FOX'S GUIDE
TO FIELD GEAR

A comprehensive guide to selecting gear for your adventure

HAMISH FOX

Fox's Guide to Field Gear

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Salkantay Track, Peru

Fox's Guide to Field Gear

Welcome to the Tegere Outdoors guide to field gear. We aim high with this publication and hope to answer the most common, and even some obscure questions you might have about what gear to use outdoors. If you are heading bush for the very first time we think you will find this helpful. But so too even if you are deeply experienced in the ways of the outdoors. If you can't find the answer here, just send us your question. We love to help.

The Tegere team all started outdoors by crawling outdoors. We were blessed with those sorts of childhoods. I grew up on the outskirts of Melbourne in bush suburbs with bush excursions part of our daily life. I have spent more than a decade in the outdoor retail trade and spent time in the Australian Army getting a slightly different view of gear availability and use.

I have a passion for the 'nuts and bolts' of gear and want to know why something works the way it does. I won't bore you with science through this book. But I will attempt to explain the rationale behind performance, and how the science might shape my view of a product. And what I promise not to do is commend a product because I've spent $800 on it. The cost of a product is not necessarily reflective of the value of a product, something I am sure we have all discovered when asking others about their views on outdoor gear. Sometimes the best gear is the gear you have made or improvised yourself and has not cost you anything.

I hope you enjoy the resource and find it helpful in your gear deliberations.

Hamish Fox

p.s. if I recommend anything it's because I like it and have found it functional and enduring, not because anything in here is sponsored.

While this book aims to educate, you will also find my observations and commentary aims to support local, ethical and quality manufacturing. I'll consider quality, durability, necessity, longevity, price, functionality, purpose and practicality.

The following people have commented, offered views, critiqued and otherwise contributed to this eBook. Between us all we have trekked in Australia, New Zealand, Tanzania, Kenya, Jordan,the UK, Alaska, Afghanistan, India, Nepal, Canada, Argentina, Peru, and PNG to name a few places. Thanks to you all.

Chris Gersch, Michael Reidy, Kavitha Lyman, Bruce Lyman

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What type of outdoor person are you?

When I am day dreaming I often get carried away and think I will be the next person to summit Everest, or that I will be half-way through the Australian Alps Walking Track before Christmas. The reality is I most likely won't be. That's partly due to the current state of the world let alone a swag of other limiting factors.

Sometimes I look at my hiking gear cupboard and wonder if I need the two tent flys, two tent inners and the two different diameter tent poles or the six pair of hiking boots and any number of different rain jackets. They all serve some kind of purpose on some type of adventure. And they do allow me to tailor my gear for a season or a trip. Or both.

I would say that I am somewhere between Intermediate and Advanced. Why do I rate myself here? Well, I don't get away anywhere near as often as I would like and when I do go away it's usually for no more than two or three nights. And while people often think I'm an advanced hiker that might just be relative to their position in the hiking fraternity.

How often will you go outdoors?

This raises another point. You don't have to be hiking and camping to be considered outdoorsy. Just being outdoors more than qualifies you to be decked out in spiffy outdoor gear. So whether you are walking to the shops or conquering the Overland Track we will explore many options for different facets of adventuring. Of course, what you wear on a daily basis can differ to what you might be prepared to carry with you on an overnight hike.

It wasn't always thus. One of the first records of 'bush walking' in Australia is found in a letter dated 1788 from George Worgan to his brother Dick back in England, written only four months after the first fleet arrived in Port Jackson. Listen to an exuberant George recount his 'ramble' and check his gear list.

We sometimes put a Bit of Salt Beef, or Pork, or Bisket, a Bottle of O be Joyful, in a Snapsack throw it over our Backs, take a Hatchet, a Brace of Pistols and a Musket, and away we go scouring the Woods, sometimes East, West. N.S. if Night overtakes us, we light up a rousing Fire, Cut Boughs & make up a Wig-Wam, open our Wallets, and eat as hearty of our Fare as You, of your Dainties, then lie down on a Bed, which tho' not of Roses, yet we sleep as sound as You do, on down; I enjoy these little Rambles and I think you would, however, I think it is hardly worth your while to come and try them.

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Will you be day-walking or overnight hiking?

The transition from day only walks to overnight walks marks the point where things begin to get costly. The amount of gear required for day walks as opposed to multi-day hikes or overnighters is substantial . However there are often items left behind on day walks that I firmly believe shouldn't be forgotten. See our day hiking load list in Annex A at the end of this book and our overnight hiking load list at Annex B.

Who are you walking with or are you going it alone?

If you are heading out with an experienced walker chances are they will have chewed your ear off about gear already. There is no such thing as too much information in the outdoor gear world. You will always be learning and hearing things from people with different levels of experience. Lots of gear has evolved over the years but there are some tried and tested methods that even the oldest bushies can hand down (even if they don't let fashion get in the way).

You should always be geared to survive on your own (if walking with others always apply the thinking 'what kit do I have on me if I get separated from my partner or the group?'). But there are some things that can be shared and that is always a good thing.

Are you on a budget?

We are all on budgets. Priority and capacity will shape just what that budget looks like. Good gear does not have to cost an arm and leg. But even where gear might be too costly there are options to get you through. As students with little money to spend on gear we focused on staying warm so had clothing to suit. We had some hand me down sleeping bags and used a small folded tarp to sleep in because tents just were not an option. Our priority was to get into the bush, and we shaped our gear around that. If our priority had been to be comfortable, well we would never have gone camping at all. I'll share some budgeting tips for you throughout the book.

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Importance of Supporting Local

I know we all want to support local businesses but often it's easy to simply pick up some gear in a big retail store, or on-line. There are some good reasons to support local and take the time to do so. The first reason is the obvious one - that you are supporting a local business which in turn is supporting our economy.

The people who work in outdoor retail are most likely to be enthusiastic outdoors people. That usually means they'll be more than willing to chat to you about your adventure and to try and help kit you out with appropriate gear. Obviously they will be looking to sell product from within that store but every now and then you will get an honest individual that will even send you up the street if they identify the need.

An example being a customer looking for a $300 2 person tent walks into a high end hike store with nothing under $500; rather than try and up-sell them they might direct the enquirer to a store that will accommodate the budget. It does happen. Chances are they once owned a cheaper tent themselves when they were starting out so can also offer some real world advice.

Retail workers in the outdoors industry also attend training events, seminars and are always talking to sales representatives about new and emerging gear.

Supporting local doesn't just mean only buying locally manufactured gear but we believe it is also shopping in stores owned by locals rather than shopping in 'big box' retail outlets. It is likely they started their business - be it on-line or bricks and mortar - out of passion for outdoors and it's important we try to support that passion and that business wherever possible.

Where Do we Start?

Let's start by getting dressed for adventure. For some people, every day is a hiking clothes day. I'm very guilty of that approach. While there are many important differences between clothing for adventure and clothing in general, many everyday pieces of clothing might just be suitable to get you started. You don't actually need a lot of special gear to get started in this sport. That can at least help your budget.

Let's start with the inner layers and work towards the outer layers. The stuff you want to wear is usually the stuff we all talk about around the fire. I'll then consider the things we sleep in and the things we sleep on - a close second in the chat subject stakes. I'll then address packs followed by safety gear. Then repair gear, often overlooked until the sole comes off a boot two kilometers into a 36km walk off Aconcagua. Finally, we'll cover off on all the other things we want to throw in our packs at the last minute.

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Clothing

Material Used

If you would like to jump straight to the fun stuff click here. You can always come back to this reference section later.

Before we get into garments proper let's think about the materials used. Let's begin with day trips, walking around the block and just general outdoors stuff. Lots of clothing is made from cotton and I love wearing cotton tee shirts, until I start to sweat. They quickly become damp and then can actually cool you too rapidly when you are done with the exercise. I would wear cotton for walking the dog on a sunny day or in the warmer months where it will in turn dry out the sweat. Some alternatives to cotton are polypropylene, merino, Lycra and polyester. Let's quickly explore the differences of each of these.

Cotton

'Cotton' is derived from the Arabic 'quton'. The cotton we wear starts as a fluffy fibre wrapped around the cotton plant seed. That is, cotton is a natural fibre. The fibre structure is open and fibre length is variable, attributes which lend to the qualities which make it attractive - its softness, durability, absorbency, breathability and the fact that it has no 'static cling'. Pima cotton, from South America, is the 'prime' cotton and is extra soft, but more importantly extra resistant to fading, tearing and wrinkling. Egyptian cotton is similar to pima but originates from Egypt. The most common cotton type which makes up about 90% of the world's cotton is known as Upland cotton. It originates from Central America. Cotton has been in human use for more than 7000 years. Australia produces around 3% of the world's cotton but is the third largest exporter, behind the USA and India.

Pro's and Con's of Cotton

Pro

- Less prone to 'crutch rot'
- Probably more options to chose from as cotton is a popular textile

Con

- Rapidly cools when wet - dangerously so
- Garments not always designed with trekking in mind

Polypropylene

It ends with -ene so that tells you it has a hydrocarbon base. Or, if you like, it comes from oil. Not sunflower oil but the same stuff from which your petrol and diesel is derived. It's the second most popular plastic on the planet and is mainly used in packaging. Clothes are a form of packaging I guess. One of it's attributes is that it resists fatigue so it's used in plastic hinges such as that flap on your box of Tic Tacs. It is a plastic so it does melt, and at quite a low temperature of about 170 degrees C. You may have already discovered that embers and sparks from a fire will leave small holes in polypropylene fabrics. You need to take care around any fire with any synthetic clothing.

Its uses are very diverse. It's the plastic used in model aircraft, in food containers, medical devices, trading cards, bottle tops and so on. Because it absorbs water it is used in sanitary napkins and nappies/diapers. And it's for that reason that it's used in cold as well as warm weather clothing as it draws sweat away from the skin. A downside is that it retains body odour.

Pro's and Con's of polypropylene...

Pro
- Strong
- Light
- Strong moisture wicking properties
- Warm

Cons
- Flammable
- Can get stinky quickly

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Lycra

While we are talking synthetics let's touch on Lycra. A plastic fibre invented by the company DuPont in the 1950s, it can stretch 5-8 times its original length and is very popular in lots of sporting garments. That capacity to 'expand' lies behind the name Spandex which is an anagram of 'expands'. You will hear it called Spandex in the US, Elastane in Europe and Lycra in Australia and New Zealand. There are lots of other brand names for the material. Its capacity to stretch and then return to its original shape, and its ability to dry quickly means it's often used in a blend of cotton or other synthetic fibres. Used in small quantities it contributes to the stretch but does not dominate the 'host' fibre. Cotton still feels like cotton. And merino still feels like merino - it is an essential ingredient in many Wilderness Wear socks. You will find it used in underwear, leggings and a wide range of sports clothing, though Du Pont originally built its market on women's clothing with Audrey Hepburn modeling garments made of the stuff. Regrettably Lycra doesn't recycle well and like any synthetic is a contributor to plastic pollution.

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Merino

Wool. All 'merino' is wool but not all wool is merino. Any old wool clothing can be good. We grew up with our farmer neighbours wearing hand knitted woolen trousers and shirts and jumpers/jerseys for winter wear. Some of those old boys loved the scratchy wool garments issued by the army and which they were using years later. Wool is hardy, long wearing and fire retardant. And it's both a warming material as well as an insulator (ever wondered why some sheep have their fleeces left on in the Australian summer heat? For the same reasons you put wool insulation in your ceiling - it keeps heat in as well as out).

But any old wool which is hardy and long wearing can be heavy (doubly so if wet) and prone to scratch and itch. Here is where Merino wool offers some advantages over wool which might be better used for carpet.

The Merino sheep is a type which originates in Spain but which has had its breeding refined in Australia and New Zealand to produce a strong, fine grained, 'silk' wool. It's comfortable. Expensive, but comfortable. The finer merino wool contributes to those attributes we often associate with Merino - wicking (drawing water away through capillary action), and cooling. It's softer than regular wool fibre so doesn't scratch or itch. And when you are thinking about how much room you don't have in your pack it has the added advantage of being very compact and lightweight when compared with other wool fibre.

"Merino" is now commonly used as the noun to describe a piece of clothing, shortened from "merino thermals" so you might hear merinos described as one thing and 'thermals' described as another. Is there any difference? Well there might be since thermals can be made from polypropylene or other synthetics.

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Sample from Australia's top Merino clip 2010

Merino Mix

Merino can be mixed with wool from other animals, including possums. Possum wool makes those garments incredibly soft. But wool from alpacas and even goats can be mixed up with the merino. Of course merino can be mixed with synthetic fibres as well.

Synthetic (or blended) Mix

- Polyester and Cotton - results in a material which is wrinkle resistant, holds its colour, and is comfortable.
- Spandex/Lycra and Cotton - gives you stretchy but comfortable material.
- Wool and polyester - combines warmth and breathability with shape. Ever worn pure wool garments? You"ll know how warm they are but how shapeless they can be too. Not for fashionistas.
- Linen and Silk - silk stops a garment such as a shirt from creasing.
- Cotton, polyester, viscose (bamboo) - same benefits of polyester and cotton blend but the bamboo adds a silky texture.

Ella applying layers prior to glacier kayaking

Layers

The most common advice you will get from any seasoned hiker is to utilise layers. This is the best advice you can get. It makes sense particularly in colder climates and when moving between high and low altitudes. The range of daytime temperatures in winter in Australia can be between 10 and 30 degrees. It might be 0°C at sunrise but could peak at 30°C in the afternoon in somewhere like Alice Springs. In the Alps it might move from -5°C to 15°C.

There are two main principles at play in layering. Layering helps you manage these variations in temperatures and conditions. Layer on. Layer off. The other, more relevant to extreme cold, is to trap layers of air between the layers of material. The trapped air becomes your insulating layer while the material guards against any wind stripping the warmth in that layer away from you. If you want to know more about layering check out this article and about layering for the Antarctic cold.

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Base layers (and socks)

A good place to start (after undies) is with base layers and socks. Traditionally base layers or thermals are either Merino or polypropylene or in more recent times a blending of the two. Usually a long sleeve top and bottoms constitutes a set of thermals. Every person is different in the way they feel the hot and cold. I prefer to keep my thermal set tucked in my rucksack in case I need them. Others might start by wearing them and strip them out as required along the walk. On undies - be careful about synthetic fibres especially on long treks. Cotton is easily the best option for underwear as it's less prone to encourage 'crutch rot'. Merino underwear exists, however I have not tried it therefore I am not qualified to comment on it. I am very much interested in testing them out so keep an eye out in the next edition of this book. Don't worry, we will spare you the photos.

