

TransAm Trail Cycle 2017

James Bamforth

jamie_bamforth@hotmail.co.uk



Foreword

From early July to mid-October 2017 I spent 83 days cycling 4,000 miles solo and unsupported across the US from the east coast to the west coast (Washington DC to Cape Flattery, WA). The route took in just a few of the varied and beautiful landscapes of the North American continent and mainly (80%) followed the TransAm trail, an on-road cycle route across the US. On route I encountered heat waves and snow storms as well as some of the most generous and kind-hearted people that I have ever met. This report will begin by discussing the planning of the expedition and how this plan was adapted whilst the expedition was progressing. It will then go on to present a summary of the day-to-day diary entries written during the expedition.

Cover image: Blue skies, wide shoulders and wheat fields in Washington State.

Contents

Foreword	1
1. Introduction & Recommendations	3
2. Previous Experience.....	3
3. Route	4
4. Logistics	5
5. Food	6
6. Dangerous Wildlife.....	6
7. Accommodation	7
8. Finances	7
9. Skills & Training.....	8
10. Equipment	8
11. Equipment Maintenance	11
12. Injury Management.....	11
13. Risk Assessment, Emergency Plans and Insurance	12
14. Expedition Diary	14
15. Summary	35
16. Bibliography	35
17. Acknowledgements.....	35
Appendix A – Risk Register	36
Appendix B – Detail of Change of Route in West.....	41
Appendix C – Insurance Details	42
Appendix D – Itinerary	42

1. Introduction & Recommendations

The first sections of this report are aimed at providing details on the practicalities of planning and executing an expedition such as this and as such, certain sections of the report provide significant small details. If the reader wishes more to read of what actually happened on the expedition they should skip forward to Section 14.

Aims & Objectives

- Complete an Atlantic coast to Pacific coast unsupported solo crossing of the US by bike.
- To explore and experience the contrast of cycling through many of the varied beautiful environments present in the North American Continent.
- Complete my longest cycle expedition to date.
- Build upon previous cycle expedition experience.
- Encourage others to broaden their experiences by attempting similar expeditions.

The first four objectives were achieved during the expedition, whilst it is hoped that this report and the presentation(s) given will go towards fulfillment of the last objective.

Recommendations for Future Cyclists

- Ensure a very very low gear is available if touring with significant weight, ideally using a triple chainset.
- WarmShowers.org is a fantastic organisation.
- Use shifters that allow for friction shifting. The ability to switch from indexed shifting to friction shifting can prolong the useable life of a worn out drive chain.
- Train as much as possible for a prolonged period prior to an extended cycle expedition.
- Take two pairs of shorts to cycle in. One can dry whilst wearing the other, reducing the chance/severity of saddle sores.

2. Previous Experience

Academic Background

2013-2017 M.Eng. Chemical Engineering with a Year Abroad, Imperial College London

Previous Unsupported Cycle Touring Experience

2016 New Zealand: Solo cycle tour from Queenstown to Picton on the South Island. 900km, completed over 3 weeks (11 days of cycling).

2014 UK: Attempted to cycle Land's End to John O'Groats with a friend. Trip was terminated early due to a serious injury to my right knee.

2013 Europe: Cycle tour from the mouth of the Rhine (Hook of Holland, Netherlands) to the source of the Rhine (Oberalppass, Switzerland) with a friend. 1600km, completed over 12 days. Passing through Netherlands, Germany, France, Austria, Switzerland.



Figure 1: Descending from the Swiss Alps after reaching the source of the Rhine.

