by November. They rest and conserve their energy for the coldest, snowiest part of the year, which means they tend to stay on the ground and can normally be found in the same location as their usual breeding grounds in Spring. Their unique adaptation to the environment through their ever-changing camouflage and their resilience makes them thoroughly absorbing characters to photograph.

Snow bunting (*Plectrophenax nivalis*)

Another mountain specialist that can be regularly seen in the Cairngorms and other high mountains. On snowier, windier days





7. Red squirrel, great characters and nicely contrasted on the snowy branches. 8. Crested Tit. Getting them on a nice perch with a snow covered branch. Patience rewarded. 9. Cairngorm reindeer, our 'semi-wild' creatures are often good subjects and easier to get closer to. 10. Ptarmigan 'croaking' a wonderful sound. The gaelic name for this bird is Tarmachan which translates as Croaker.

they tend to come to lower altitudes, often seen scavenging from the ground where humans leave food scraps. On that subject, I never 'bait' wildlife to get my photographs. That is a personal choice. I prefer not to risk influencing their long-term behaviour patterns.

On bad weather days, I spend time below the treeline where I can photograph other iconic species such as the red squirrel and the crested tit. There are companies that operate hides where you can pay to observe and photograph wildlife. These can be great places start to your wildlife photography journey.

Red squirrel (*Sciurus vulgaris*)

In my book, this is the 'second-most adorable animal' to photograph. Near the Cairngorms the best areas to see them are in the Rothiemurchus and Abernethy forests. A recent fall of snow to low levels can give a lovely snowy background.

Crested tit (*Lophophanes cristatus*)

The 'punk' of the bird world. These distinctive birds are only found in the Cairngorms and are another popular species for wildlife photographers in the area. They dart about quickly but are always worth the effort.

Wildlife photography is a thoroughly absorbing activity. For me, the overall experience of spending hours up close with nature is the most memorable and rewarding part of it: the images are only a snapshot of that time. ■



Gary Hodgson runs Wildlife & Landscape Photography Workshops in Aviemore at the foot of the Cairngorms. www.garyhphotography.com. He is a Winter Mountain Leader and International Mountain Leader and runs mountain walking, navigation courses and winter skills alongside his photography courses. www.tarmachan-mountaineering.org.uk.



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get inspired

Tim Nell on top of Crib Goch's Crazy Pinnacle,
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ABOVE Rebecca Williams coaching at the Youth Climbing Symposium.

COACHING MENTAL SKILLS *for* CLIMBERS

So, you want to coach mental skills for climbers. What do you need to consider for safe and effective practice?

It's been fantastic to see interest grow in coaching mental skills for climbing over the last 15 years since I started working in this field. Mountain Training launched its Coaching qualifications a few years ago, with the top-end Performance Coach Award having a dedicated mental skills module, and the awards are evolving to take climbers' head game into consideration from the outset. When you put this alongside increased recognition across sports of the key role that psychology plays, the time is ripe for an uptick in demand from climbers to help them become stronger both physically and mentally. So how do we as coaches ensure that our practice in this area is safe, effective and right for our clients?

Key considerations for coaching mental skills

a. Relationship skills

If you want a climber to open up about what is really bothering them and the content of their

head, you are going to need top-notch listening and questioning skills. In every study of therapy and coaching, the single most effective ingredient is the coaching relationship. Key skills here include: the ability to build rapport, reflective listening, asking open questions, knowing when to stay silent and wait, and the ability to summarise, memorise and reflect on the information you have been given.

It should go without saying that any information the client gives you should be kept confidential and not form any part of your marketing or publicity for your business without express permission – trust is a vital component of building an effective coaching relationship. Also think about the way you ask questions; are they designed to explore and seek out the *client's truth* so you can gain a shared understanding of the issues at hand? A style of questioning called Socratic questioning (where the questioner professes ignorance of the subject and asks the other to elaborate or explain)

WORDS BY REBECCA WILLIAMS
PHOTO BY ED WONG



Dr Rebecca Williams BSc DClinPsy CPsychol runs Smart Climbing, offering performance psychology coaching for climbers and CPD for coaches and instructors. She runs regular free reflective practice workshops for coaches and instructors online and face to face – contact her at info@smartclimbing.co.uk for the dates of the next workshop.