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The right socks in high country Alaska - Australian merino no less

Socks

Socks are a matter of preference as they come in different thickness and heights and blends of merino, nylon and Lycra to name just a few. The biggest point I will make with socks is this - make sure when you buy boots that you test the boots in the socks you intend to wear when hiking. Specific socks can impact your boot fitment.

Given that merino gets such a good rap for being warm it can turn people away from opting for merino socks. In my experience a good merino or wool sock acts better in heat than something like bamboo or cotton. The simple science is that we shoot a lot of heat through our feet and our heads and in cold environments it's a no-brainer to ensure these areas are well catered for. It also means that in warm weather our feet are going to be warm no matter what we wear. It's just a matter of making life a little more comfortable.

It has taken me 15 years and dozens of pairs of socks to arrive at my current favourite - Wilderness Wear Fusion Max and Fusion Light for warmer days or cycling. The Fusion Max contains 80% Climayarn which utilises a 3:2 ratio of merino to polypro, 15% Lycra and 5% Nylon. This combination of ingredients makes for a very comfortable sock that is breathable, keeps its shape and fits really well. They also have a high level of cushioning which I appreciate when at work or on the trails.

The Fusion Light sock is a scaled back version of Fusion Max and the hotter climates when you know you will have hot feet for the day. I also wear them with my trail-runners, sandals (!) and Ugg Boots.

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Sock Tech

After taking a tour through Melbourne's Wilderness Wear factory with manager Jon we were intrigued by the level of detail by which he would describe textiles, yarns and garments. Never had I heard the term "full terry" or "half terry" when talking about socks. There are a few key points we think are important when choosing a sock.

1. Sock height - whilst there is no right or wrong there is some comfort in NOT wearing ankle socks while hiking. I would suggest no less than a ¼ height.

2. Cushioning - this can impact the fitment of boots slightly so make sure you are fairly consistent with which types of socks you buy for certain applications i.e. heavy cushion for work boots, medium cushion for hiking and perhaps light cushion for running. There are no hard and fast rules here of course - use what works for you.

3. Composition - meaning how much of each yarn, fibre or material is used to build your sock i.e. 80% Climayarn, 15% Lycra and 5% Nylon.

4. Weight - usually refers to the 'thickness' of the whole sock. Generally the mid to heavy weight would be more suited to cold weather or work-boots etc, while light to mid weight more suited to active pursuits like running, cycling and warm weather trekking.

Hamish's Top 3

- WW Fusion Max (everyday)
- WW Fusion Light (dress boots, cycling and warm weather) and
- WW Merino Fleece Originals (work boots, camping and hiking)

Budget Tip: Companies like Wilderness Wear often offer imperfect product at greatly reduced prices. By imperfect we don't mean they are non functional. It might be that a customer has requested a particular colour then changed their minds, invisible stitching is visible, and so on. Definitely worth considering if your budget is tight.

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Our family camping, circa 1965

Midlayers

Things can get a little crazy from here. Midlayers can be anything from a thicker version of a base layer through to a 800+ loft (we talk about 'loft' below on page 24) puffer jacket. There seems to be a slight trend away from Polartec fabrics (another blog topic but important to note) due to issues with microplastics. In the past I have favoured my Polartec100 ¼ Zip fleece as my midlayer as it adds warmth but does not stifle you when worn beneath a shell.

Often I will consider the comfort of a midlayer and whether I can handle wearing it next to skin as well as over a baselayer as I think I can diversify my layering a bit. In the past I had some super warm 100% merino thermals that I would never utilise as I hated the feel of it next to my (hairy) body (it's a thing!).

I have switched to a combination of merino fusion short sleeve tee and merino fusion long sleeve crew or ¼ zip crew as my base and mid. The warmth I have found I can get from these two layers is not far off what I used to get from polar fleece. It also reduces bulk beneath the outer shell or puffer jacket. I can also utilise the long sleeve by itself without the t-shirt if the conditions demand it. At the risk of sounding like a fashionista - it's all about having options.

Outer Layers / Shells

Arguably the most important layer is the outermost layer. This all depends on how you look at it. My advice is that it is the most important as it acts as a wind and rain barrier. Wind can be more of a pesterence than rain and if it's cold enough it will cut through you like a blade. But before we go any further let's take this opportunity to clear up some definitions and some terminology.

Definitions

The primary definitions to which you need to be alert is the difference between 'water resistant', 'water repellent' and 'waterproof'. A material or object (such as a watch) which is water resistant will handle a certain amount of water but in the end will be penetrated by water. It might handle a light, passing shower of rain or inadvertent dunking but not much more. Something which is water repellent will handle more water, usually thanks to some sort of additional coating which has been applied. However water repellent materials will also allow water to eventually penetrate. Waterproof material will not allow water through at all.

Caveat: even the most waterproof garment you can ever purchase can, due to lack of care, wear and tear, dirt and many other variables eventually 'wet out' and not be as waterproof as it started out. We'll explore this in later editions.

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Terminology

As for terminology the one relating to fabric which you need to know applies to most good quality rain jackets and is 'Air Permeable Laminate' . This means the material is a multi layered fabric that allows air to pass from inside to outside (breathability) while preventing water droplets to pass from the outside to the inside. Breathability can be as important as it's waterproofness, especially in warm, humid environments.

Perhaps the most well known air permeable laminate brand is Gore-Tex. In trying to get your head around all the product options out there it is going to help if you understand Gore-Tex is a brand for a version of air permeable laminate fabric and is NOT a type of fabric. It's like the Tupperware of the rain jacket world. We all know Tupperware was in the right place at the right time (70 years ago) but plenty of other companies have developed a similar product and similar reputation for quality and are making equally as good, if not better, products.

So, Gore Tex is a brand. Well established, true. But also well knocked off and many an unsuspecting trekker has shopped for Gore-Tex in the outdoors shops in Thamel in Kathmandu and been disappointed with the outcome. Having said that, why is Gore-Tex so popular? The short answer is that the brand was the first to change the choices we had for wet weather coverings.

Gore-Tex revolutionised rain jacket options. Invented in the late 1970s (arguably even in the 1960s) and patented in 1980 it started to appear in bushwalking markets in the late 1980s as a lightweight bushwalking option, albeit a very expensive one. Gore-Tex promoted the attributes of being water-proof while at the same time being able to release water vapour back out to the atmosphere - you were less inclined to steam up under Gore-Tex. It was also incredibly light. Prior to Gore-Tex rain jacket materials were heavy if waterproof. For example a popular option was a Japara. Japara is a cotton fabric infused with a wax. It was very water and wind proof but the wax needed reapplication and the garment was heavy and bulky. A 'cheap' option was the ex Army "Great Coat" made of wool. Also wind proof, it was only water proof to a point and under punishing rain would eventually become a heavy sponge. And if you had a greatcoat in your pack there was little room for anything else. Outer garments were variations on these. The military 'battle jacket' was a cotton/poly mix infused with a waterproof compound which soon vanished, while mountaineers would use as many wool layers (bulky) as they could get their hands on. There were of course nylon and similar outer layers, though it didn't take long to work up a sweat under them. Rubber and even seal skin garments were options for the super cold. Sheepskin jackets (hide on the outside, wool on the inside) were popular with some farming communities and with the hippy community after Robert Redford made them popular. There was no question that Gore-Tex revolutionised the outer layer jacket options for outdoors enthusiasts.

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Lots of heavy material before modern synthetics ►

Improvisation on the Salkantay Track, Peru

Air Permeable Laminate Fabric. When talking about rain-wear this essentially consists of a nylon outer face fabric that is usually Durable Water Repellency (DWR) treated for hydrophobic properties, and air permeable membrane with tiny micro-porous holes allowing moisture and vapour to pass outwards and a fine mesh layer for protecting the delicate membrane (3 layer) or no mesh (2 layer)

2 Layer Waterproof Fabric. Commonly used in running jackets and lighter weight gear. A downside to this fabric is the lack of a barrier between sweaty human body and magical air permeable layer. This means build up of dirt and oil can cause 'wetting out' quicker than a 3 layer jacket.

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What do We Mean by "Wetting Out"?

So let's say it's been hosing rain for a few hours. You have your water proof jacket on but you notice water has started running down your face neck. Puzzled? You spent a lot ot money on this jacket and you are still damp. What you might be experiencing is some "wetting out". What this basically means is that you can/will eventually get water coming through the rain jacket. You shouldnt be suprised. If vapour can be released outwards, water can also find it's way in. There are a few ways this can happen and one of the most common ways is by wearing a pack over a rain jacket in wet conditions. The pressure from pack straps sitting against your shoulders and back can force water or moisture through the fabric. This is hard to avoid but the quality of the garment usually plays in your favour and helps ensure you stay dry.

Another source of wetting out is poor maintenance of rainwear. Contrary to popular opinion, it is good to wash your rainwear. Like most fabrics, Air Permeable Laminates like Goretex appreciate being cleaned of bodily dirt and sweat and external grubiness. If left filthy the dirt on the insides and outsides of the jacket will create a channel of dirt, oil or grime and this channel will allow water molecules to pass through. You may have heard of a range of products for washing and reproofing rainwear. These products are highly recommended by most rainwear manufacturers and as a rule of thumb I would say washing your jacket after 5-10 days of use (thats hiking with it on and where ever it might be exposed to sweat and body grime).

Don't be scared of washing your gear. It will last longer if you do. Things like seam sealing don't last forever and they don't like sweat either. What seems like an expensive detergent/reproofing agent can help get an extra 5 or so years from your favourite jacket as opposed to buying a new one. That's a positive for the planet and your back pocket.

I will go into more technical detail in future updates of this book. In summary it helps to understand why you might think your jacket is failing. Maybe it needs a wash or maybe you need to assess it for damaged seams. A good retailer will help you assess whether you need a new one.

My tip is to go for 3 layer waterproof fabrics as they are typically more robust and durable.

My top picks

- Cactus Mountain Jacket
- One Planet Torrent
- MONT Supersonic

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Family and friends getting to their campsite circa 1986

3 Layer Waterproof Fabric. Used for heavier duty and higher quality rain jackets. A third layer is often a fine mesh layer laminated to the middle layer to protect its integrity. A nylon outer fabric provides initial barrier and immediate waterproofing.

Cleaning and Care. Once you've found the right waterproof jacket the most important thing is to look after it. Not only have you invested a lot of money in this piece of kit but you don't want to get into a cold and wet situation only to discover lack of care has compromised its integrity. In my time working in outdoor gear shops I found that many people neglected washing their rain-wear. Most people thought that washing their rain jacket would decrease its ability to repel water. There is some slight truth in that but it is very important to properly launder rain-wear and re-apply or reactivate it's repellency regularly.

As a rule of thumb I would suggest that washing a jacket or pants is necessary after 10 days of use. That is, that you have worn the jacket and walked in it for 10 days. In a perfect world we would do it more regularly but the products recommended for washing these garments are a little more pricey than regular detergents.

Refer to maintenance and care on Page 28.

"I recall having to muster cattle in the high country of Otago in early, unseasonal snow. I was 15 and had no real cold weather gear other than the usual layers of coarse wool garments. But I was especially proud of my Army Great Coat. Lots of the farmers in the area farmed 'returned servicemen lots' so these clothes were still popular. While the amount of snow overnight had been exceptional (about one metre, enough to bury our cattle) and the temperatures cold enough to freeze running creeks and waterfalls) the sun was out in a blue sky. It took about thirty minutes in my Great Coat for me to come down with heat stroke. It was too heavy and I worked up a terrific sweat under it as I tried to work my way up to our stranded Angus. Apart from the embarrassment of collapsing and being ill I'll never forget how unhappy I was with that Great Coat that day."

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Looking Across Root Glacier to Kennicott, Alaska

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Caught out on the Salkantay Track, Peru

Overpants

When thinking outer layers don't forget overpants. That extra water proofing that can make a real difference. We were walking Salkantay Track in Peru coming off a 4,600masl pass when we were hit by a sleet/ice storm with freezing rain. Some with 'cheap' over-pants found that the seams were not water proof and, while they kept the effects of the cold wind at bay, they made for miserable walking with lots of icy water getting through.

A key characteristic of many over-pants is a zip that runs half way up the leg from the cuff to allow for ease of getting over boots in haste. This is a very convenient feature but it can also be a fail point or ingress point if the zippers are damaged or are not water resistant type zippers to start with.

- Cactus WTF Over-pants
- One Planet Synapse Over-pants
- Mont Austral Over-pants

My current pair of One Planet over-pants have served me well. If not for the first time I used them on the Salkantay Trek when, as we descended from the pass at 4600masl and the snow turned to sleet and then to rain, for the next few hours it was quite wet.

It is in this weather having a full set of rain-wear can really make a trip more comfortable. Needless to say some companions were sporting a garbage bag around their waists and they were seemingly just as happy.

For me the trick is to pre-empt the rain and get the waterproofs on before getting wet, rather than wrapping your wet body in a jacket and pants. That just makes things steamy. I have recently seen some very impressive rain-wear sets at very reasonable prices, although I wouldn't be inclined to go scrub bashing in it or work up a sweat in it.

Budget Tips

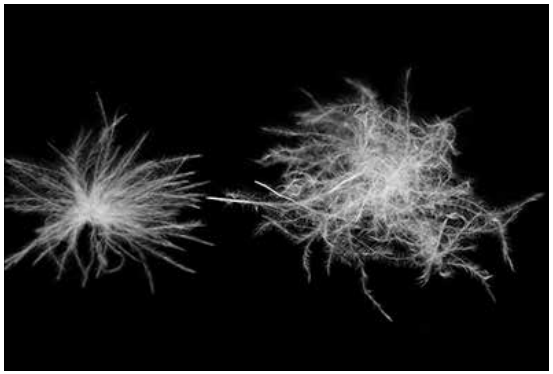
- Frogg Toggs
- 3 Peaks

Fox's Guide to Field Gear

Getting the Low down on Down

We are about to touch on the insulative elements of the outer layer jacket so we should talk about down. And it's something we want to think about when we talk about sleeping bags a bit further on. Anything using down will refer to 'fill power'.

The basis of fill power is the structure and size of the actual down itself. The structure of down is different to a feather and is in fact found underneath the bird's feathers. The difference between the two is shown in the following pictures - feather on the left. An easy point of difference - the feather has a quill, down does not.



Feathers are not down and down is/are not feathers.

Down comprises a cluster of fine filaments which radiate out from the centre and in which tiny pockets of air are trapped. This trapped air is the basis of your insulation. Each piece of down is rated by its size. The larger the piece of down the more air it is able to trap and the more insulation it is therefore able to provide. Goose down is larger than duck down which means it tends to be warmer than duck down and is therefore the most common down you will find in your gear.