3. Route

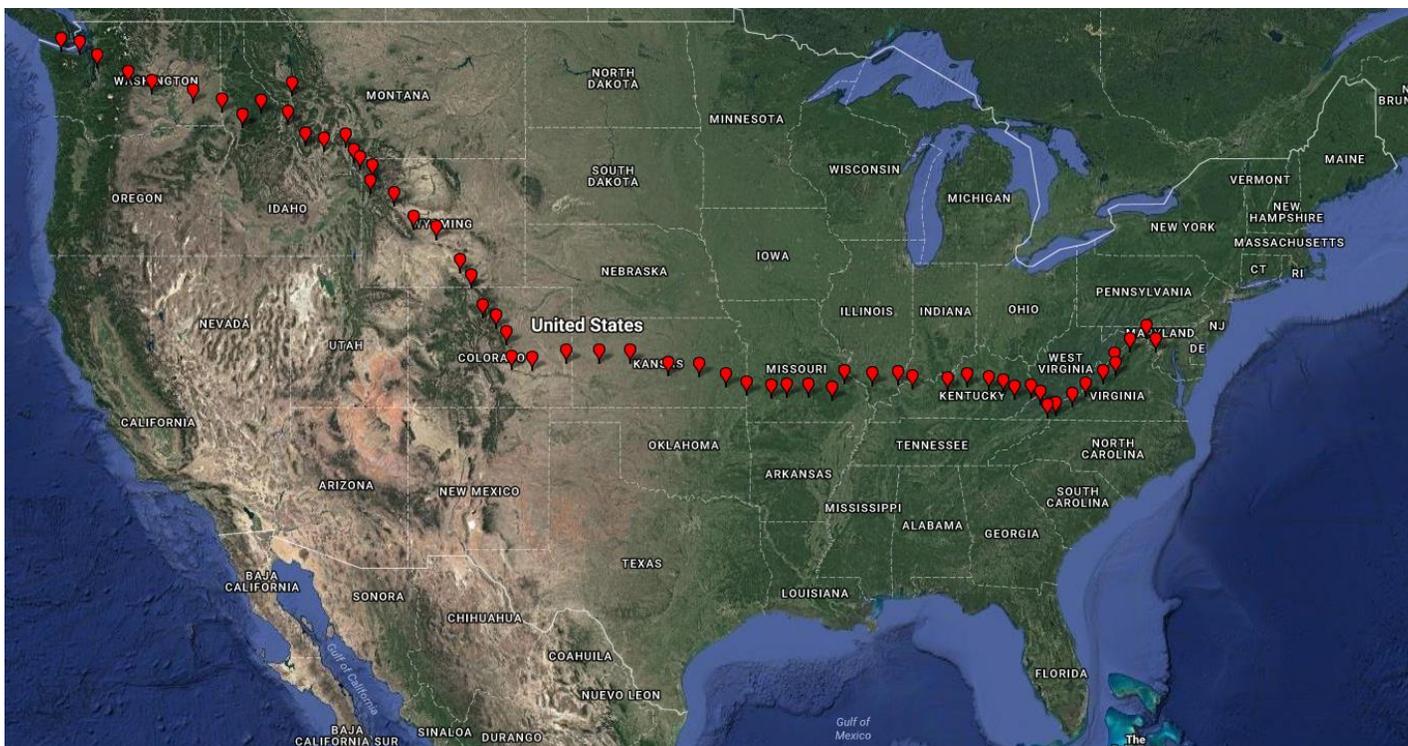


Figure 2: Route from east to west coast. Markers indicate overnight stops. Map produced using GPSVisualiser.com (Schneider, 2016).

The route taken mainly (3,200 of 4,000 miles) followed the TransAm Trail (US Bicycle Route 76, Figure 3). This route runs from Astoria, OR on the west coast to Yorktown, VA on the east coast and has been around since 1976. It was developed by the ACA (Adventure Cycling Association) in celebration of the 200th anniversary of the formation of the USA. Utilising an existing route has the dual advantage of significantly simplifying the pre-expedition route-planning and assuring the route passes through some incredible locations and scenery.

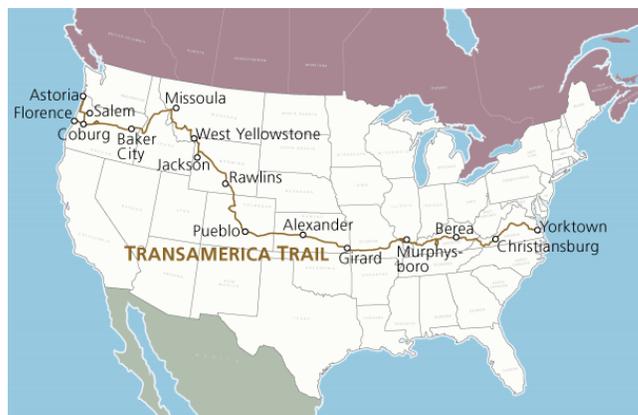


Figure 3: USBR 76 overview (McMichael, 2014)

The original plan was to start off route, from Washington DC and proceed 250 miles along the C&O Canal bike trail out of DC and follow Skyline Drive south through the Shenandoah National Park to join the TransAm Trail at Vesuvius, VA, then following the route all the way to the Pacific. Due to injury (discussed later in Section 12) the Skyline Drive route was substituted for the less scenic, but less steep, Shenandoah Valley. The last 600 miles was also spent off route as I got slightly bored with being on a designated route and had been told of an interesting gravel route over the Cascade Mountains. As a result, from Grangeville, ID, I proceeded north west into Washington State rather than south west towards Oregon, as seen in Figure 50, Appendix B.

From talking to other cyclists on route, it turns out there is a ‘season’ during which it is recommended that the trail be completed (supposedly for weather reasons). This basically entails starting cycling from either coast between March and May. During planning, the only limitations for cycling I checked was that, by my schedule, I would arrive in the west before certain mountain passes closed. I found that being ‘late’ in the season was not

particularly a problem as long as preparations are made for the weather (i.e. carry warm clothing and a warm sleeping bag). It would not have been possible for me to start at the recommended time anyway due to exams.

4. Logistics

Travelling by air with a bike

Travelling with a bike is relatively inconvenient unless you are actually pedaling it. Each airline usually has its own policies regarding how bikes are classified as baggage, how they should be packaged and how much extra they will cost. However, a safe bet is to remove the pedals, handlebars and wheels and package it all in a bike box with suitable padding (e.g. other soft equipment you need to transport). The box can usually be obtained for free from a local bike shop in the form of a used cardboard bike box in which new bikes are delivered. The box may be awkward, but can be transported by bike by carefully lashing it to the top of a rack (see Figure 4).



Figure 4: Transporting a bike box in New Zealand

A bike shop is also useful at the beginning/end of a trip to loosen/tighten pedals. Conventionally, pedals take a 15mm spanner, a heavy tool with only this use on a bike, and would be inconvenient to take on tour. Bike shops are usually amenable to lending you a pedal spanner for the minute it takes to loosen pedals to hand tight for the short cycle to the airport where the bike can be dismantled and boxed. Excluding a pedal spanner it usually only takes a couple of Allen keys to dismantle a bike for flying purposes.

Arrival in US

I flew with Iceland Air into Washington Dulles International Airport on Friday 7th July 2017 via Iceland. This carrier was chosen due to flight price. It was significantly cheaper than the next cheapest flight. It should be noted that when reviewing flights I found and included the price for a bike as hold luggage in addition to a hold-all with the rest of my equipment as hold luggage.

To transport my bike, it was packaged in a soft bike bag with a hard rigid base. The rest of my equipment was transported in a hold-all. Conveniently, both the bike bag and hold-all had been left in the UK by a family friend, Tony, on his previous visit from the US. Upon arrival I was then kindly hosted by Tony and his wife, Meg, in Washington DC until I started cycling.

Departure from US

I flew with Iceland Air out of Portland International Airport on Friday 13th October 2017 back to the UK via Iceland. For the return journey a cheap hold-all was purchased from an army surplus shop and the bike was packaged in a box following the method mentioned above. In order to get to Portland from Seattle I travelled by train. The Cascades Amtrak Line accepts bikes for an additional fee as checked luggage with no dismantling necessary.