is often used in therapeutic or coaching interactions as it aims to deepen understanding rather than wrap up or close down conversation so is more effective than closed questions.

b. Know yourself ... and your limits

Since the relationship in coaching is key, then understanding what we ourselves bring, in terms of our history, our relating style and our own assumptions/ beliefs, is vital. As Donald Rumsfelt put it (badly!), there are known knowns, known unknowns, unknown knowns and unknown unknowns. He was referring here to something called the Johari window, which helps us to understand that there will always be information and knowledge hidden to us, including knowledge of ourselves; this is where engaging in reflective practice can be really helpful. Attending a group-based reflective practice session may be daunting, but the facilitator should create a safe environment where you can pose questions, discuss your own approach, and, with some gentle questioning and exploration, illuminate any hidden corners of your practice. Keeping a reflective practice journal, where you spend time thinking about all the elements of the coaching session including your own reactions and responses, is also helpful in developing as a coach.

c. Take a good history

If there is one thing I have learnt over the last 20 years of being a clinical psychologist and performance psychology coach, it is the absolute imperative of taking a good history

If you cannot see how the client's problem started, is being maintained, and why they have adopted the coping strategies they have, then you do not have enough information to start coaching them. Our personal stories are a combination of our background, learning experiences and environmental influences – our story may not make sense to others, but that is because their background, learning experience and environmental influences are different to ours.

So, if you do not understand your client's 'story' and cannot see how they got from being a happy beginner climber to the person who is now terrified on the lead, then you simply do not have enough information, yet.

At a basic level, good starting points are: asking what the problem is; when they do and don't experience it; how it shows up and how often; things they have already tried; and what goes through their mind when they are climbing. You should avoid trying to outline why they are having this issue until you feel you have all the details. You should be able to draw out a pen picture of what the climber's issues are in a way that they say, 'yep, that's me exactly'.

Taking a good history includes asking about accidents, incidents, and trauma, either by direct involvement, or as a witness. Post-traumatic stress reaction/disorder (PTSD) is likely under-reported in climbers, and given how common it is to witness even minor accidents, it's crucial to understand the impact on your client at the time and how it may still be impacting them now. Ask if they have images popping into their minds about the accident, any repetitive or intrusive thoughts or sudden panics when climbing. If the answer to any of these is 'yes', then you should strongly advise your client to seek some qualified help – direct them to the British Association for Behavioural and Cognitive Psychotherapies (BABCP) to find a therapist who can offer EMDR (Eye Movement Desensitisation Therapy) or TF-CBT (Trauma Focused Cognitive Behavioural Therapy). This doesn't mean that you can't work with them, but I would proceed with caution and avoid anything which may re-trigger memories and thoughts of the traumatic situation (which may likely rule out falling practice).

You also need to ask about current stress levels and whether they receive any support for mental health problems. This is to enable you to find out what helps your client and what triggers their difficulties, so that you can build on the former and avoid the latter. It will also help you understand what is manageable for them right now. Coaches often worry about 'opening up a can of worms', but, in my experience, adult clients are able to regulate how much or how little they tell you, and your job is to respect that trust, listen attentively, and keep what they say confidential. Another worry can be saying the wrong thing; here the only wrong thing to do is to give advice, whereas the right thing is to listen with respect, an acknowledgement of what they are saying and to offer an empathetic response. Nothing more is required of you. You can also simply ask the client what they would find helpful.

If you would like to learn more about this area, then a mental health first aid course may be useful to you.

So what are you going to coach?

There isn't a whole lot of research on key mental skills crucial to climbing, but what does come up is route previewing skills, visualisation, focusing, problem solving and developing self-efficacy (confidence specific to the task in hand). These are all relatively easy skills to coach, and there are plenty of books, articles and research protocols to guide you in this respect, also, there is less chance of something going awry psychologically speaking. I, personally, would be cautious about teaching mindfulness skills to climbers unless you have a strong practice yourself, as they are not effective for everyone, but also can be harmful in some instances without proper guidance.