The loft number refers to the amount of down required to fill a specific space. Unfortunately the US and Europe have different systems of measuring but for explanatory purposes we can say that loft is the amount of space in cubic inches that one ounce of down will fill.

Small down that fills 500 cubic inches will be rated at 500. Larger down which fills 800 cubic inches is rated at 800 and so on. As a rule of thumb US loft numbers will be about 100 more than those measured by the European/Australian system. Be aware of that when checking down measurements. (This is because the US standard tube for measuring loft is 241mm in diameter while the European one is 289mm in diameter. A narrower tube means a higher reading for the same volume of down).

Another factor is the down to feather ratio. While feathers don't offer much by way of insulation they do help manage bulk and structure. A ratio of 90:10 is perfect - the feathers don't compromise your warmth. However you shouldn't be deterred by a ratio of 80:20.

Because loft is determined by the size of the down, the higher the loft number the less weight of down required to fill the space. This means a jacket with 500 grams of 800+loft down will perform better than one containing 500 grams of 600+loft down. In order to gain more warmth with 600+loft you would need to increase the fill significantly. For some people those grams don't matter but if you are counting every gram this is an area where you can shave a few off.

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So what are the "down" sides? Typically if down gets wet it can form clumps of down and thus create cold spots where the down clusters are not lofting. It is also quite difficult to rectify this when traveling or hiking. A good portion of the down that ends up in clothing and sleeping bags will have been treated with 'Durable Water Repellent' or DWR. DWR is applied to stop fabrics or any material for that matter absorbing water and is helpful in combating these issues. If you are camping in constant damp environments it would be well worth considering a synthetic jacket or bag but be aware that DWR does wear off over time and needs reapplication.

If you want to know more about down you can start here with the International Down and Feather Bureau! Such a thing exists!

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Back to Jackets

You will commonly find a super lightweight down jacket that packs down to the size of a fist. That is impressive and convenient. However, if you are going deep winter back country trekking you might need something with a bit more fill. For example my current 800+ loft down jacket weighs 610 grams and is appropriate for very cold weather and has a hood. If a similar featured jacket weighed just 400 grams it would likely have cold spots and not be very warm. In the photo on Page 24 is my synthetic fill puffer from Montane. As you can see it is less puffy but it is quite versatile for lots of applications. It is easier to fit the less puffy jacket under a rain jacket if required. However they pack to a similar size.

Due to their quilted nature and the sheer amount of stitches most insulated jackets are not waterproof. All those stitching holes invite water in. However many are now being made with water resistant sheel fabric to provide a basic level of resistance from showers and rain. If down gets wet the performance and thermal properties of the down is degraded and water can lead to clumping, degrading it even further. It is difficult to rectify these issues when in the field.

I have been sporting the One Planet Inversion Jacket (discontinued) for the past 2 years. It's the kind of jacket a lot of people scoff at and say "you'll not need that in Australia". Well that is a fair statement if you do not intend on leaving the country or stray into the alps in deep winter. If you do go to cold places or just feel the cold in general a jacket like this is not overkill. It is designed to be warm, really warm, and it is. It also has a Pertex outer shell which affords it superior water resistance compared to most down jackets. It has a large hood which easily goes over a beanie, hat or climbing helmet, and has a nice cosy neck tube. One Planet is an Australian owned company which designs and manufactures a lot of their products in house in Melbourne.

**The inversion jacket is not made in Australia.

Cactus make a really cool (or warm) Cactus Down Jacket which is built for some hard wearing. It has a much more durable outer fabric than the usual down jackets seen on the market. This means it won't suffer in the arms of a load of firewood or those boozy nights around the campfire on the weekend when you fall backwards off your chair.

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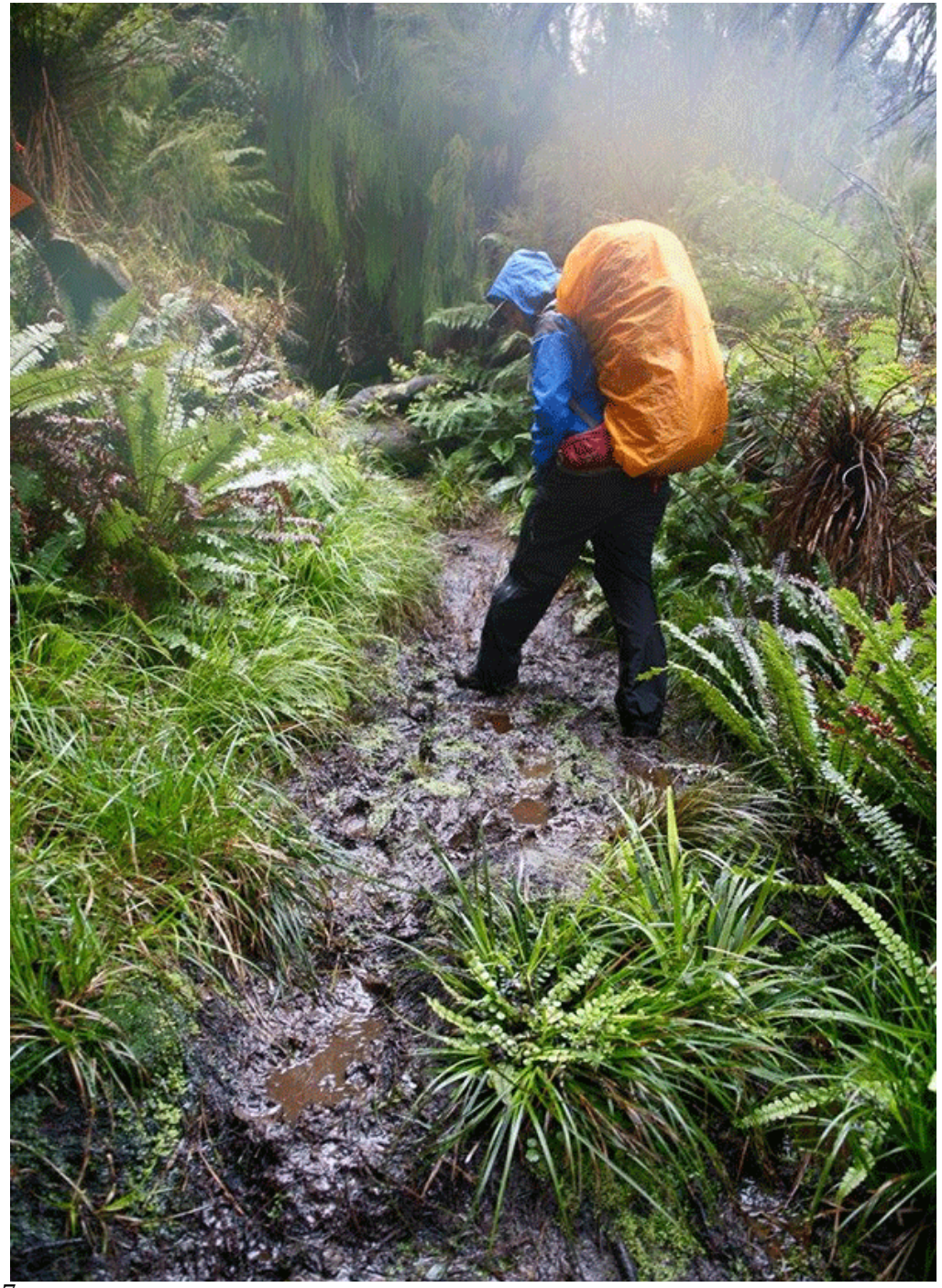

Gear Maintenance and Repair

Gear Aid sell a wonderful suite of products for caring for gear, as their name suggests. I will list a few of them below.

- Revivex Wash-in Water Repellent - used to restore water repellency in rain wear garments.
- Revivex Pro Cleaner - used to wash rain wear and technical clothing.
- Revivex Down Cleaner - used to wash products containing down. In accordance with the manufacturers directions.
- Revivex Durable Water Repellency (DWR) Spray

Another trick is a warm tumble dry or warm ironing of the rain-wear (after washing) can be enough to trigger the nylon face fabric back into a decent state of repellency without the need for DWR re-treatment. If you are concerned with carrying out any of these steps there are professionals that offer such services at small cost. ALWAYS FOLLOW THE DIRECTIONS OF THE MANUFACTURER NOT SOME CRAZY GUY CALLED HAMISH.

Hamish's Preferred Gear Repairers

- Remote Repairs
- Finn Industries
- One Planet

Footwear

Boots

A pretty important piece of kit. Some would argue the most important. The only reason I would say it isn't 'number one' is because the military issue one type of boot to recruits at basic training. Other than being sized up it's one boot for all. There is an element of "you'll get used to them" when it comes to boots and the actual likelihood of someone finding the perfect boot first time round is quite low. For instance I have 6 pairs of boots. Some are waterproof, some are not. Some are meant to be waterproof and are in-fact not.

I do tend to go for certain pairs for certain types of walking. I have had good success with my One Planet Sturt full-leather boots and I am currently getting good usage out of some Kameng boots by Mishmi Takin. Merrell have a good reputation for 'out-of-the-box' comfort and it's no lie. I recently bought a pair of MOAB 2 8" Tactical boots as a lighter hiker/work boot and I have been impressed with it's level of comfort. I haven't loaded up a pack and given them a test yet but I have worn them for weeks on end at work pushing wheelbarrows and digging holes and they're comfy.

After some time in the Army I got used to wearing boots every day. That habit has carried on five years later. I think we get used to things. This is not my area of expertise but lots of people are hiking in trail runners and lighter weight footwear. From a fundamental point of view the issue with lightweight footwear is a lack of stability through the sole of the boot. Some say NOT having this forces us to train our bodies to stabilise rather than relying on the boot itself. But you only have to wrench a foot in a remote area of the country to appreciate the benefits more robust footwear gives you.

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As with all footwear it is best to start your research by trying on as many as you can. You will quickly realise a lot of the shoes or boots that appeal to you aren't necessarily the best fit for your foot. It is also easy to get stuck in a whirlpool when trying to make a decision on which ones to settle on. Don't stress too much - you won't be the first person to buy a pair of boots a half or even full size too small. It is common that we try footwear on with cold feet and in a relaxed state. The issue here is that later in the day, after being on your feet and maybe working all day your foot will have expanded somewhat. If you have snuck away from work on your morning tea break to try on some footwear and you've got cold feet and thin socks, chances are you'll feel more comfortable in a smaller size. However if you prefer thicker woolen socks and hiking in warmer weather you will likely need to consider sizing up ever so slightly. I made this mistake more than once until I was told by an appropriately credentialed shoe fitter that I was a US12 not US11 like I had thought. I took his advice on board despite being slightly pessimistic but his advice made a world of difference and alleviated the footwear discomfort I had been experiencing for the previous three years.

Boots we have worn and liked.

- ASOLO Fugitive - super sturdy, waterproof and hard wearing.
- One Planet Sturt - leather, sturdy and comfortable.
- AKU Pilgrim - good light pack boot, can run in them.
- AKU Spider - Lightweight, comfortable
- Mishmi Takin Kameng - sturdy, very waterproof
- Merrell MOAB Tactical Zip Side - out of box comfort, zip side is handy for set and forget lacing.
- Zamberlan leather. Two pairs over the last ten years. No breaking in. Used on the farm on a daily basis as well as in the mountains of New Zealand, Afghanistan and Nepal, and trekked up Kilimanjaro. These are a favourite.

Laces. Don't forget an extra pair of laces. Laces are usually pretty durable but there is nothing worse than breaking one and not having your boots fitted up snug.

Trailrunners

Whilst I don't profess to be a trailrunner I have done most of my running on and off the beaten track. The longest lasting and best all round shoe I had was Salomon XA Pro. It was sturdy enough to be able to hike in, light enough to run in and tough enough to cop a beating in muddy, dirty and rocky terrain.

Some of our team ran in a 450km ANZAC ultra marathon in 2015. Trailrunners which took a hammering then included

- Hoka
- Merrell Moab
- Salomon
- ASIC Gel Sonoma

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Sandals

People love them. The rest of us hate them. I think I probably fall into the latter group. But let's start with the positives. A pair of open toe sandals can be just what you need at the end of the day around the campsite. You have a chance to get your feet out of sweaty or wet boots and sandals are a lightweight tool to have for that purpose. If you have other positives please let me know.

What don't I like about them? To be fair my dislike is really about their inappropriate use. Open toes and no ankle support, combined with a slippery base is not what should be on your feet when you are in the bush. I cringe whenever I see boots taken off and sandals donned to cross creeks. That's just asking for trouble. And that is just about the sum of it. Mind you my argument is kind of undone when I walk with the porters and guides on Kokoda who are all getting along barefoot or are wearing thongs. I bought a pair in Kokoda thinking the porters must have been on to something after ten days in the mud but they were as hard as steel and I couldn't wear them. There's a kid up there with a gifted pair of thongs, hardly used by me.

If you do have to buy a pair I recommend materials which are not going to break in a remote site, and that there is a heel strap to help prevent your foot sliding off the base if you are in water or mud.

Another instance where sandals work well is cycle touring. You can even get them with built in cleats. If you are clocking long days in the saddle in hot conditions this could be a nice reprieve from the foot sweat. Handy hint - don't forget the sun screen. Burnt feet are only second to burnt nostrils (on the inside!)for painful discomfort.

Hats and Balaclavas

Everyone has one but not everyone wears one. We all have favourites - wide brimmed, baseball caps, visors. It goes without saying that most wide brimmed aim to keep the sun off but they can be handy for keeping the rain out of your face as well.

Balaclavas are so named after the battlefield site and place of that name in the Crimea. British soldiers were sent hand knitted wool 'hoods' from home to help them manage the cold of a Russian winter. Balaclavas offer a layering advantage which hats can't give, keeping ears and face warm. Their disadvantages are that they can accumulate ice around mouth and nose from the humid air which you exhale. And they can make it difficult to determine the direction of sound - in the mountains understanding the source of noise (falling rock and ice) can be important. However those disadvantages rarely outweigh the benefit of warmth they offer.

The progression of the balaclavas have been seen in the development of buffs and hoods. These work similar to the original but are made of more comfortable materials (fleece or merino) and provide more space around the eyes and mouth (which has been the greatest concern of the full face balaclavas.

I've found these especially useful on ski hills as I've often pulled them up over my nose when the wind picks up. However further down the hill where it warms up you can quickly pull them down and breath.
- Mike

Consider thin balaclavas to wear under helmets or other head-wear and under a jacket or shell hood.