Maps and Navigation

The android app “All-In-One OfflineMaps” (OfflineMaps, 2017) was used for navigation throughout. This (free) app allows user specified sections to be downloaded at user specified detail for use offline. This was chosen primarily for its coverage of the US Bicycle Route system and the ability to imprint this bicycle route layer over a hiking map layer to give terrain details. The app also allowed the storage and export of waypoints in a gpx file, allowing all the locations stayed at to be easily stored for use in the figures in this report.

Google maps was used to supplement the OfflineMaps app when in WiFi for route planning, especially at the beginning and end of the route when off the TransAm Trail.

Originally the plan was to buy a state road map as each new state was entered for redundancy if my phone battery were to die, then dispose of/pass on the old map when leaving the state. This was done in Virginia, Kentucky and Missouri, but upon entering Kansas became pointless due to the very simple navigation (only two or three different roads per day).

The ACA does produce their own set of 13 paper maps of the route, but these were expensive at \$177 for the set, and there was no need for them with the route obtainable in the OfflineMaps app.

5. Food

With a conservative estimate, 4,000 – 8,000kCal were burnt each day depending on mileage, with an average day consuming ~6,000kCal (calculations performed using metabolic equivalent of task (MET) levels). This requires large amounts of food and despite eating a lot of food, I was still running a Calorie deficit, losing 5kg over 83 days. On 100+ mile days I was eating five solid meals and snacking throughout the day on the bike. It was a struggle to physically eat enough. A typical daily menu was:

- Breakfast: 2 or 3 bagels with spread (peanut butter, cream cheese etc)
- 1st Lunch: Burger and chips or burrito or similar if a Café was convenient and cheap, otherwise sandwiches
- 2nd Lunch: Sandwiches
- Dinner: Cup of rice or 250g pasta with sauce and protein
- Snacks (throughout the day): trail mix, biscuits, nut/granola bars, nuts, fruit, chocolate milk

6. Dangerous Wildlife

Bears

About half the route was in black bear territory, with the more northerly parts of the route in the west also passing through grizzly bear territory. Bear spray was purchased in DC and carried throughout. When not in sight of food, and at night, food and food preparation equipment was either put in a bear box if at a campsite or hung in a tree in a pannier if not. When hung, I attempted to follow these guidelines:

- Hanging spot should be 50m downwind from sleeping area.
- Bag should be 5m above ground and 2m from vertical support (tree trunk).

I say ‘attempted’ because in practice it is actually pretty difficult to find a tree that allows you to satisfy all of these criteria, especially in an evergreen forest. To hang the weight 2m from the trunk actually requires a pretty sturdy branch and suitable trees were few and far between, so I prioritised the bag being 5m up and did as well as I could on the other guidelines. As it was, I never had any issues or saw any bears.

Dogs

An unexpected issue encountered in (mainly) Kentucky was being chased by domesticated dogs. Dogs like to chase cyclists and in Kentucky the practice is not have a fence for the front yard and to leave your dog out front, not tied up and next to a busy highway. This presents a genuine danger; the three leaders of this year’s TransAm bike race were all bitten by the same Pitbull. On a loaded touring bike you cannot out-run an aggressive dog on anything other than a steep downhill. There were various tactics I was advised for dealing with these encounters (which occurred multiple times a day). The best approach I found was to dismount on the opposite side of the bike to the dog. Usually the dog would lose interest as soon as you got off your bike.

7. Accommodation

There were three sorts of accommodation used throughout the expedition:

- **Camping:** Wild camping is relatively easy in the US, especially the further you get from the east coast. It is also legal to wild camp in National Forests.
- **Warm Showers:** WarmShowers.org is a network similar to couch surfing but specifically for cyclists. You contact them through the website and, if available, a host will usually provide a shower, somewhere to sleep or camp and sometimes food. The idea is that you then host when you are able to in the future. I was slightly apprehensive at first, but I only had good experiences. One great thing about this network was meeting and getting to know locals who love to have a good conversation in the evening.
- **Churches, volunteer fire stations, cyclist hostels:** one source of accommodation that I hadn't anticipated was provided by communities en-route that had opened their doors to cyclists after seeing them pass by on the TransAm Trail for 41 years. These were mainly in the east and consisted of churches and a few volunteer fire stations where you could camp out back or roll out your mat between the pews, and hostels that ranged from a small room with a shower and some camp beds to a full bunk-bed and kitchen set-up in an old gaol. These were always free or donation based.

8. Finances

Expenses

The initial budget for the expedition given in the proposal was £4,222. As can be seen from Table 1, the expedition came in under budget. This is due to significantly less being spent on accommodation than budgeted, but about 50% more being spent on food than budgeted, which accounted for nearly half of the total expenses and nearly 2/3 of the expenses whilst in the US (i.e. excluding travel). It can also be seen that the funding from the Exploration Board significantly reduced the out-of-pocket cost.

Table 1: Expenses

Expense	GBP
Food	1,693.036
Transport	1003.41
Equipment	178.68
Insurance	178.68
Accommodation	265.624
Visa	131.00
Spares	117.07
Gross Total	3,567.50
Less Funding	750.00
Less Insurance	178.68
Net Total	2,638.82

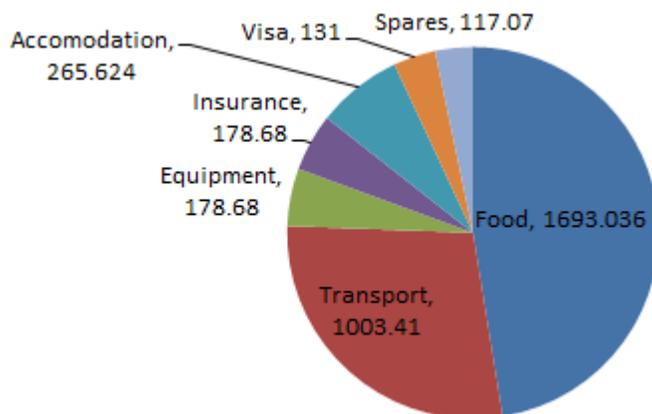


Figure 5: Pie chart of expenses

Money

Primarily a Monzo Top-up card was used for transactions and ATM withdrawals. This provided transactions at the MasterCard rate with no commissions and no cap on the value of transactions completed in any given time period. The same with ATM withdrawals (although in November 2017, for ATM withdrawals only, this

changed to a value of £200/month without charge, then 3% charge on anything withdrawn after). The card could be topped up from an app and could also be frozen from the app in case of theft.