Probably one of the commonest skills or issues I see coaches attempting to tackle is a fear of falling. Done well, coaching someone to manage

a fear of falling can be liberating and life changing; done without due consideration to the climber in front of you, their history and the content of their worries, or the psychological theory behind overcoming fears and phobias, coaching can make matters much much worse. There are easier mental skills to learn how to coach than falling practice and that is not always the right solution for a fear of falling, so proceed with caution.

Understand the psychological theory

If you know what you want to coach, then do make sure you understand the psychological theory behind the skills you are coaching. If you are looking online, there is a commonly accepted hierarchy of evidence; meta-analyses or systematic review papers are considered gold standard, and research articles published in peer reviewed journals hold sway over books, blogs and even 'common coaching practice', since many of these practices may be outdated according to our latest understanding – practice on the ground tends to move much more slowly than research. Google scholar is a better place to start than UKC! (sorry UKC!). If you don't fully understand what you are reading, you can discuss it with another coach, or even email the authors to ask for clarification. If you can't unpick and articulate what you are doing and why, then you will not be able to adapt it to meet the particular needs of the client in front of you.

Insurance

Before taking on that first client, do check with your insurer what activities they will cover. Not all insurers will cover sport psychology or the mental skills for climbing; of course, in practice it is difficult to separate out these elements of the coaching experience, but it is better to check and clarify – as different insurers may have different definitions of what is mental skills/psychology coaching and what can fall under the remit of general coaching.

Final thoughts

Coaching the mental side of climbing can be extremely rewarding. At present there is no legal obligation to have a certain qualification to do so, but you do need to make sure you are competent and insured. Be careful what you call your service and be clear about what you can and can't offer. 'Sport psychologist' is a protected title and you need to be registered with the Health Care Professions Council (HCPC) to use it, but this also extends to offering 'sport psychology services'. If you are not registered with the HCPC, then it is illegal to say you offer sport psychology coaching and you could face prosecution. Be sure to thoroughly understand the theory behind what you offer, consider expanding your skills by engaging in reflective practice or seeking supervision from a sport psychologist, and do check out the Development and Performance Coach awards and consider joining UK Coaching, which is a great way to develop your skills. ■

Resources

- <https://babcp.com>
- Hay, J. Reflective Practice and Supervision for Coaches
- <https://www.mountain-training.org/qualifications/climbing/coaching-scheme>
- Jowett, S [2005] The Coach Athlete Relationship *The Psychologist Vol 18* (7) p412 - 414
- Perry, J [2017] Performing Under Pressure: Psychological Strategies for Sporting Success. Routledge: London & New York
- Seifert, L; Wolf, P; & Schweizer, A [2017] The Science of Climbing and Mountaineering; Routledge: London & New York
- <https://www.ukcoaching.org/resources/topics/guides/subscription/understanding-the-johari-window-thinking-tool>



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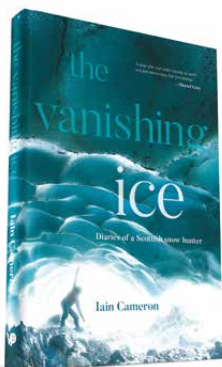


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BOOK REVIEW



THE VANISHING ICE – DIARIES OF A SCOTTISH SNOW HUNTER

By Iain Cameron

Reviewed by Gary Hodgson

Anyone who regularly walks in the mountains of Britain will no doubt have observed occasional snow patches lingering on some of our highest peaks in summer. They have definitely not gone unnoticed by one man in particular who has been fascinated by these ‘remnants of the Ice Age’ since boyhood.

Iain Cameron’s new book, *The Vanishing Ice*, is an insight into his fascination and recording of the phenomenon of snow that persists throughout the year on our mountains. He reveals another side of snow, the snow that survives year-round.