I've enjoyed wearing an Akubra on many hikes but remember they are quite bulky and can conflict with your rucksack so I recommend wearing them on shorter day hikes where the pack may not be as high. They offer good sun protection and can be used to scoop water from rivers, fan a struggling campfire and cover your face while day napping. - Hamish

Caught out in a summer snowstorm- Alaska. Right kit = peace of mind. ►

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Gloves

Gloves appear in every material, colour and function, from those dysfunctional things your sister knitted you as a school project through to expensive seal skin fashion pieces. A glove differs from a mitten in that a glove has a separate sleeve for each finger while a mitten encapsulates all digits within the one enclosure. As a general rule a trekker will want a glove or gloves for protection from the cold, though a pair of gardening gloves can be handy for use around the campsite.

Inexpensive gloves for protection from the cold can be purchased from ski shops. These can be waterproof and warm, and are multi-layered. However because they contain all layers in the one package you might want to consider a lightweight polypro or merino underglove which stays on your hand if you have to remove your primary glove for any reason.

Handy hint - gloves are easily and often lost on a trek. Or rather, one of a pair will go off and join the single socks which have vanished as well. It's a good idea in a sub-zero hike to carry a spare pair. In warmer hikes you could simply lanyard your single pair to save weight.

SealSkin Cycling Gloves: I bought some of these just before the South America trip in anticipation of cold weather at higher altitudes. They proved a winner and they were nice and light without the bulk of a ski glove. Cyclists always demand comfort and can't afford to lose too much dexterity, hence why I went looking for waterproof cycling gloves. They were a little harder to come by but eventually a Melbourne CBD bike shop came through with the goods.

KUIU Hunting Gloves look to be a good quality product. If cyclists demand quality then hunters go one step further. They lean very heavily on their kit and often have some special requirements when it comes to technical detail. They don't like stuff that makes too much noise in the scrub, for obvious reasons. This means for the average hiker you benefit from these technologies if you buy hunting gear, a non scritchy rain jacket and warm, waterproof and dexterous gloves.

Image: Camp Bonanza, Alaska

Mittens

Generally only required for extreme cold, mittens are designed to minimise the surface area that is exposed to the cold. The material of a glove encases each finger and as such the design presents a large area to cold air - larger than that presented by a mitten. On the other hand (so to speak) the mitten allows all the fingers to warm each other and a smaller area of material is presented to cold air. Mittens do not allow you to do any fine motor tasks but they do allow you to have gloves on underneath them so if necessary you can remove a mitten for a brief period without exposing your skin to the cold.

They can be hard to find but we like Outdoor Research (OR) mittens. We've used them in wind chill temperatures as low as -35°C (Argentina) and ambient temperatures of -15°C (Nepal) and have been delighted with them.

Importance of Layering Gloves

The same principles of layering clothing applies to gloves, especially if you ever need to remove a glove or mitten in extreme cold in order to fix, tie, untie, or otherwise use your fingers to complete a precise task. Exposing skin to cold air is not an option, and nor is it wise to touch any metal in extreme cold. A fine merino or poly glove that fits snug to the skin and allows a heavier glove to fit over it is sensible practice.

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Miles Dunphy and Bert Gallop - no gloves but a couple of rifles and swags for the road.

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Tents

Overview

"Which tent should I buy?" is a question that pops up quite regularly. The purchase of a tent is often made in the lead up to a specific trip. "I'm going to hike the Overland Track in September and I need a tent, any recommendations?" And then comes the torrent of suggestions from people. I'm going to attempt some unbiased education here that will help you make the decision that supports your circumstances best, rather than just suggest the tent I happened to have purchased.

Tents are usually classed as a 3 Season, 4 Season or Alpine/Expedition Tent (there are plenty of other variations but let's keep it simple). Other considerations when buying a tent are the pitch options i.e. can it be set up fly first in bad weather to avoid wetting the inner, is it free-standing in that it will stay erect without needing to be pegged? How many entry points and are they diagonally opposed (this matters if 'top 'n tailing' with a non intimate companion). And is there some sort of vestibule over the doorway?

3 Season

You could say 'three season' aims to cover you for everything except winter but perhaps it's better to look at it in terms of likely weather. If the three seasons are Summer, Spring and Autumn then it would depend on where you were as to what you might encounter. Alpine areas aren't just cold, wet, windy and snowy in winter. I have been caught in a blizzard on Mt Kosciusko in the middle of an Australian summer in January (it was 26°C in Canberra that previous day). And this snow occurred in Alaska in the height of summer (See Page 35).

It would be safe to say a tent that is deemed 3 Season is suitable for most conditions apart from heavy snow, high wind and heavy rain. The construction usually consists of lighter fly fabrics and mesh inner sections to improve air flow in warm climates. Some have slightly less sturdy pole designs which aides in saving weight. Ground sheets are often an optional extra and can be utilised on a needs basis. I suggest you should always use a ground sheet as often failure to do so will void warranty.

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4 Season

When the trees are bending over, the ground is white and you can't feel your face. That's pretty much the 4th Season, aka winter/deep winter or Alpine most of the year. If you have the luxury of owning a tent for each of the occasions then if you are heading into the Alps it is wise to pack a solid tent. There will always be those people that say "you're crazy carrying all that extra gear" but I also never heard anyone say 'you're crazy for carrying 4 litres of wine up the hill', followed by a subtle hint at wanting to indulge in a glass (plastic) themselves.

It all comes down to personal preference but if I was offering advice I'd suggest that tents not be skimped on. It is your home in the mountains. If it fails on you then it could be just you and your sleeping bag left to fight the elements and if you've skimped on the tent chances are you might have done it on other kit too. In fact if you are planning "four season" you should be thinking worst case scenario and have the best tent you can get your hands on.

Key characteristics of some 4 season tents are cross-over pole design, thicker diameter poles, stronger fly fabric, thicker floor fabric, nylon enclosed inner (rather than mesh), adjustable vents, large vestibules and lower cut fly's. Not all tents are alike (that would be boring) and some have taken on engineering and physics to be lightweight yet stable.

One Planet Goondie 2 30D Fly Mesh Liner Mt Bogong

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We purchased a 'cheap' two person, three season tent at Mountain Designs and took it up to Kokoda. It was perfect. Handled storms and torrential rain really well. Had lots of places to stow gear and had inbuilt 'verandas' to store gear outside the sleep area but out of the weather. We used it in the Australian Alps as well and it handled ice and snow. In between it handled anything the usual Australian bush threw at it including torrential rain. The only 'extra' we added to it was a small blue tarp to create a portico if the rain was heavy. In the end we re taped the seams after about eight years and since then it's essentially been retired to fine weather camping only. It was excellent value for money. Simon

Hamish's Top "4 Season" tents

- One Planet Goondie 2 30D Nylon Inner
- MONT Moondance 2
- WE Space 2
- MSR GuideLine Pro 2 Tent
- Hilleberg Nammatj 2

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Tarps

Tarps are for brave people who like to hip and shoulder a storm and don't mind headbutting snakes. In saying that they are increasingly popular and a very cost effective shelter and a versatile piece of kit. What I like about tarps is that you can pitch them in very peculiar places and in amongst rocks, shrubs and trees. They're simplistic and functional. In the right conditions I would happily hike with a tarp. Utilising walking poles makes them a huge potential weight saver in your kit.

For example two walking poles might weigh in at 400g while a tarp such as the Alton 3m x 3m tarp is 560g. Conceivably this combination knocks a kilo of weight out of your pack.

The insulated space blanket is a tarp variation which is one of the most versatile pieces of kit you can carry. They can go under your tent as a layer of protection and heat damping. They are also handy in a first aid situation for making stretchers or transporting patients in snow.

You can utilise a tarp for a range of uses. You can use them folded like a tortilla and sleep in the fold. Or you can simply have them as a handy extra when you want to have an awning in wet weather. Stepping out of your two person tent in pouring rain to stand under a small awning is a bit of luxury worth having if you can carry the extra bit of weight.

Don't forget to pay extra attention to the rest of your sleep system if you are sleeping under a tarp.

Cathedral Ranges 1978. Tarp folded in half is a handy tent substitute

The small tarp here was very handy for keeping the campsite just a little bit drier. It also provided a cooking area and allowed the tent to be set up and taken down in pouring rain. It was worth carrying the extra weight for that convenience. Also handy were the extra pieces of rope and the pruning saw that allowed it to be quickly rigged.
Grose Valley NSW. Three days of heavy rain.

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Sleeping Bags and Mats

Overview

Back in the day a down sleeping bag was considered fancy. Now they're fairly common but things like quilts are making an impression on people who are looking at saving weight where possible. The "Sleep System" which encapsulates the sleeping bag, sleeping mat and in some respects the shelter in which you sleep is one thing you want to get pretty right. Being too cold is horrible in sub zero temperatures, as is being overly hot in warmer months. You'll hear me say it often - 'always pack for your coldest potential environment.'

Fill - Down

Down is the insulating layer beneath the feathers of a duck or goose. Refer to our discussion about down if you have come directly to this via the index.

Fill - Synthetic

Synthetic sleeping bags are great, robust bits of kit. Especially if it is likely to get wet. They can be a bit heavier than down bags but for any climate above 0°C I reckon they go alright. A good quality synthetic 0°C bag shouldn't weigh much more than 1kg which is a respectable pack weight for a sleeping bag. A con to a synthetic bag is it is likely to be more bulky than its down equivalent.

Sleeping Bags

So what sort of sleeping bag should I buy? The first question to ask is not that one but "What am I going to use it for?" You may end up with two or three bags.

It's -15°C in this tent on Ama Dablam as the Sherpas deliver a heart starter.

Consider the fill first. Then the outer layer. Overall weight - you have to carry the thing after all and after your tent your bag can be the heaviest single piece of kit in your pack. Expected temperature. Overall size. Buy a bag too big for you - you may want to be climbing into it with lots of layers of clothes on.

That a sleeping bag warms you up is a common misconception. Rather, a sleeping bag traps the heat you generate, so the warmer you are when you jump in your sleeping bag the quicker you will maintain warmth in your sleep system.

Sleeping Bag Liner

A good way to approach your sleep system is to use a sleeping bag liner. Another layer. And can be cost effective. Rather than buy a bag that's rated for your coldest temperature, buy a bag rated a little less and add a liner. In this way you have a sleep system based on one sleeping bag which gives you some flexibility across a range of temperatures. A minor disadvantage of a liner is that you can wake to discover it is tangled around your body if you are an 'active' sleeper. Hint: a liner can be used to dampen the sound of a noisy mattress.

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Some Sleeping Bag Considerations

Other than the type of fill for a bag there are a couple of other things to look out for.

- Single stitched or box walled? All that down is useless if cold seeps through the seams. Hold a prospective sleeping bag up to the light - is there lots of light coming through a line of stitching?

- Zip overlaps. Similarly, the zip can be the back-door to cold air. Does the sleeping bag have insulation layers to offset that?

- Does the insulation include the hood? Some brands don't have a hood. If you need a hood for the cold you need a hood. Hoodless bags are good for using in combination with a pillow.

- Foot locker, boxfoot, footbox, bucket or bootie. Bags for very cold scenarios will have an extra insulated section at the bottom of your bag which does not unzip. It's a bucket of insulation into which you sink your feet. Very nice.

There are lots and lots of really good bags out there. Do your homework for specific conditions and trekking. We like the following bags:

- Sleeping bag for extra cold: OnePlanet Bushlite -7°C or -11°C.
- One Planet Quest
- Extra extra cold - a 800 down sleeping bag from Macpac called the Epic 800. A good high altitude (cold weather) bag.

Sleeping bag for warm weather - Consider a quilt as it can used to boost a sleeping bag for deep winter too.

Summary Checklist

⊙ Zip Side ⊙ Zip Compatibility ⊙ Shell Fabric ⊙ Shape ⊙ Hood

⊙ Baffle Construction ⊙ Fill Type and Quantity ⊙ Temperature Rating

How many of us have climbed into a bag smelling like a wet sock? All bags should be hung and aired after use. It is surprising to know how much dirt and grime can be caught up in a sleeping bag. In the army we used to spend days and sometimes weeks without showering, sometimes even crawling inside sleeping bags with clothes and boots on to save time when called to picquet. It would be essential to wash the bag after each field trip otherwise next time you unrolled it the smell was quite horrific. Synthetic sleeping bags take a bit more of a beating than their down counterparts however, if done right, washing a down bag can not only improve cleanliness but also it's efficiency at maintaining your body's warmth.

Over time down clusters accumulate dirt, grime and oils from our body and this can clog up or clump the down and therefore lessen it's capability to loft. The impact of this can make the difference between a good nights sleep and a chilly one.

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◄ *Here is a hot tip: over and over again I would have customers who didn't know better return their down filled gear because it was 'faulty'. They thought that if down was 'leaking' then a seam (which they could never find) or something was undone or there was a manufacturing fault. THE sign that you have down in your gear is that it will leak small amounts of down. If you have spent $1000 on a down sleeping bag or jacket and you don't have these little floaters then hand it back - you have something other than down in there. These pieces floated out of our Macpac 800. A very good sign from a very good high altitude bag.*

Quilts

Quilts first came across my radar when I was working in an outdoor retail shop in Melbourne. The company I worked for designed a quilt to be used in conjunction with a shoulder season sleeping bag (-2 - +2) to boost it's capability in colder climates. It could also be used by itself with a sleeping mat or added to most sleeping bags in the range for boosted warmth. From there I started seeing the likes of Terra Rosa Gear and Tier Gear creating some masterpieces and really pushing quilts as a primary component of a sleep system.

From a technical point of view I find it difficult to work out exactly what I would recommend to people as the rating of a quilt relies heavily on the quality and rating of the sleeping mattress being used with it. On the proviso that a suitable mat is being used it would then come down to the fill quantity of the quilt. The mat will be the main source of preventing heat loss from beneath you so the quilt is looking after the sides and top. I'm satisfied a good quilt will do its job on the sides and top as a bag would and if the sleeping mat is right it should act in a similar way to a good sleeping bag and that is that it will: create an enclosed area in which the body's warmth can be retained and thus maintain warmth throughout the night. (You may just need to wrap your head in a beanie or down jacket if it snaps cold).

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Foam Mats

Let's begin with the humble blue foam yoga mat which isn't bad 'bang for your buck' and does a surprisingly good job of insulating you from the cold ground. It's not the most comfortable mat but after a big day of stomping it can be quite dreamy to crash on. They also make a nice seat for sitting around camp on if you fold in half twice.

People seem to be trending away from closed cell foam mats in search of lightweight insulated inflatable mattresses. There are some rippers on the market. However if you are budget conscious a foam mat is a great place to start. One of the advantages of foam mats is that they don't get holes in them and deflate in the middle of the night. They are very reliable and easy to set up. If you find you can do without the foot end you can cut them in half or ¾ if you wish to reduce weight. Another option we have seen in the mountains is to save weight by cutting them in half from top to bottom.