A Revolut card and my debit card were carried as backup. A Revolut card works similarly to the Monzo card, but has limits on the value of transactions per month before the user is charged.

It should be noted that ATMs in the US charge a fee per withdrawal of typically \$2-\$3 if the card used is not from the bank that owns the ATM.

9. Skills & Training

Bike Maintenance

I already had all the skills required to strip and rebuild my touring bike provided I had the right tools. For anyone looking at attempting an extended cycle tour with no cycle maintenance experience, a good free resource is SheldonBrown.com (specifically, this link to start: <http://www.sheldonbrown.com/repairs.html>).

Navigation

Although I never actually needed to use a compass along the route, I carried one and have a lot of experience using a map and compass to navigate unfamiliar terrain. In an emergency scenario, this could have been an essential skill. Day-to-day I was usually on road and this was not required.



Figure 6: Cycling in Brittany

First Aid

I had previous first aid training through the Army Cadet Force and this was refreshed through attendance of an Outdoor First Aid course organised by the Exploration Board.

Training

Two weeks prior to leaving for the US a training ride was conducted in Brittany. Five friends and I rode 240 miles along the coast of Brittany from Roscoff to St Malo over five days. Due to the restrictions of final exams in May/June, the remainder of the training consisted of a few 20-30 mile rides. This was not really enough training, although to train properly for a long expedition like this, several hours in the saddle per day would be required.

10. Equipment

Bike

Thorn Sherpa:

- Steel frame
- 9spd 32x11 rear cassette
- 22/32/42 front crank
- Bar-end friction shifters
- 26"x1.5" tyres
- V-brakes
- Thorn Expedition steel rear rack
- SON28 Dynamo Hub
- Dynamo powered front and rear lights
- Brooks B-17 saddle



8 Figure 7: Fully loaded bike at Cape Flattery, WA

- Flat pedals
- 3x Profile Design Kage bottle cages

The frame is purpose made for touring, essentially it is a road bike type setup with a longer wheelbase for stability and braze-ons to mount front and rear racks. Very low gearing allows for easy climbing even on steep hills. The largest complaint I heard from other cyclists I met was not having a low enough gear in the Ozarks. Friction shifters allow gears to be shifted smoothly even on a worn out drive chain or stretched gear cable, which came in very useful on this expedition. The bottle cages can expand to fit 2L disposable water bottles and fuel bottles as seen in Figure 7.

Other

All the equipment carried at the start of the expedition can be seen in Figure 8 with the exception of items bought along the route and cold weather gear. The 4 season sleeping bag, thermals and down jacket were posted forward to a friend near Denver to pick up on route. All equipment, including bike, had a dry weight (without food water or fuel) of 34kg.



Figure 8: All equipment flown into the US

Table 2: Equipment (a). Red denotes any equipment bought on route.

Worn on Person	on Rear Rack	On Frame
Cycling jersey	Panniers	Sports bottle 750ml
Cycling shorts	Tent	Water bottle 2L
Sandals	Tarp	1L Sigg Fuel Bottle
Cycling gloves	Foam roller	Top-tube bag
Helmet	Luggage strap	Half frame bag
	Drybag	

Table 3: Equipment (b). Red denotes any equipment bought on route.

*converts power from dynamo hub to 5V for USB charging.

In...	Left Pannier	Right Pannier	Drybag	Half Bag	Frame	Spares Kit	First Aid Kit
Diary		Pot	Sleeping Bag	Phone		Inner tube	200mg Ibuprofen tablets
Travel documents		Frying pan	Thermarest	Bear Spray		Spokes	300mg Aspirin tablets
Wash kit		Alcohol stove	T shirt	USB charging cable		Rack bolts	12x Immodium tablets (loperamide hydrochloride)
Compass		Pot stand	Hawaiian	USB battery		Brake pads	8x Ducolax tablets (5mg bisacodyl)
Kindle		Wind shield	Vest	Sinewave Revolution*		Quick link	5x Rehydration powder sachets
USB wall plug		Lighter	Swimming shorts	Leatherman Multi tool		Puncture repair kit	1xElastic wound dressing
Kinesiology tape		Sponge	Travel Towel	Sun glasses		Bike multitool (Allen keys and chain breaker)	1xTriangular bandage
Waterproof socks		First aid kit	2x Boxers	Long fingered cycling gloves		Tyre Levers	1x Roll 1" zinc oxide tape
Thermals		Waterproof jacket	Thick socks	Arm warmers		8mm wrench	1x Eye pad dressing with bandage
Down Jacket		Chain lube	Trainer socks	Leg warmers		Gear cable	2x 7.5x7.5cm dressing
Fleece		Duct tape	Zip off trousers	Spares kit			2x 12x12cm dressing with bandage
Tupperware		Zip ties	Spare cycling shorts	Wallet			1x 18x18cm dressing with bandage
Head torch		Para cord	Wooley hat	Chamois cream			8x Steri-strips
Toilet paper		Spork	Gloves				2x 20ml Saline eyewash
Headphones		Cup	Buff				1x Pair nitrile gloves
Portable speaker		X plate					Tweezers
Sun hat		Water bottle 2L					Sharpie marker
Sun cream		Sewing kit					Assorted Plasters
		Chlorine tablets					Savlon
							Antiseptic wipes

11. Equipment Maintenance

Bike

Components replaced along the route:

- 3 chains
- 1 set of front brake pads
- 1 rear tyre
- 1 rear cassette
- 1 bottom bracket

All of these items are consumables and are expected to wear out and be replaced every few thousand miles (with the exception of the bottom bracket). None of these items should catastrophically fail if the bike is periodically inspected, giving time to get to the next bike shop for a replacement. Spares were carried for components that could fail without warning.