I first became acquainted with Iain Cameron in 2011, via Facebook. He informed me of what he does in his spare time, a study of Scotland’s remaining snow patches. I joined him for a day out on Braeriach. He’d dedicated his weekend off to measure the size of one of the few remaining snow patches which was lying in a high, remote corrie on Britain’s third highest mountain. On our day up the hill Iain chatted constantly about anything and everything snow. He was certainly enthusiastic. We stomped up the mountainside, he, a man on a mission. Eventually we arrived at the cliff edge of the huge Garbh Choire Mor. The cloud and mist drifted up from the abyss and Iain casually commented, ‘I don’t really like heights’, yet before I had chance to contemplate the route down, he was scrambling into the void, descending steeply to the snow patch somewhere out of sight far below.

The Vanishing Ice is a compelling read and an insight into Iain’s commitment, enthusiasm and passion for the study and recording of the remaining snow patches on Britain’s mountains. The book is

excellently researched and chronicles the first recorded observations right up to present times.

Cameron has undoubtedly raised the awareness of snow patches surviving in the mountains to a much bigger and broader audience than anyone else in the last 15 years or so. Social media, television programmes and the general public’s growing interest in weather, snow and ‘climate change’ has also certainly helped. The book gives an in-depth and detailed account of the work he carries out and what that entails.

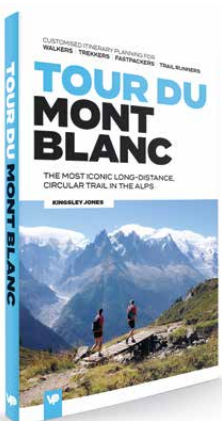
The Vanishing Ice is a fascinating perspective on the effort, time and commitment required to measure, record and monitor these relics from winter. It will engage the public whose interest may range from the avid mountain enthusiast to the armchair reader. He does a terrific job of reaching out to all without too much technical jargon.

What brings the book alive for me are the various trips into the mountains which he makes on a regular basis. These accounts are described brilliantly and gives the reader a taste of the vigorous endeavours required to reach these snow patches and doing so in all kinds of weather. Many of the mini expeditions he embarks on he does alone. The time and effort to reach the snow are in areas where most hillwalkers would never venture and are full days out, many in difficult to access locations.

Iain describes some humorous and some more stressful days out with groups of people who have tagged along with him in his forays to record the snow patches. These stories confirm the serious undertakings which are required to get to these locations.

I certainly look at summer snow in a whole new light since reading his book and also following Cameron’s social media posts. Over the last few years, I have become intrigued with snow tunnels especially, these are some of the most beautiful creations of snow that survive in the summer.

The Vanishing Ice will give the reader a very different perspective on snow. ■



TOUR DU MONT BLANC

By Kingsley Jones

Reviewed by Alan Ward

Back in 2015 I led a group on the Tour du Mont Blanc (TMB) for Ramblers Worldwide Holidays. With no significant experience of the TMB it was all rather daunting, and I wouldn’t have gone but the scheduled International Mountain Leader (IML) had to withdraw at short notice.

I survived the experience without any great difficulties but thought the information I had to work with was fairly limited.

I recently saw a new guidebook by Kingsley Jones (IML) which I’ve really enjoyed reading. If it had been available in 2015 it would

have made things a lot easier back then.

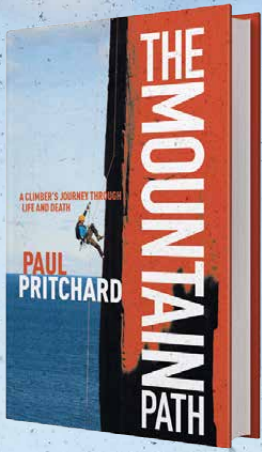
I enjoyed Kingsley’s *Tour du Mont Blanc* so much that I’m planning on another TMB next year.

Likes: An easy-to-read format packed full of information and maps with interesting route variations which I’ll incorporate next year. Kingsley has guided on the TMB over 50 times, and this is reflected in the contents which includes day to day tips such as features of interest and where the best cakes can be purchased.

Dislikes: I haven’t got much to say here really, apart from a few very minor points, e.g. At Col des Monets (WP136) there is no mention of a small information centre with a café where the TMB crosses the road. This was a useful place to stop whilst we waited for the bus. That’s about it.

Note: There is an accompanying Guidemap (ISBN 9781912560974 – £14.95) which includes a GPX file download. ■

The Guidebook and Guidemap are available from www.v-publishing.co.uk



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