Aside from the classic old blue closed cell foam "yoga" mat which is surprisingly effective at insulating I would recommend the Ridgerest by Thermarest. It has a bit of a groovy surface. Not groovy like mum and dad in the 60's and 70's but literally has a texture to it. Whether that grooving adds comfort or warmth I'm not sure but it seems that I slide around less. Those sheeny sleeping bag fabrics can be a little slippery at times so it's nice to avoid that where possible.

The Ridgerest also comes in a few different lengths. Because I use mine for the warmer climates I opted for a ¾ length as I don't need to insulate the full body length but rather just provide some basic level of comfort. It's also super light, but rather bulky which isn't so bad in warmer climates as you might find you have some extra space where the booties and winter sleeping bag normally sit. I even go as far as lining the inside of my pack with the loosely coiled mat and shove my gear inside the void. Works well and keeps the pack from deforming whilst packing.

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Inflatable Mats

This is where the conversation opens up with regards to mats. There are a few different types of inflatable mat: down filled, synthetic fibre filled, foam filled and air filled with a splattering of magic applied to the walls for insulation. Synthetic versions are available for those not wishing to purchase down and who worry about the filling getting wet.

The sweet spot between foam mats and inflatable down mats are the insulated inflatables which offer a high warmth to weight to ratio and are reasonably comfortable. They have a synthetic insulative layer glue to the inside of the face fabric which is usually polyester or nylon of varying thicknesses and robustness.

One of our team uses the down filled air mattress with a hand pump. They are expensive and 'heavy'. And the hand pump can be extremely frustrating to operate - it takes quite a bit of practice to get those pumps working. Why a hand pump? To ensure the moisture from your breath does not 'clump' the down, or turn to ice in the mattress. On Aconcagua inflating these things was a daily chore which could take as long as twenty minutes to accomplish. At altitude that was fatiguing. So that's all the down side (no pun intended). What's the upside? Even in the coldest circumstances on Aconcagua and Ama Dablam no sense of 'chill' came through from the ground. Ever. These things make for a comfortable nights sleep and at altitude you are not sleeping well in any event. So you want to use any tool you can in order to get solid rest. If doing anything in the snow or at altitude a down filled mattress is a solid investment. Just practice the use of the pump before you go.

A snapshot of options. Data is from various sources. The smaller the value figure the better the value.

Prices in this table indicative only and valid as of December 2020.

	Size inflated (cm)	Thickness (cm)	Weight (kg)	R-Value	Warmth to Weight	Colour	Comfort to Warmth	Fabric/Foam type	Value	Price ($)
Exped DownMat	183 x 52	9	0.63	7	0.09	Grey	63	Polyester/Down	0.53	$369.95
NeoAir X-therm	183 x 51	6.4	0.43	6.9	0.06	Vapour	44.16	Nylon	0.79	$558.95
NeoAir X-lite	183 x 51	6.4	0.34	4.2	0.08	Marigold	26.88	Nylon	1.42	$469.95
Trail Pro Reg	183 x 51	7.6	0.86	4.4	0.20	Gecko	33.44	75D Poly/Urethane Foam	1.84	$313.95
Sea to Summit Ultralight Insulated Reg	183 x 55	5	0.48	3.1	0.15	Orange	15.5	Nylon	2.20	$219.99
ProLite Plus WR	168 x 51	3.8	0.64	3.9	0.16	Cayenne	14.82	50D Poly/Urethane Foam	2.91	$263.05
EvoLite Plus Reg	183 x 51	6.3	0.64	3.2	0.20	Pumpkin Spice	20.16	Polyester	3.60	$362.50
Trail Scout Reg	183 x 51	2.5	0.63	3.1	0.20	Grey	7.75	Polyurethane/Urethane Foam	3.83	$145.95
ProLite Plus Reg	183 x 51	3.8	0.57	3.2	0.18	Poppy	12.16	50D Poly/Urethane Foam	3.87	$263.95
Trail Lite Reg	183 x 51	3.8	0.8	3.2	0.25	Grey	12.16	75D Poly/Urethane Foam	4.38	$212.95
Trail Lite Lge	196 x 63	3.8	1.11	3.4	0.33	Smokey Pine	12.92	75D Poly/Urethane Foam	4.93	$194.95

Packs and Rucksacks

Overview

There is no one-size-fits-all pack. They are kind of like getting fitted for boots. There will be plenty that are "your" size but might not be your exact fit. A good starting point is to work out what you will mostly do with the pack. For example, is it mostly day walks with the odd overnight? Is it multi-day hikes with multiple camps? Or through hikes or base camp setup with day walks from that base? Let your work shape the type of pack you purchase.

Generally the colder the environment the more gear you need to take so this variable is worth considering if you are buying the pack early into your foray into hiking. The last thing you want is to buy a 60L pack and spend thousands of dollars on other gear only to realise it won't fit, and you in fact needed to purchase a 75L pack. As a rule of thumb I always say you are safest to cater for your coldest environment. This can be applied to packs, tent, sleeping bags, clothing and safety gear.

Day Pack

There is some ambiguity in the term day-pack. It could be anywhere from 8L to 50L depending on what type of day trip you are intending to do. My general advice would be to consider having a framed back in your pack if you ever intend to carry greater than 10-12kg. Lots of Ultralight packs are hitting the market between 26L and 50L these days and most won't have much of a frame. If I was to go down this path I would be aiming for a sub 10kg step-off weight (water and food included). Terra Rosa, Wilderness Threadworks and Tier Gear are all Australian companies making some pretty neat ultralight gear. Check them out.

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Loaded for 10 days on Kokoda

Multiday Packs

At this stage of the game you are venturing into overnight hiking. The gear list changes in that you will need to add "a sleep system" (shelter, sleeping bag and sleeping mat). This can also add between 2 and 5kg to your pack system. The extra weight can mean you require an upgraded harness compared to a day pack unless you are counting every gram and going ultralight. I, for one, don't yet like to forgo life's luxuries like a -7°C sleeping bag, 4 season tent and insulated sleep mat. Others don't mind pitching a tarp in the snow and wearing down jackets and other clothing to assist in maintaining body warmth while sleeping.

If you are not necessarily counting grams and buying gear based on budget then you could find an overnight hiking kit weighing in around 14 - 16kg without much food and water. Once food and water is added you are suddenly hitting the 20kg mark. 20kg isn't light for a lot of people. What is important is that the pack you buy/borrow/steal needs to fit you properly. The best way is to get fitted by a professional. If you've picked up a second hand pack there are some foundation steps that apply to most packs that can be applied to ensure the best possible fitment for your body.

Everyone's body is different so just because 20 people say a certain pack is the best doesn't mean it's best for you. Like boots, you need to try a few on if you can. If you are buying on-line ensure you follow any sizing charts and take care in measuring back length and hip belts. Visit our YouTube channel for a short video tutorial on how to fit a pack and how to take measurements.

Analogy: a big car with a small engine is like a pack with a poor harness. A small engined car can't handle a load very well. On the other hand a bigger engine in the same chassis helps the car handle heavier loads. The harness is a bit like that engine. A bag with the same capacity but with a slightly better and heavier harness may seem counter-intuitive but the extra 500-800g in the harness may well help you carry heavier loads with better balance and weigh distribution.

Handy Hint: try your new pack loaded up with appropriate weights before buying.

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Being hyper alert for bears, Alaska ►

Alpine Packs

Alpine packs often won't look much different to a multi-day pack or rucksack. They will however have some extra features for specific load carriage requirements for back-country trekking like shovel storage pouches, snowshoes straps, ski straps, ice axe/pick holster and in some cases Avalanche equipment pouches. Much more gear is carried for deep winter backcountry missions. Due to the likelihood of such extra weight it is highly recommended that an adequate harness is attached to the pack you look for. Dispersing such loads to the hips and lower back area is important as shouldering weight for long periods can really throw your body out of whack. There is insight into this in our YouTube video where Hamish outlines some pack fitting tips. Nice.

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Entry level snow packs

When touring out in the snowy backcountry it can be very handy to have a snow specific bag. These pack variety from 10L to 60L and are packed full of extra features. These include ski, snowboard and snowshoe straps, ice axe straps, goggle pockets and even avalanche airbags. These are only really worth the purchase if you are doing some significant backcountry hiking. However the major brands design the bags to have a street style look. So there is possibility for multifunctional use here.

"On my hikes I absolutely love all the features of some of these snow specific brands. You can tell the designers have put a lot of time, effort and testing into them. Generally all the major brands make good bags, just make sure you check it out and try it on in person first." - Michael

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Lightweight Packs

This is an exciting area. As someone who had a hip operation at 27 years old I probably should be looking into the ultralight gear but I am a sucker for a heavy pack (thanks military). As I mentioned earlier, I don't mind carrying wine and even soft cheese and pepperoni up mountains. I am however beginning to look at lighter options and maybe leaving the deli items behind (sometimes). At 34 I'm not old but I am not getting any younger. The hips and knees are going to appreciate the lighter gear no doubt.

The good thing about some of the gear on the market is it's actually quite tough as there are fibres and fabrics available that are durable and light. So if you can keep that overall kit under 12kg (optimum would be 8-10kg and 45L in my opinion) you are doing alright. I'll still be using my trusty old One Planet Vertex 45L as my lighter option as it still has a well engineered harness and can cope with 12kg really well. Next on my list is something from Wilderness Threadworks and another from Cactus Outdoor.

Pack Cover

Even if your pack is waterproof a pack cover can make life a lot easier. Imagine a damp soggy bag needing to be dragged inside your tent in bad weather as opposed to removing the cover and shaking it out in the vestibule allowing you to maintain a dry pack inside your tent. For the purpose of keeping gear inside the pack dry I would recommend internal waterproofing measures like dry sacks, zip lock bags or a pack liner that can be rolled over at the top to stop water ingress.

Some packs offer higher levels of water resistance than others - such as canvas or vinyl bags. However it is best to bag up your valuable items and spare clothing especially if attempting several river crossings or hiking in known inclement weather.

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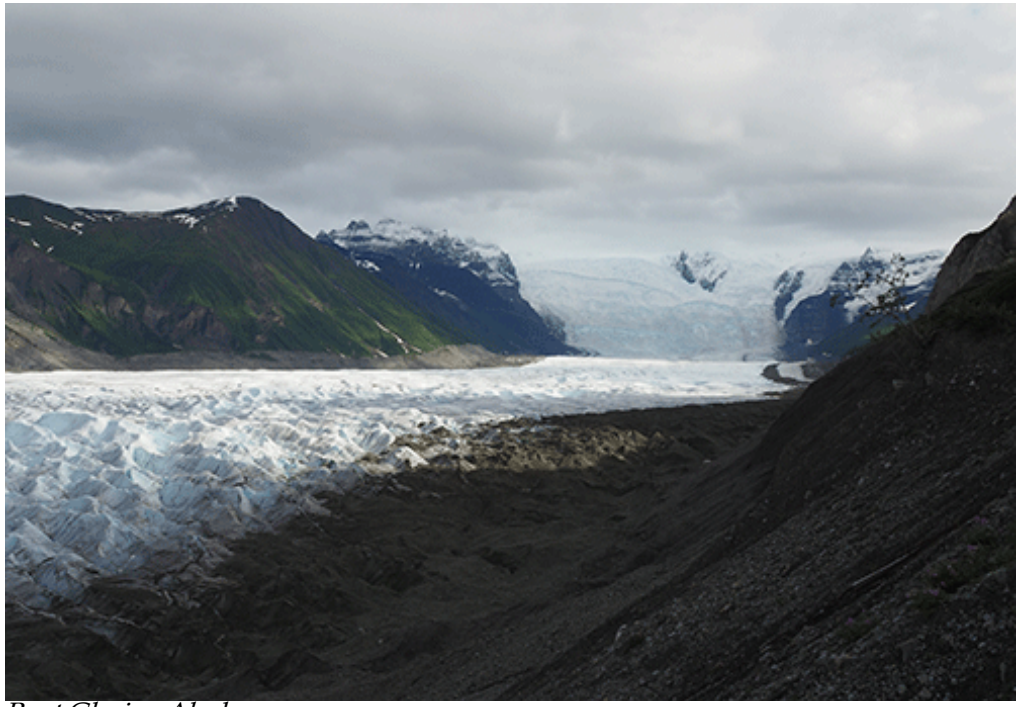

Root Glacier, Alaska

Pack Liners

For the sake of a garbage bag there is no reason your pack 'can't' be lined. Depending on where you are going and what you think you might encounter will determine the necessity for a pack liner however it is good insurance and weighs next to nothing.

A pack liner that I have for my large rucksack almost doubles as a half body bivvy bag. That might sound crazy but in the event of an emergency or if you are trying to keep an injured person out of bad weather this half-body size bag could make the world of difference. Having items in your kit that double or better yet triple as other things is a bonus and will save weight as much as it saves you taking excessive pieces of gear.

$$$ Budget tip: A good sturdy garbage bag or a purpose made nylon pack liner will do the trick. Just remember if you go the garbage bag option and you are worried about it breaking just double up and take two, or three for that matter you might make friends with people who forgot to line their packs. They will forever be grateful if you assisted them in keeping their gear dry.

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Food and Water

If you've spent days or weeks living off ration packs you might have a tainted view on dehydrated or freeze dried food. It's not all doom and gloom though. Some of the dehydrated and freeze dried food available these days is really tasty and quite diverse in its range of options. Some companies like Campers Pantry are presenting us with freeze dried fruits, breakfast, lunch and dinner options and even a rice pudding with apple.

Food can often suffer in the hands of neglect and it makes for a pretty miserable experience if you happen to go hungry. Freeze dried food is really the lightest form of nutritional food. It is important to remember though that water is required to reconstitute the meals, either with cold or hot water. I must say I have never taken the cold water rehydration option, it doesn't sit well with me unless it involves porridge or something sweet. In saying that, many people are choosing the cold option to avoid the carrying of a cooking system. If you don't need hot water for coffee and you are happy to eat your stodge cold then you have saved your self anywhere between 400g and 1kg in cook system weight.

Freeze dried food locks in more nutrients than dehydrated meals. However they are both fantastic options to get adequate amounts of food in to your pack for multi-day trips. Whilst on a two day hike you can probably stretch the nutritional friendship with your body it will start to fade you if you intend on longer trips. If you are doing big days walking your body will need to replenish itself of things like electrolytes and nutrients.