Panniers

A tear in my pannier was repaired with duct tape.

Tent

A tent pole snapped and was repaired with zip ties.

12. Injury Management

Unfortunately, two days before leaving the UK I got Achilles tendonitis in my right leg and it was extremely painful to walk and cycle. Thankfully, after two weeks rest and rehabilitation in Washington DC, I was at a point where cycling was almost pain free and I set off (12 days late) towards the west coast. The injury healed along the way and I was able to complete the expedition. It was not, however, completely healed by the end of the expedition and I had kinesiology tape on my right calf/Achilles (see Figure 9) throughout the expedition (replaced every 5 days). The tape was the only treatment that I found that allowed for pain free cycling, although it left me with a rash after two weeks.

As well as kinesiology tape, I foam rolled both calves every evening on the expedition, as well as performing eccentric heel drop exercises. I also adapted my riding style, lowering my saddle slightly and consciously keeping my heels dropped at the bottom of each pedal stroke to keep as much strain off my calves as possible. Whilst in Washington DC I also applied heat/ice treatment.



Figure 9: Taping for Achilles tendonitis

13. Risk Assessment, Emergency Plans and Insurance

Risk Assessment

The Risk Register for the Risk Assessment can be seen in Appendix A. Note that all overall risk estimations are based upon the unwanted event taking place without any of the described controls in place. The controls then reduce the overall risk to an acceptable level.

Emergency Plans

USA Emergency Services Number: 911

Travelling solo introduces significantly more risk simply by not having somebody else to provide first aid or seek help in the case of incapacitation. However, the major injury risks on this type of trip are primarily from road traffic accidents or loss of control of the bike at high speed. Both of which will have happened on a well-used road.

Road Traffic Accident

This will have involved another person (driver of vehicle), who will most likely stop at the scene and provide and call for help.

Loss of Control at High Speed

In this situation, I would most likely still have been able to walk/move around and so could have contacted help myself. If it was so serious that I couldn't find help myself, I and my bike would have been clearly visible on or near the road and other passing vehicles would have eventually stopped and provided help.

Emergency Plan – Incident Response (including illness and exposure based injury as well as physical injury)

Step 1: Initial Response

- Am I safe?
- Was anybody else involved who may be able to help? If so, call for help.
- Assess situation: Injuries and seriousness, bleeding, where am I, am I visible from the road?
- Judgement call 1: Am I able to reach the nearest hospital or population centre independently? If yes go to 2A, if no, proceed to next bullet point. If in any doubt, proceed to next bullet point.
- Make call to emergency services, giving location from map or map app on phone.
- Judgement call 2: Am I mobile? If yes go to 2B, if no go to 2C.

Step 2A: Mobilisation to Hospital (e.g. dislocated shoulder, broken wrist etc)

- Treat injury.
- Call Emergency Imperial College Contact and inform of situation and plans. Seek advice as necessary.
- Progress to hospital. Making sure to stay warm and eat and drink sufficiently.
- Attempt to hail any passing vehicles for help in getting to hospital.
- Continually assess situation, if in any doubt at all whether it is still feasible to get to the hospital, proceed to 2B.

Step 2B: Limited Mobility

- Stop any serious bleeding.
- Move to a position where I am safe and can easily be seen from the road.
- Treat wounds.
- If previously unable to reach emergency services, move position until able to make contact, staying on/along road.

- Assume comfortable position in clear view of road and wait for help with head torch on and flashing and first aid kit to hand.
- Ensure seriously bleeding locations stay raised with pressure applied.
- Continue to assess situation, making sure to stay warm and eat and drink sufficiently.

Step 2C: Immobile (may not be possible to complete all tasks)

- Stop any serious bleeding.
- Treat wounds.
- Assume comfortable and safe position in clear view of road and wait for help with head torch on and flashing and first aid kit to hand.
- Ensure seriously bleeding locations stay raised with pressure applied.
- Continue to assess situation, making sure to stay warm and eat and drink sufficiently.

Step 3: Post Incident (at appropriate stage during/after medical treatment)

- Make contact with appropriate staff at Imperial College (staff member and contact details TBC).
- Contact insurance provider and ascertain details required to make claim. If not in fit state to make contact, ask Imperial College point of contact to establish contact.
- Complete Imperial College Incident Report form.
- Document incident including times, locations and contact details of any members of public involved if possible.
- If required, a debrief will be conducted at Imperial College.

Insurance Details

The cover for the trip was provided by Cycling UK (formerly known as the Cyclists' Touring Club (CTC)) through Citybond Suretravel and paid for with funding from the Imperial College Exploration Board. The cover is available with a 10% discount Cycling UK membership. The expense was covered by the Exploration Board. The details of the cover can be seen in Table 4, Appendix C.

14. Expedition Diary

This section is split into chronological subsections by state. An itinerary with daily mileage and locations can be found in Table 5, Appendix D. Not all 100 days are covered in detail. Note that “Day 1” is defined as the first day of cycling.