Hot food or cold food? That's a subject for another book. Your body is just as efficient processing hot or cold food. But if you look about you can find some useful references to help you get the most out of your food. From the Victorian Government Better Health site: "Some vitamins dissolve in water, so you lose your vitamins to the cooking water if you prefer to boil your vegetables. For example, boiling a potato can cause much of the potato's B and C vitamins to migrate into the boiling water. It is still possible to benefit from these nutrients if you consume the liquid, for example, by turning the potato and the liquid into a soup. Alternative cooking methods such as grilling, roasting, steaming, stir-frying or microwaving generally preserve a greater amount of vitamins and other nutrients."

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Stoves

Here's a whole world of argument around the camp fire. Ask a question about the best stove and you'll have as many answers as you have had hot meals. Which is what it's all about after all. Fire! Matches. That's the first option. Actually the first option is to eat cold and that's a planning strategy to always have up your sleeve. Can you eat if you can't light a fire or your stove breaks?

There are loads of ways to throw together a cooking system. Just ask the people that cut a beer can into an alcohol fuel stove. You can literally boil water on a burning pile of sticks but that's not always practical or legal (national parks). Many national parks and state forests will have restrictions around what can and cannot be used and during which times of the year. As it varies from state to state and park to park I will not attempt to debunk the myths. The best advice is to follow the signage within the national parks or contact the relevant authorities in the location you intend to travel to. Wood fires are commonly restricted in Alpine National Parks and only gas stoves can be used.

Fuels

Wood. Enough said. Dry is best.

Tablets. Hexamine. A smokeless chemical which burns without leaving ash and is part of a base issue to soldiers, who mostly learn to hate the noxious fumes and residue which taints uncovered food. The burning hexamine releases a range of chemicals including hydrogen cyanide so it's hardly surprising that it can make you feel nauseous. It won't surprise you to know we don't really recommend this fuel.

Butane. An organic compound in the same family as wax or paraffin, it's conveniently a gas at room temperature and a highly flammable one at that. Derived from oil petroleum it is odourless so other chemicals are added to alert users to gas leaks. It dissolves instantly in blood, is denser than air (gas leaks in tents can affect sleeping campers) and when burning produces carbon monoxide and carbon dioxide - excellent reasons to not use them in a confined space.

Isobutane. An odourless and colourless gas its used in blended fuels for camping. An upside of this fuel is that it has minimal impact on the ozone and as such has become common as a refrigerant. Its actually a gas which becomes liquid under pressure.

Kerosene. Your grandpa probably called this paraffin oil. Or just paraffin. And there's every chance your early camping experiences includes recollections of this fuel firing lamps and stoves. Originally derived from coal and oil shale (such as found in the ghost town of Newnes (NSW) it was later produced at your local friendly oil refinery. Its widely used in cooking and heating but its most common use is as a jet and rocket fuel. Works well with the MSR Whisperlite

Methylated Spirits is an alcohol (ethanol) derived from plants, but given its toxic nature also includes additives to deter you from taking a swig of it on a cold morning. Methyl alcohol is the main additive designed to deter drinking which is why its common name is methylated spirits.

Butane Pros and Cons (more fuel considerations coming in the next edition)

Butane or isopropane stoves are among the easiest to use. Generally a simple stove will screw fix directly to the fuel source and utilise that gas canister for stability. This usually leads to lower pack weights and in some cases the canister will nest inside the cooking system allowing for neat packing.

A very common question about butane canisters is "how long do they last?" The answer of course depends on how often you use them and for what. Single meal cooking heating 300-500ml of water once a month means a canister can last you for months, if not years. Multiple meals on multi-day hikes mean you may only get a few trips out of them.

Pro's: often quite lightweight stove options, high BTU output for fast water boiling, easy simmer control in most options. (British Thermal Unit - the amount of energy needed to raise the temperature of one pound of water by one degree Fahrenheit. You might be more familiar with calorie - the amount of heat energy to raise one gram of water by one degree Celsius. Same but different.)

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Cons: fuel availability due to specific canister types, cannot fly with canisters, empty canisters cannot be refilled*, canisters can become expensive as a fuel option.
Never use in a confined space such as a tent.

Water Purification

This is safety gear, without question. Or rather, your attitude to what you put in your mouth, water or otherwise relates to safety.

What are we trying to kill?

Germs and bugs. Anything that can make us violently ill. Or even uncomfortable. One of the main issues with gut problems, apart from the discomfort, and perhaps embarrassment is the rapid dehydration that happens with anything like giardia, dysentery, vomiting or diarrhea.

From smallest to largest here are the unseen things that we are purifying against.

- Viruses: such as enterovirus, hepatitis A, norovirus, rotavirus
- Bacteria: such as Campylobacter, Salmonella, Shigella, E. coli
- Protozoa: Giardia intestinalis (also known as Giardia lamblia)

Here is a tip - all of them come from human or animal faeces. Prevention is the better part of any cure so practising good toilet hygiene goes a long way towards avoiding these bugs. But you never know what faeces might be entering the water upstream so let's look at our treatment options. (We'll cover preventative measures in the next edition).

Boiling

Most bugs that ruin your outdoor adventure are killed by boiling water for at least a minute. Boil, not simmer. Be happy that your water is a 'rolling boil' - seriously bubbling. That will kill even giardia which if you have experienced you will know you don't want to ever have again. Most Australian terrain is fairly low and one minute will suffice. But if you are in higher country above 2000m the collective wisdom is to boil for longer. Let's say three to four minutes. It's tempting to think that when you are in the mountains that the water is pristine but you never know who has been there ahead or above you, or even what animals have contaminated the water through faeces or by decay.

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Filters

Our camping and trekking adventures have been greatly assisted by deep research around the world by organisations searching for non boiling water purification options for the third world where boiling is not an option and dirty water kills millions, especially kids. Mechanical filters are numerous. As a general rule a filter with porosity of less than 1 micron will filter out all the bugs listed above.

Be aware that filters DO NOT remove viruses. They are tiny critters and slide through even a 1 micron hole. Boiling is the answer. But if you can't do that see 'Combination' below.

Chemical

Not all chemicals will kill all bugs. Iodine for example will not kill giardia. Nor will chlorine. Check the manufacturer's instructions to see what bugs they kill. There are lots of options out there.

Helpful hint. If you are trekking in second or third world countries be aware of the problem of the multi billion dollar counterfeit pharma market which plagues these places. The medicines and water purification chemicals (and even things like contact lenses) may look like the genuine thing but most likely are not. Buy your chemicals and medicines before you leave Australia.

Budget tip: if travelling in a group you can break up the various purifcation tools and share the load. One person brings say, a steripen, another brings tablets and so on. That way you can share the cost, cover all the bases, and ensure you don't have a group with no purifcation tools at all.

UV Light

As a general rule UV light is unlikely to be a good option in the bush. Great if you are car camping or in a caravan otherwise close to good power sources. UV light effectiveness depends on the power of the UV but also the cloudiness (turbidity) of the water. Sediment can minimise the effectiveness of the UV treatment.

Combination

If unsure you can use a filter and chemical. Some we know take extra precautions by boiling what they have filtered. That may seem a bit extreme but if you have the time to invest in this sort of precaution your gut may well thank you for it later.

A combination of filter and chemical is one way to address all bugs including viruses if you are not able to boil any water.

The Micropur tabs will kill bacteria, viruses and Giardia. We combine these with boiling water for at least one minute if we are not sure about our water supply.

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Water Bottles/Bladders

A good water bladder is one of the best ways to carry larger volumes of water. The bladder itself is usually quite light which is positive when factoring in the weight of litres of water. Water carriage is critical and more so in higher areas and along ridges where water can be scarce. If your camp is high and you intend to perch there for a couple of nights you may need to take enough water for 48 hours 6+ litres. This is a hefty addition to what can be an already weighty pack. It was often the case in the military we would step off with a minimum of 6-8 litres as resupply was never guaranteed. I rarely carry that much water but there are sections of the AAWT that stay quite high for long distances and in summer water can be hard to come by. Indeed, unlike trekking in places like New Zealand, the Australian bush can promise water one week only to be dry the next. There are too many deaths from dehydration in our country, perhaps the saddest being those in the NSW Blue Mountains by trekkers who have assumed water would be available on the trek.

BPA Free? What does that even mean? BPA stands for "bisphenol A". BPA is found in some food packaging plastics and in some epoxies which line food cans. There are concerns that BPA can impact fetal development and impact child behaviour because of its influence on developing brains.

My favourite combo is 2 x 1000ml Nalgene bottles (1 x wide mouth and 1 x narrow mouth) and a 2 or 3 Litre bladder (not always full). If I am setting up camp for 2 nights and I am unsure of water scenario I know this is a minimum to be able to see out 24 - 48 hour although it is stretching the hydration budget. A freeze dried meal requires approx 250 - 300ml so one water bottle would cover lunch and dinner for two days. Another bottle would cover morning coffee and the sogging up of my muesli/milk powder combo in a ziplock bag, which leaves the 2-3 litres in the bladder for conservative hydration.

I can confirm that Nalgene bottles in addition to their extreme usefulness have also become a bit of a recent fashion accessory. In addition to puffer jackets and vests, it is not out of place to see a fashionable young person sporting a Nalgene bottle out in the city. As of recent some designer brands have been doing "crossovers" with the bottles too.

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I think there is some wisdom in having the capacity to carry extra even if you don't step off with it full. You might have a companion whose bladder punctures (it happens) and they lose 2 litres through their pack (it happens) and they need some water or a loan of a bottle for the remainder of a trip.

A simple and effective way to carry bulk water is to grab two 1.5lt water bottles from the supermarket. They are re-usable and recyclable and very cost effective. They may pose a slight issue if exposed to excessive sunlight for long periods however I am not qualified to go into further detail on that. For the record Nalgene bottles are very tough and robust and BPA free. You can also pour boiling water into them without risk of losing their shape, which means you can use it as a hot water bottle in your sleeping bag when it's really cold. Above 3000m in the Himalayas and in Argentina boiling water placed in a Nalgene bottle then placed inside a sock made for a long lasting water bottle. The next morning you have a cooled bottle of sterilised water. Just don't confuse it with any bottle you might be using in the tent as a pee bottle.

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Safety Items

I lump into this section all those things that may well contribute to my survival but also help ensure I am fit and well when I am outdoors.

First Aid Kit (FAK)

First up the FAK, which is not an optional extra but a necessity. First Aid Kits are essential but what should you put in them? A couple of bandaids, some tweezers and a stretchy bandage? There's a little more thought required but this is an often neglected bit of kit.

Think about the trip you are undertaking and what you might need in an emergency, but especially how you will use it. In remote locations we have managed arterial cuts and broken bones with stretch bandages to good effect. A foam/foil splint can be a very good aid and we always carry one of those as well. What gear do you carry for snake bite? And how will you handle burns?

If traveling in a group consider first aid for the group. Some items can be spread across the group but each person should carry a FAK sufficient to support themselves.
And if you are trekking in Australia I think you should consider your phone an important part of your first aid kit - on it you should have the Emergency+ app. Make sure the app is on your Home screen or first page of apps.

Remote area first aid training exercise, Berowra, NSW

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Personal Locator Beacons (PLB)

Here is a topic we all hope our knowledge of doesn't need to be called upon. In saying that it is one of high importance and recent discussion and debate. PLB's are different to a GPS watch or device in that they emit a beacon or frequency that is picked up by a network of satellites. That beacon is then linked to a device (you) and your location (at first based on the registered trip for that PLB) this is where it gets tricky and the forums go haywire.

Step 1. You buy a PLB for instance the KTI PLB2.
Step 2. You go home and excitedly take it out of the box and read all of the instructions.
Step 3. If you completed step 2 you should now be on the www.amsa.gov.au website registering your device.
Step 4. Presuming you purchased the device for an intended trip you will be required to (not mandatory but highly recommended) register where and when your trip is.
Step 5. There is a way to test the device and this should be completed.
Step 6. You head out bush and fall down a ledge and suspect a broken femur.(Ouch!) No phone coverage and flat battery on your phone/phone fell off cliff.
Step 7. You grab your PLB and push the magic button after flipping the antenna. (See Step 9 for what happens nest).
Step 8. You wait patiently for a rescue team to arrive.
Step 9. Your signal is picked up by the helicopter and ground crews are made aware of your location and an effort to reach you is made ASAP.
Step 10. Off to hospital or safer ground you go.

Certain rescue apparatus can scan for the beacons signals once in the general area. Most rescue helicopters are fitted with such technology. This is why it is **important to register your beacon** and log your trip intentions via the www. amsa.gov.au portal.

Depending on where you are you'll probably wonder how long it will take for that care to arrive. In the best instance at least an hour if you are a few hours from the closest major city. Once your beacon signal is received in Canberra, the authority in the area you are in will be notified that the device you own has a trip logged on-line (by you) in the Alpine National Park around Mt Buller for instance. They will contact your emergency contact for extra information about your trip. This allows them to send relevant help in that general direction.

If you don't register your beacon and assume pushing the button will magically make a rescue team appear then you may be unpleasantly surprised when help does not arrive.

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GPS Devices

These days the power of smartphones has ALMOST nullified the need for a stand-alone GPS device. Provided you aren't using the same smartphone to take photos the whole trip it can be quite useful. In my experience it is hard to rely on the battery life of a mobile phone as a GPS device. I wear a GPS watch which I purchased in 2014 after destroying my previous one during back-to-back military training courses in 2013.

My current watch, a Garmin Fenix 3, has been quite useful in various scenarios but mostly for acquiring a grid reference in unfamiliar terrain to allow for a map to ground reference. It has the ability to track your course as you walk and therefore allows you to "track-back" to your departure location. If you get fancy with the availability of .gpx files you can load predetermined routes using on-line software before you head off on your journey. This is a good safety measure if you are likely to encounter inclement weather or unknown terrain. It does take some time and research but will give you peace of mind on the trails.

Battery life can be the main issue with some devices. However we are seeing more products hit the market with solar capability. The settings can be tweaked to optimise battery life i.e. dimming display, reducing frequency of GPS ping, switching off at night and disconnecting from smart phone.

There are also some more mutli-use items for communicating on the trail. Take the Garmin Rino 700 and 750 for example. These GPS units have UHF radio technology integrated into them. They negate the need for carrying a GPS and a UHF radio. If you are a hunter or work in the bush where you are separated from other members by more than a coo-ee then a Rino could be of use. If, however, you have less of a requirement for an all in one unit the best option would be to have at least one GPS mapping device, a couple of two-way radios and a PLB in your walking party. If your group is afforded the luxury of having someone proficient in map and compass navigation that can eliminate the need for a dedicated GPS unit. Most mobile smart phones have downloadable map capability and some third party apps even allow for GPS overlay so you can plot your trail.

I like Garmin Tactix, Garmin Fenix and Suunto Ambit

SPOT trackers. You may see SPOT trackers used by mountaineering groups or ultra marathon runners. They can be outside most budgets and do rely on someone else keeping track of where you are. Early versions were very heavy on batteries. Even the elite military SAS use them in training and candidates who might otherwise have been lost in remote areas while training and been 'found' - though they likely argue they were not lost!

Fox's Guide to Field Gear

Trekking Poles

After having hip surgery at the ripe old age of 27 I decided that maybe it was time to invest in some trekking poles. I will not beat around the bush - there IS a stigma around poles particularly amongst younger folk. The only way you can determine if they are any good or not is to actually give them a go. Rather than borrow a set I just dove straight in and bought a pair prior to a trip to Peru in 2016. Whilst I will never know how I would have fared without them, I do know I felt great at the end of each day having used them.

To simplify what is what I will highlight 3 different pole types. All of which will usually be available in either aluminium or carbon fibre options.

1. Folding
2. Telescopic Poles
3. Fixed length Poles

In theory, the less (moving) parts in a walking pole the sturdier they are, however this has some drawbacks in that you cannot adjust them to suit your height or walking conditions. To descend, the poles need to be longer than when on flat ground. The most important scenario to cater for is steep descents. The walking poles act as stabilisers and in essence are an extra limb, or limbs if you have 2 poles. Because the ground is falling away from you as you descend, having longer poles means you can prop and take your combined body and pack weight through the poles rather than your legs, back and hips (as much).

So if you haven't gone crazy-mad ultralight with your gear and you want to be more comfortable on the trail or you are a sucker for carrying those extra comforts in your pack then I highly recommend a set of poles. Take it from a 34 year old with a bung hip.

You can also use them with tarps to create a shelter or with a tee-pee style tent like the UL6 teepee.

Pick your terrain - poles very handy here on the volcanic slopes of Kilimanjaro

Helinox make a range of hiking poles suitable for all facets of outdoors adventure from day walking to snowshoeing and mountaineering. They are great value and are impressively lightweight. I bought a set before a trip to South America hiking the Salkantay Track, they were a welcome addition to my kit as I had undergone hip surgery just 2 years prior and appreciated the relief they provided by taking some of the load off my lower body.

I am generally not a fan of trekking poles since they throw out my sense of balance. But on Kokoda I'm glad I heeded advice to use them. On more than one occasion they saved me from spectacular falls. I was consoled that even the local porters were using trekking poles - made from sturdy saplings cut from the side of the track! Bruce

Knife/Bush Saw

Anyone who has a knife has a view about its merits and it seems everyone is an expert on knives. A folding blade is good for safety sake but so too a solid sheath. A good example of a knife I really like is shown here from Melbourne knife maker Habitat Blades. An excellent tool for general purpose work.

Consider a pruning saw if you are bush bashing. These can be purchased with a stainless steel folding blade from hardware stores. The pruning knife has come in handy over the years, from clearing trees fallen over tracks to cutting saplings for a stretcher and cutting frames for a shelter. Lighter than an axe and usually very sharp they are a good investment in the pack.

I recently purchased a small retractable pruning saw from Mitre 10 for some light pruning tasks at work. I had not factored in that it might be useful for hiking too. I was first impressed with how light it was and also by it's retracting mechanism, a simple turn of a tensioning device and slide it out, then lock it place by turning the opposite way. In essence it is no better or worse than a traditional folding pruning saw but just something I had a good experience with.

I also carry an Opinel #6 Carbon Steel folding pocket knife. For around $29.95 from most camping and outdoor stores these are little gems. They originate in France and sadly I've learned they are about $5 over there. Regardless of their perceived value they are a great knife for preparing food, cutting rope and sorting out splinters (if it gets to that point).

Space Blanket

Not the scrunchy disposable foil one! Whilst the neat little disposable space blankets are very useful and don't take up much "space" in your pack there are some better quality and much more versatile and useful space blankets on the market. Grabber do a great one but I have seen other companies like Survive Outdoors Longer (SOL) doing a similar thing. Basically its an 8' x 5' insulated quilted space blanket with a hemmed edge and brass eyelets that allow it to be used in many ways i.e. as a shelter, tarp, bivvy, picnic blanket or a reflective panel marker to signal your location to the rescue flight aircraft.

Navigation

Navigation is worthy of an eBook in its own right. It's worth your while to learn the basics of navigation and to understand how to use a map and compass and those foundational lessons will stand you in good stead if the navigation App dies or batteries go flat.

A useful on-line resource for learning how to use a map and compass is at https://www.wildearth.com.au

Silva has some really clear resources on YouTube.

A compass never lies. Ever. An App can. Having said that there are some apps which I've found very useful for planning and tracking routes.

Apps for planning/tracking

- Gaia
- Garmin (.gpx files)
- All Trails

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Maps

Usually the best place to buy maps is as close to the destination as possible. Store owners in a local town will generally stock a solid range of maps of the area as well as others. They can also impart some of their knowledge to you (especially if you are supporting their store). As with the compass, if you don't know how to use a map it may not be the most useful thing to have. However I believe there is a level of intuition when it comes to navigation so there isn't any harm in carrying it given the insignificant weight cost.

If you are serious about learning to read a map and you can't find someone to teach you after using on-line resources how about doing some orienteering? If you have access to a local orienteering club they will be able to not only show you how to read a map but how to use a compass as well.

Compass

If you aren't confident using a compass check those YouTube resources and learn the basics. Another option is to use the orienteering courses which are widely available. Many have beginner routes so you can get experience with a map and compass without getting horribly lost.

Why do I encourage that? Because, as our military instructors would repeatedly say "The compass never lies". If you are confident using it then a compass should always be in the pack.

Navigation by the sun, moon and stars (celestial navigation) is probably a better baseline level of knowledge to also have in the bush. Understanding nature's cues means you can intuitively make your way in a deliberate direction without becoming too far "off-course". To learn the fundamentals of map and compass navigation takes a bit more practice and requires regular re-hashing so you don't "lose" it. In short, I reckon you would be better off doing your best with nature's cues rather than stressing over remembering how to orientate the map to ground and pick a bearing with a compass.

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I like the Silva compasses but there are lots of good options out there.

SILVA Ranger MS6400

SILVA Expedition

Silva has a good reputation. They were issued to us in the military and proved to be quite reliable. I suspect in most cases it is the user not the compass at fault when picking bearings. I have had good success in navigating by the stars at night time, of course after checking a compass bearing.

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Ella and Dennis taking UV precautions at altitude - Alaska

Sunglasses and Goggles

There is a very good reason to wear sunglasses in alpine areas, particularly if there is snow. Snow glare can do damage without you realising it. Certain sunglasses are designed to be used in such situations. You may have seen some glasses resembling "old school" mountaineering glasses with the leather flaps on the sides. This offers extra protection from the sides where sun glare can still get in but without the full wrap of a goggle.

The Cancer Council offer some really good sunglass options designed to keep reflected as well as direct light out of your eyes. They are cheaper than your popular fashion brands and are quite robust. And you can be sure they are going to do the job.

If you are snow touring it may be wise to have goggles for adverse conditions such as blizzards.

But it's not just snow. Bright days. Altitude. Water. Beaches. Deserts. Anywhere in fact where you are exposed to direct or reflected light. Don't forget that as you gain altitude, even only by a small amount, that you are increasing the amount of UV light to which your skin and eyes are exposed. There is a very good practical reason why pilots wear sunglasses - it's not just about looking cool!

"For full days sunglasses with side protection is a must. It is incredible how much sun bounces off the snow and can get under the glasses. I've had a few days where my eyes have been dried out and red. Even worse I got sunburnt on the skin directly under the glasses, right around my eye. This meant that for the next 4 days I was asked several times if I had been punched in the face, so I would definitely recommend covering the eyes properly, even with tape or extra sunscreen if you are only planning a few days.

In my experience goggles are a must for downhill skiing. However when touring the ascent I always get too hot to have goggles stuck on my face. That's why I carry both glasses and goggles on my tours.

In terms of brand I've found that your dollar really goes a long way. The gold standard (and most expensive) goggles are Oakley, they are the most durable and offer the best vision in lowlight conditions."

Michael

While we are talking about skin protection don't forget your sunscreen. And if on glaciers and snow make sure you protect those nostrils! Nothing worse than the nostril membranes being blistered.

Head-torch

Rechargeable vs non-rechargeable?
How bright does it "need" to be?
Are you walking at night?

I purchased a Black Diamond headlamp in early 2012 and it still serves me well. It is a re-chargeable 200 lumen trail running model and has great battery life for rummaging through your pack at camp and cooking up a storm for dinner. A safer option can be something with replaceable batteries so you can pack what you require for the length of the trip. The downside to lamps with battery packs is that they can be quite heavy. If you are walking at night you might be better off having some kind of solar charger working to charge during the daylight hours.

In addition to a more powerful headlamp I have an emergency lamp called an e-lite by Petzl. It's residual from my days in defence. It weighs nothing and the head-strap is merely a strand of retractable wire. Very minimalist but incredibly handy and even has red light and SOS functionality.

We were climbing Kilimanjaro at one in the morning and my expensive head torch faded and died. The batteries were too exposed to the cold I reckon, even though I had used the same torch on early climbing starts in the Southern Alps of NZ. Lesson for me was the need to have a second or backup torch.

If you are walking or climbing at night take the time to grab some photos - the effects can be magical.

Ruins of abandoned copper mine, Kennecott, Alaska ►

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UHF - 2 way Radios

Quarter watt. Half watt. Watt does that even mean? Watt does it matter? Radio power is measured in watts. A Watt is a measure of power, and is named after a Scottish scientist called James Watt who lay awake at night thinking about these things. Governments tightly regulate how much power a radio is allowed to use but it's also a factor of battery strength and capacity. Suffice it to say, a half watt or even 5 watt (5W) radio is not emitting much power at all. Think about how dim a 40watt light bulb is and you can appreciate how small 5W really is.

Fortunately in the radio world 5watts will do you a lot of favours. To help you put 5W in perspective, in the days when Citizens Band radio was popular it was common for New Zealand enthusiasts to be able to talk to their Australian colleagues using only half a watt of power (that was all the government allowed them to use). The conditions had to be right (always at night) when the atmosphere allowed them to bounce their signals across the Tasman. It was known as 'skipping' or 'talking on skip'. So any wattage radio up to the legal limit of 5W will be fine.

Apart from power output your radios will be impacted by terrain. At the frequency you are using, signals won't go through or around hills. That means your radio needs to be able to 'see' other radios in order to communicate with them. You will hear reference to 'line of sight'. If your team is spread out among the mountains, as long as they are in line of sight your radio should be good for a couple of kilometres or even more.

Here is your main challenge with radios - the higher the wattage the quicker the battery drains, and the harder they are to recharge. Mains power, or serious solar packs are usually best for 5W radio recharging. If you are walking from hut to hut, and those recharge facilities are available at the huts then you are fine. But if you are doing long multiday treks and don't have access to charging mains or solar recharging at huts, your use of radios need some serious homework and support gear.

Watt or what I will say is that no matter what the watts it's a handy bit of kit to carry if you have a trekking group of more than 5 or 6 people and you like to spread out along the track. It is very easy to forget the person behind you is even there, especially on a steep incline with the sound of your own heart thumping through your ears.

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5W UHF Radio in use while trekking Alaska

On trips gone by we have adopted a Trek Master and Trek Leader system. Now that might sound like overkill but when you are tasked to look after the safety of a group of 18 "adults" in Alaska you'd be surprised how 'random' their behaviour can be, even when their own safety is at stake.

Whilst minimal wildlife was encountered in Alaska we figured that with an average distance of 5m between each trekker we would be spanned about 200m along any given track. To shout from the front to the back of the group would wear thin after the first few hours. Yelling "bear" at the top of your lungs may not go so well for you either if you are faced with such a scene.

Most handheld UHF units are no more than 2W and in-car units usually up around 5 watts. Handhelds can however be purchased in 5W versions and they are good for increasing your range and contacting parties other than your own immediate group i.e. search and rescue, local authorities and landowners. Certain channels on UHF radios are reserved for emergencies (5 and 35 on the 40 or 80 channel radios, but please check these on the instructions that accompany your radio). For the sake of looking after communications between the front and rear of a small group a simple 1W or 2W should suffice, although a twin pack of 5W handhelds can be obtained for between $200 and $400 and will increase the versatility of your communications.

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Repair Items

Repair Kit. If you are away for weeks at a time in remote areas a repair kit is essential. You will make this up based on experience but we have found the following things helpful.
(Note that some of these repair items also constitute your survival kit).

Budget tip: consider sharing these items across a group of hikers.

- "Hundred mile an hour tape" - fabric based gaffer tape. Easy to rip into strips.
- Small pair of high quality pliers. Avoid the $2 specials, they will let you down.
- Cable ties of various lengths and thicknesses
- Nylon fishing line.
- Glue. Two weeks into a four week trek in the Andes and a tube of glue saved the soles detaching from not so old boots!
- Small tube of superglue.
- Tent patches.
- A couple of steel bull clips - will keep material together in wind better than pegs.
- Shock cord for tent pole repairs.
- Sewing kit.
- Scissors/shears.
- Multitool

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Other Gear

Essential? Non essential? Stuff that might make your trip just a bit more comfortable, enjoyable and even memorable. Like any piece of gear this is all about your choice.

Binoculars

Whilst I'm not an avid bird watcher I do like to be able to verify distant objects from time to time. A good camera lens can do the trick but having the bi-focal advantage makes a huge difference to the quality of viewing. I have only recently bought a pair and they're amazing. Only $149 and an 8 x 42 gives a clear crisp image and good amount of zoom. Monoculars are a good option and can save a lot weight.

If ultralighting is your thing then you could skip past this one as by the time we have drawn our binoculars you'll be quick stepping it to the very location we are aiming to see in the viewfinder.

The other time I would recommend binoculars or a sighting device is if you are relying on conventional navigation methods. If you are required to do a re-section or triangulation in order to verify your location it can be handy to be able to pinpoint a particular landmark using binoculars.

Booties

Handy in cold areas in your tent or if you are using a hut. Fresh socks and a pair of booties reward your hard working feet. Sheep skin slides are a good lightweight option and even thongs, flip flops or jandals can suffice as camp footwear depending which side of the Tasman you hail from.

I have two options in my gear cupboard, Adidas slides and some Aussie made sheep-skin UGG slides. I guess the sheepskin ones could be reserved for cold weather usage and the Adidas ones for everything else. This is not always a must-carry item but can make the world of difference after a good stomp.

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Gaiters

Snakes? Scrub bashing? Snow? Where do you need them? Should you just wear them out of habit or because someone says you should?