Virginia, Days -13 to 12, 537 miles

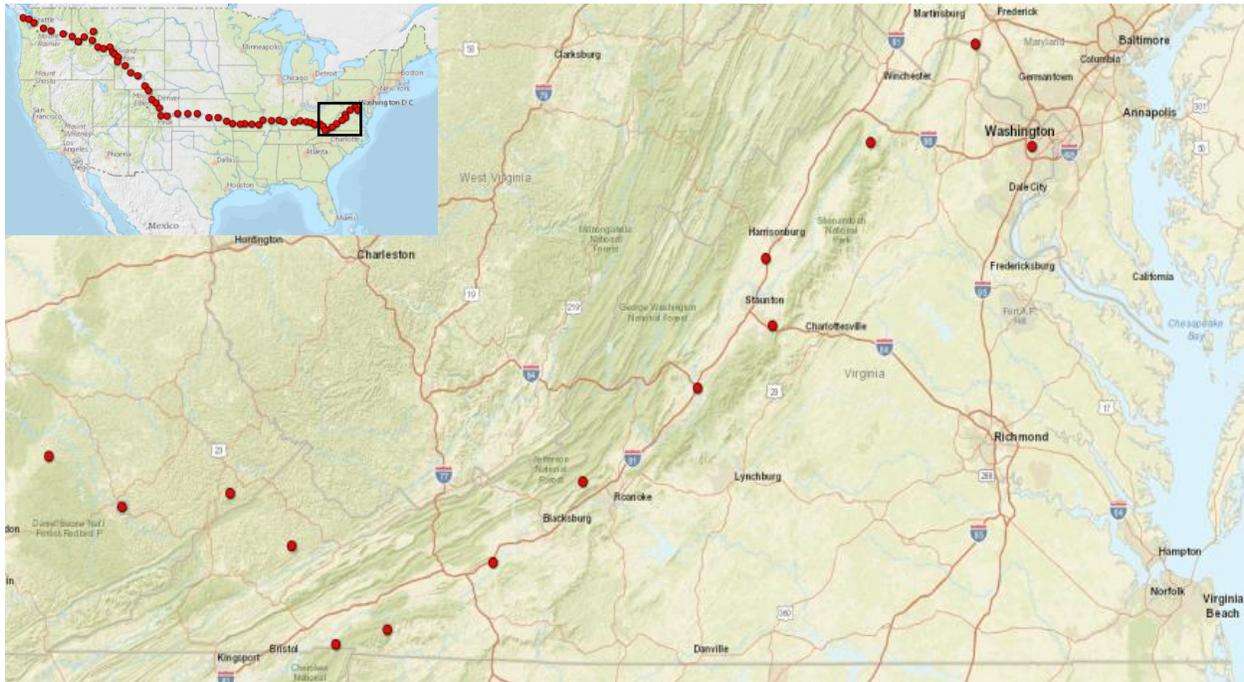


Figure 10: Route through Virginia. Map produced using GPSVisualiser.com (Schneider, 2016).

Upon landing in Washington Dulles airport on Friday 7th July and getting on the interesting elevator busses to the customs building, I was met by Tony, a family friend living in Washington. The original plan was to go straight to a Wolf Alice gig in DC that night, then do some canoeing on Saturday and sightseeing and bike building on Sunday before starting cycling on Monday. Of this original plan, only the gig and bike building happened as I had developed Achilles tendonitis in my right leg two days before. Tony and Meg (Tony’s wife) kindly offered to let me to stay as long as was needed to allow me to heal up and get on the road.



Figure 11: Tony and Alex enjoying their ice-creams.

A few days later, after seeing a friendly physio off the books in exchange for some beer, I had confirmation that it was Achilles tendonitis and some advice on how to treat it. This advice included that it would take minimum of four weeks to return to more intense physical activity. For that first week I was pretty dispirited by my progress. It didn’t hurt to walk any more, but that was as far as I had got. It still hurt to turn even low gears on my unloaded bike. However, after a week I tried applying kinesiology tape, a type of elastic cotton tape, using a method for Achilles tendonitis that I had found on Youtube. Turns out the tape is some kind of black magic and instantly granted me pain relief. I was a bit disbelieving at first, but following a week of mostly-pain-free test rides building in distance and weight, I found that the tape was the key to allowing me to finally start

cycling towards the west coast. Whether it was black magic, placebo, or something else physiological, I was just very happy that I could cycle.

Twelve days behind schedule I was finally ready to set off. Luckily the expedition was long enough that I felt these twelve days could be made up somewhere along the route, however I was setting off in a large part hoping for the best, not knowing whether my Achilles would be able to stand day after day of long hours in the saddle. The time with Tony, Meg and their daughters Tamsin (9) and Alex (6) had let me get to know them much better, do some sightseeing in Washington, and relax for a while. Apart from not knowing when/if I would get on the road, it had been a very pleasant and enjoyable two weeks.



Figure 12: A view from the Canal.

After saying goodbye and being called “loco” (crazy) by the Mexican guy who was painting the decking once he heard what I was doing, I set off. I cycled through Washington to the C&O Canal, where the towpath acted as a cycle path that took me north-west out of DC on a beautiful, flat, car-free route. The canal is dotted with small free campsites every 5-10 miles, each with its own water hand pump. I pulled over mid-afternoon to set up camp after a pleasant day’s cycle. It was however, extremely hot and humid – 38°C and 98% humidity – which made for a very uncomfortable evening of being bathed in sweat. Lying in my tent after dark to get away from the mosquitoes I was lying directly on the floor, with no ground mat, to try and use the ground to cool me down, but sweat was still pooling on the floor

of the tent. I finally fell asleep at 2am but was woken early by the heat as soon as the sun came up. Instead of lying there I decided to just get up and break camp and was out by 6:30am.

Another beautiful day’s cycle followed. I left the towpath in the morning at Harper’s Ferry. The heat was bearable as long as I was cycling at an easy pace to get the wind coming past. As soon as I left the canal I hit the steep, rolling hills that seemed to characterise the valleys of Appalachia. I continued down towards the Shenandoah National Park, but instead of entering it and taking the Skyline Drive south to meet up with the TransAm Trail, I headed into the Shenandoah Valley to the west to have some easier riding for my Achilles. During the afternoon I got some blessed relief from a storm that swept through, preceded by cold winds and leaving a cooler temperature in its wake. Despite the lightning I decided to just ride on through as I was in the middle of farmland with nowhere to shelter. I put my waterproof jacket on but was almost instantly soaked to the skin; the rain was so heavy that it knocked one of my contact lenses out, despite having my sunglasses on to protect my eyes. The rain only lasted half an hour and I was basically dry again an hour later, a good trade off for a cooler afternoon.

This trend of heat and humidity with storms in the afternoon continued for the next couple of days riding. On the third day I developed pretty bad saddle sores, having constantly being wet from either storms or sweat. This was the first time I had ever had saddle sores, and after a bit of research, it seemed that apart from a couple of weeks of rest off the bike, nothing was really guaranteed to make them go away. This wasn’t really an option for me if I wanted to make it to the west coast so I just applied nappy rash cream each night and hoped for the best. Unfortunately the sores kept haunting me on and off throughout the rest of the ride. Added to this, that day my right knee had started to hurt and my left Achilles had also started hurting similarly to my right (I had an operation on my right knee two years before and had six months in a brace, it hasn’t been the same since).



Figure 13: Getting on the TransAm trail for the first time.

As a result I decided to carry on, and I am very happy I did. The trend for my knee pain most days for the next 1,000 miles (after which it got better) was that it would hurt in the morning, but after stopping for lunch, it would be pain free for the rest of the day.

That night, I had my first Warm Showers experience. I stayed with a lady called Francine and after a shower, some good conversation, and an excellent dinner I had an amazing night's sleep and set off in the morning feeling much more positive than the day before, and the tour just kept getting better from there. That day was beautiful riding along a stream where I hit the TransAm Trail for the first time at Vesuvius. After eating lunch whilst cooling off in the stream I ran into my first other cyclist. Her name was Jessica. Originally a hiker, after doing the PCT (Pacific Crest Trail), she had decided to try her hand at cycling. With a banjo strapped on the back of her bike she had cycled east from California and was just days from the end of her tour. We stopped and had a snack whilst she gave me some info on the route ahead. At one point I asked when these rolling hills would finish and she just laughed and said "not for another one and a half thousand miles". Well, at least I now knew.

For the second night in a row I had a Warm Showers host for the night. Dirk and his wife and daughter were very welcoming and stated from the beginning that they didn't mind if I took a rest day with them, which I did and my legs thanked me for.

Luckily, after my rest day the weather had cooled down significantly. It was still very humid, but the edge had been taken off the heat. A couple of days later I came across my first Appalachian Trail Hiker's hostel. The Appalachian Trail winds its way through Virginia and crosses the TransAm

I could deal with one of these sources of pain, but all of them together were resulting in a thoroughly unpleasant ride and I was worried about causing long lasting damage, especially to my knee. So two days later, after pulling over in an air conditioned McDonalds and considering my situation for a couple of hours over a cold coke, I was ready to pull out. I had, in fact, used the WiFi to ring home and inform my parents of this, but then cycling within town to investigate transport options back to DC, my knee was miraculously pain free.



Figure 14: Damascus, the travelers' crossroads.

Trail several times, meaning there were several hiker hostels just off route. Jessica had informed me of this one. Four Pines hostel was essentially a three door garage that the owner had fitted out with a shower, a stove and a load of sofas. Needless to say, while I was there for the night I met a few thru-hikers who kindly fed me ice-cream and beer to supplement my rice and beans.

The rest of riding in Virginia was relatively uneventful until I hit Damascus. Speaking to a couple of other cyclists in Troutdale I discovered that I was out of season for starting to cycle across the country (most people start from either coast from March to May apparently), and that there was a cycle trail down from White Top mountain, which I had just climbed, all the way into Damascus. Once in Damascus I found accommodation at the Broken Fiddle hostel, which the cyclists had recommended, and took my second rest day. The town had a welcoming atmosphere. As well as the TransAm Trail and the Appalachian Trail, multiple other walking and cycling routes came through town and I met several travellers who had ended up just staying there as they passed through, including the hostel hosts, Nick, Leslie and their dog Dora. After meeting walking the Appalachian Trail once, they started to walk it a second time, but stopped at Damascus and took up residence. From Damascus it was just a couple of days into Kentucky.