A common 'fashion of the field', or Faux Pas, depending on your association with said people, is shorts and gaiters (and long sleeve button up cotton shirt with the collar upturned, handed down from your grandpa) a broad brim or legionnaire hat Scarpa boots on their third or fourth resole and some walking poles. But lets not knock it till we try it. Gaiters offer peace of mind when hiking that critters and crawlers cannot make their way to your lower limb with ease. It also allows for the wearing of shorts without the compromise of lower leg protection.

Despite the dagginess of how it all looks it is actually quite practical, especially if you are worried about snakes or/ even just grass seeds, stones and dirt getting into your boot. And if you don't have snow shoes they can be very helpful keeping snow out of your boots. Actually, to that end in places like south west Tasmania, or in many damp places in New Zealand where you can be in lots of bogs gaiters are handy tools for keeping the mud out.

Gaiters range from ultra lightweight neoprene versions for trail running and adventure racing to the hard core canvas or nylon version that cover the whole lower leg from the knee down. There is probably a gaiter for everyone's taste and needs so it's worth looking into. If you want to go scrub bashing and you often leave the main track in search of camp or you hike alone they are added insurance against bites and abrasions. On the ultralight side of things I would recommend them for the comfort they might afford you after a day of wet hiking. After all, you might not have packed a dry pair of socks in that 38L day pack you use for overnight hikes.

Sometimes not even gaiters help - Stewart Island, New Zealand

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Drysacs

Drysacs, dry sacks, wet sacs. Even ziploc bags. Garbage bags.
Dry sacs are an investment in keeping things dry. But also to keep things organised. Handy to have a strong rubbish bag to put your rubbish in to cart out.

Environmentally conscious options do exist and are made locally by the likes of Terra Rosa Gear, Tier Gear and Ultralight Hiker. Don't be deterred from using garbage bags and zip locks though, especially if you are just getting started and unsure if you will keep hiking (even though we know thats impossible). I had the same zip lock bags in my kit for over 2 years. One with 2 pairs of socks and a pair of jocks, one with fleece trackpants and pullover and another with rainproof over-pants. These generally stayed in the bottom of the pack as emergency clothes for unexpected wet weather or colder conditions.

Whether its a zip lock or dyneema dry bag it is really helpful having your gear segmented in your pack. My key appreciation for this is when you start to realise those things you take hiking but rarely actually need to use. They can gradually make their way to the bottom of your pack rather than getting in the way of the un-pack at camp. It's also handy to practice grabbing the bags in the dark in the event your headtorch goes down and you need to find stuff in your pack. Familiarise yourself with your kit and it will save you a lot of frustration on the trails if you can put your hand straight onto that piece of kit you need.

Colour coding the drysacs is a good way to organise and group gear.

◄ *Valdez, Alaska. Thinking I need to get back here more often.*

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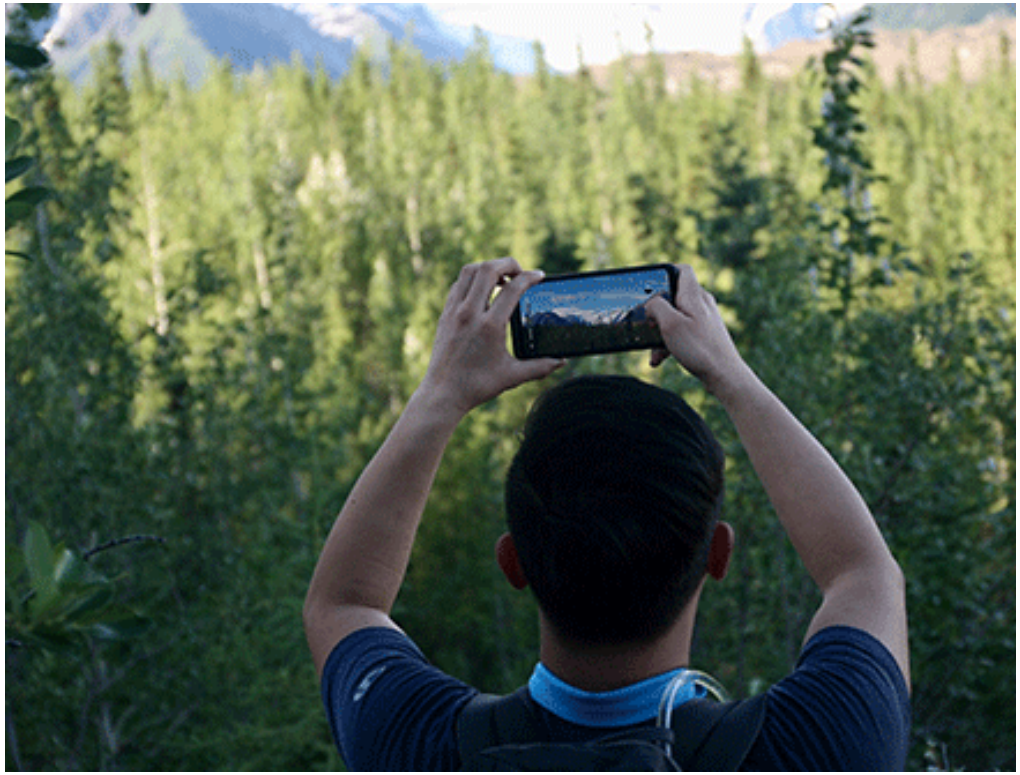
Cameras

It wasn't that long ago (or so it seems) a climber was recounting to one of our team how excited he was that Olympus had released their 'Trip35' - a compact wet film camera. He was happy that he could climb K2 without the burden of a full SLR.

Fast forward a few short years and in the months leading up to our trip to Alaska I had offered to loan my mum my Nikon 1 J5 Mirror-less camera for her trip to Japan. I visited her a couple of days before she was due to depart and gave her a run through of the camera. She was rather excited as she had settled on just taking her iPhone prior to my offer. Just before I left I thought I should ask when she will be back and of course it was 1 day after I was due to leave for Alaska!

The silver lining in this story is that I went on a hunt for a new camera and it was EOFY sale time so I managed to nab a bargain on an Olympus OMD EM5 MkII (Adventure pack) with a 14 - 150mm lens and 2 batteries. Perfect. It proved to be a winner with some stunning shots amongst the one thousand or so I took. The 14-150mm lens gave me the ability to shoot wildlife and landscapes as well as portraits without the need for switching between primary lenses and this proved beneficial in snowstorms and while hiking. I added a clip to the shoulder strap of my rucksack which had a handy quick release button so it was always at the ready, although the bear canister was probably within better reach.

Lining up that Nat Geo shot in Peru



All that being said, the results from the average smartphone camera these days is very impressive. If your images are intended for uploading on to a social media platform then a smartphone is probably the way to go. But if you are outdoors with that phone think about a good protective cover. For the iPhone the Lifeproof brand is good though rough use means I usually go through one every 12-18 months - the seals start to degrade and once that starts the whole thing become non weatherproof quite quickly. Otter and Urban Armour Gear (UAG) are other brands to consider as well.

If you insist on using your images professionally or enlarging and editing then a good quality mirrorless or DSLR with a suitable lens is worth lugging around. You wont regret it.

Canon EOS5D-MKII, 24-70mm Lens

At the other end of the spectrum a couple of our team members use full frame Canon cameras though they are heavy users of the smart phone camera too. One of the team resorts to a Canon full frame EOS5D Mk2 with a 24-70mm Canon lens. The body tolerates a lot of rough handling which is just as well since its been up and down mountains and in and out of snow and rain. The down side to this big camera is that its quite heavy. The upside is that it takes remarkable portrait and close up images. The lens is not so good at zooming in on distant images. But its very fast and is the lens of choice when walking say, the streets and markets of Kabul when people are not so keen to have a camera pointed at them. The camera can remain at your side and images taken without bringing the camera up to your face.

Root Glacier, Alaska. Captured on my Olympus EM5 ►

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Solar Chargers

Sunrise, Kangaroo Ground, Victoria

If you are hiking with electronic devices that are capable of charging via USB a solar panel can be quite useful. GPS units like Garmin or Suunto in some cases can be charged this way and if the weather is suitable the panel can be worn on the outside of your pack as you walk. The drawback to this is that if your device is worn on the wrist it may not be practical to have it charging during daylight hours whilst you are using it. Some solar panels are integrated or connected to a rechargeable battery pack which can be charged throughout the day and then used to distribute that charge to your devices at night.

I have used a solar panel and powerbanks in the past and I find it creates some extra peace of mind on multi-day hikes but is generally not a requirement for day hiking and single overnight hiking as most GPS devices are designed to maintain working capacity for 8-14 hours which is sufficient.

Phones can be charged from powerbanks and solar panels so if your smart phone is your primary camera when hiking then it would make sense to have some backup power supply for extended use and in case of emergency. A phone left on standby in your pack can last for days when the correct settings are in place i.e. aeroplane mode and power-saving mode. It is particularly important to maintain phone charge if you do not carry any other means of SOS device like a PLB, Spot Tracker or Sat Phone.

My first Solar Charger/Battery Pack was a Power Gorilla and I still have it 8 years later. It has always been hard to gauge its effectiveness but it still does trickle charge a phone or headlamp when on solar mode. It can be pre-charged via USB cable before leaving on a trip and acts as a power bank until the juice runs out. Just remember the best time to utilise the sun's energy is during the day so having something that can attach to your pack while walking is optimal. Also avoid letting your smart phone going below 30% before charging as it is often hard for a low amp charger to charge from low battery percentages.

(The best way to think about amps (short for amperes) is to equate electricity to water. Think of water in a hose - the wider the hose and nozzle, and the higher the head of water, the higher the water flow. Similarly, amperage varies according to the size of the hose (wire), the head (voltage) and the size of the nozzle - the device you have attached to the end of the wire). Ampere is the amount of electricity which flows through a wire. When we talk about recharge think about a small narrow hose trying to force water back up into a large tank - the analogy is limited but you get the idea - it's hard and slow work. In short, the higher the amperage rating the better the rate of recharge. (We'll do a better job of explaining this in our next edition).

ANNEX A: Day Hiking Load List

Safety
Let's start there. Even for a short day walk I have my PLB in the top of the pack. You just never know!

However another very good option is the free EMERGENCY + app. It automatically provides you precise location data and easy to follow options for your call. If you are in range and don't have a PLB this is a very good resource which is recommended by Australia's emergency services.

I always have a stretch bandage in one of my pockets. Valuable seconds can be gained by having a bandage immediately to hand. Use that, then spend time getting your First Aid kit out of your bag. Oh, by the way, that FAK and the PLB are always in the very front of my day pack. Nothing else ever goes there. And before we start a walk I make sure other trekkers know where to find those items. I'm also keen to know where they have their kits stored.

- First Aid Kit.
- Snake Bite Kit.
- Water.
- Pocket knife.
- Length of rope.
- If a long day walk, food, and replacement socks.
- Hat.
- Insect repellent.
- Battery bank.

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ANNEX B: Overnight Gear List

For many of us an overnight in the bush is just the therapy we need from being in town, and getting out there requires very little thought at all. But there are lots of day trekkers who are looking to overnight camp for the first time. On our trip to the Alaskan wilderness some of our intrepid travelers camped overnight for the first time and were doing that in bear country.

Your overnight gear list will partly depend on how far you travel from your drop off point, your access to fresh water (how much do you have to carry?) and on your itinerary. Is it just overnight? Or will there be a full day of walking on either side of the overnight camp?

Whatever the plan and itinerary I firmly believe you should plan for being caught on the track for one or even two more nights than you intended. That thinking influences how much food you take, how much water you carry, and what sort of safety gear you have.

Safety
As for the day trip but because I have a larger pack the FAK and the PLB and Snake Bite Kit are in the top flap of the pack. Very easy and quick to get my hands on and easy for others in the group to find in case I am disabled.

Gear Checklist

The walk to Machu Picchu via the Salkantay Pass was an epic trek through both alpine areas and steamy jungle, in one case all in the one day. It required some careful gear planning as a result. I've included my gear checklist for that trip to give you an idea of what was required. You can easily create something simular using online or other easily available software resources.

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MACHU PICCHU - CHECKLIST 2016

	Item	Packed
Pack	80Lt Rucksack	☐
	Collapsible Daypack	☐
	Ultrasil Pack Cover	☐
	Ultrasil Pack Liner	☐
	Gear Straps	☐
		☐
Shelter/Sleeping	Tent - 4 season	☐
	Down Sleeping Bag -5	☐
	Ultralight Sleeping Mat	☐
	Ground Sheet/Space Blanket	☐
	Thermolite Bag Liner +8	☐
		☐
		☐
Food/Water	1Lt Water Bottle x 2	☐
	Camelbak bladder - 1.5lt or 2lt	☐
	Water purification tabs - Aquatabs/Micropur	☐
	Flask	☐
	Jetboil Hike Stove	☐
	Spork	☐
	Collapsible Cup and Bowl - X-Cup/X-Bowl	☐
	Can Opener	☐
		☐
		☐
		☐
Other	Maps	☐
	Book	☐
	Compass	☐
	Cable Ties	☐
	Repair Tape	☐
	Sewing Kit	☐
	Notebook	☐
	Multitool	☐
	Pencil	☐
	Stubby Holder	☐
		☐
		☐
		☐

	Item	Packed
Clothing	Socks/Liner Socks x 4	☐
	Underwear - (bamboo) x 4	☐
	Thermal Top - (50 polypro 50 merino) x 2	☐
	Down Jacket	☐
	Goretex Jacket	☐
	Beanie & Buff	☐
	Glove Liner	☐
	Waterproof Gloves	☐
	Camp Shoes/Hut Booties	☐
	Gaiters	☐
	Sunglasses - Polarised/Eyeshields	☐
	Travel Towel x 2	☐
		☐
		☐
Medical Kit	Trauma Bandage	☐
	Steri-Strips	☐
	Betadine	☐
	Band-Aids	☐
	Paracetamol	☐
	Anitobiotics	☐
	Medicated eye/eardrops	☐
	Diamox - AMS	☐
	Triangle Bandage	☐
	Sam Splint - conforming	☐
	Nasal Spray	☐
	Moisturiser with Sunscreen	☐
		☐
		☐
		☐
		☐
		☐
Electronics	Solar Panel	☐
	Camera, Lenses, Batteries	☐
	Headtorch	☐
	Phone/Charger	☐
	Garmin/Charger	☐
	Headphones	☐
	Spare batteries	☐
		☐

Fox's Guide to Field Gear

Thanks for downloading and for reading any part of this.

If you would like to give feedback or even to contribute views or comments which I can incorporate in later editions please contact me at

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