Kentucky, Days 13 to 21, 458 miles

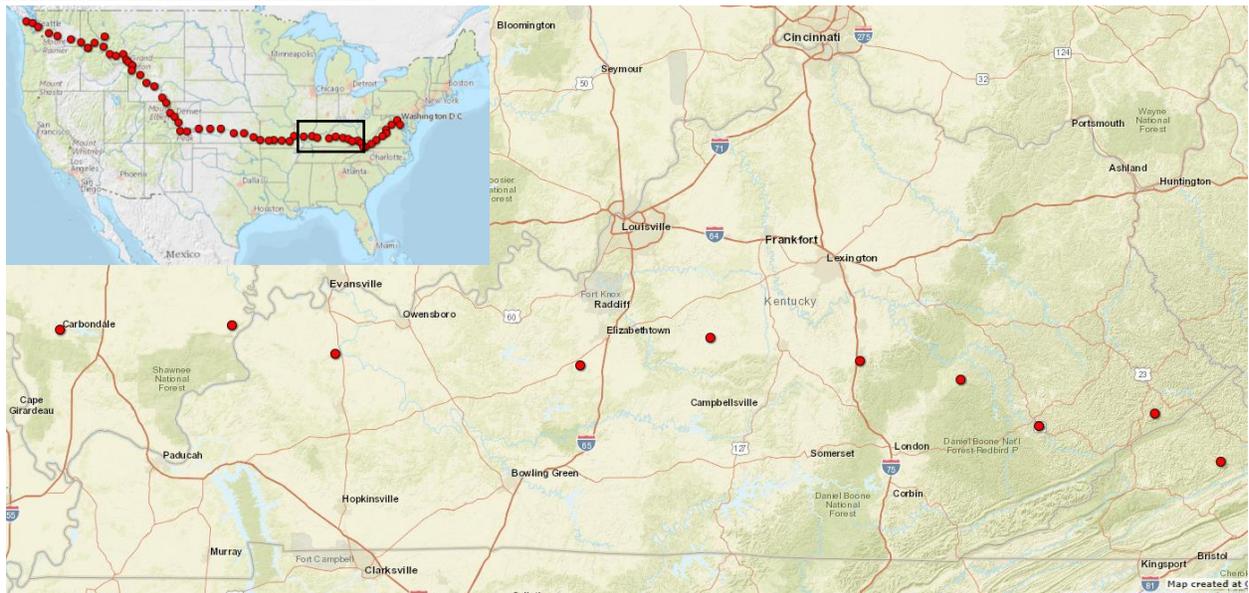


Figure 15: Route through Kentucky. Map produced using GPSVisualiser.com (Schneider, 2016).

Entering Kentucky felt like a major milestone. I had crossed my first state boundary and I was still pedaling, even if I was still taking Ibuprofen four times a day. On my first day in Kentucky I had my first “small world” moment of the expedition.

I had just pulled into Lookout Baptist Church Centre where they host cyclists who pass through, and when one of the volunteers, Julie, heard I was from London she asked “Do you know Will Percival?”; I used to play rugby with Will when I was a teenager. Turned out he’d passed through a few weeks earlier and had spent a few days there while sorting out a broken bike wheel. Small world. I also met a group who were up from a church in South Carolina to help run a week of youth activities for the kids in the area who invited me down the road for a BBQ at the church in which they were staying.

This was just one of the instances where I encountered this type of generosity whilst cycling in the US. Not that I started out thinking people wouldn’t be generous, I just wasn’t prepared for just how generous the people I encountered were.



Figure 16: Richard, 72, the oldest cyclist I met, still doing 30 miles a day.

she confirmed I had and that it had actually taken an hour longer. I quickly looked at my route for the next day to a church in Sebree and decided to condense two days into one with the temptation of a shower at the end. After wolfing down my burger and paying, I bought some Gatorade to fuel my extra miles and set off. 80 miles and a few food stops later I reached Sebree. I was starving, but at the church I got speaking to Nathan, a local who could talk for hours. Eventually, my instinct to eat overcame my instinct to be polite and I excused myself to make dinner.

It turns out that cycling 120 miles when you aren't that fit isn't a good idea, so I needed to take a rest day the next day. By this point the hunger had really started to



Figure 18: Jakob.

Unfortunately, as I had been warned, dogs were a major issue throughout Kentucky. It seemed that as soon as you crossed the state line, every dog wanted to chase you and it really got wearing after a few encounters. You would constantly have to be listening for the first bark to indicate a dog was onto you, then, if you were lucky enough to be going downhill, decide if you were going fast enough to outrun it or not. If not, you'd have to decide how else to deal with the situation.

After a few days in Kentucky I crossed my first time zone boundary. I had done 30 miles and pulled over at a café for lunch. Looking at the clock I thought that I had done 30 miles in an hour and twenty minutes, but when I asked the owner if I had crossed a time zone boundary,



Figure 17: Staying in a volunteer fire station.

kick in and I just spent the day eating. Chocolate milk became my recovery drink of choice from then on. It was a cheap and easy way to get calories and protein on board at the end of the day.

As I left Sebree I met the first cyclist going in the same direction as me. Jakob was from Hamburg and, like me, had just graduated. He was cycling from Boston to Los Angeles via the TransAm and Route 66. We teamed up for a few days and headed into Illinois whilst discussing topics from Brexit to whether internally geared hubs or a derailleur setup was a better choice for touring (it turned out his internally geared hub failed a few hundred miles later. For those bike nerds out there, it wasn't a Rohloff).

Illinois, Days 22 and 23, 115 miles

Both nights in Illinois I spent with Warm Showers hosts, and had two more great experiences. Jakob had also organised a different Warm Showers host for the first night, so we parted ways in the evening. The first night was spent with Tom, in his home on top of a hill with a beautiful driveway and beautiful view. I met him in town, then tailed him into his property where I washed off the grime of the road by going for a swim in the lake, before sitting down for a dinner of fish caught from said lake. Tom was a retired doctor and an interesting conversation ensued comparing the NHS to the system of private insurance in America.

Jakob and I met up again the next morning on the road and rode into Carbondale, where we found the first bike shop for 500 miles and I replaced my chain. Unfortunately, the cassette had worn down too much by this point and I couldn't put any power down in my highest three gears. Indexed shifting was also a problem, with the new chain skipping between gears without warning, however, changing my shifter to friction shifting allowed me to feel when the chain was properly in gear and sorted this problem.

In Carbondale I had my second small world moment of the trip. I was staying with a Warm Showers host, Jack, who was also hosting a group of seven Stanford students that night. These students were cycling from west to east supported by a van, which they took turns driving and carried their kit and extra equipment for STEM workshops that they were stopping to give to groups of kids every few days. One of the students, Arving, turned out to be the cousin of one of my friends, Rudi, who graduated the year above me in Chemical Engineering at Imperial.

On our way out of Carbondale, Jakob and I met up with Joel, a middle aged guy from New York who Jakob had previously cycled with. We were all on the wrong side of a river with a closed bridge in front of us. As far as we could tell it had just been freshly tarmacked, and with nobody around we proceeded to cross instead of adding 10 miles to our day by detouring around.



Figure 19: Route through Illinois. Map produced using GPSVisualiser.com (Schneider, 2016).



Figure 20: Tom's driveway.

Missouri, Days 24 to 29, 351 miles

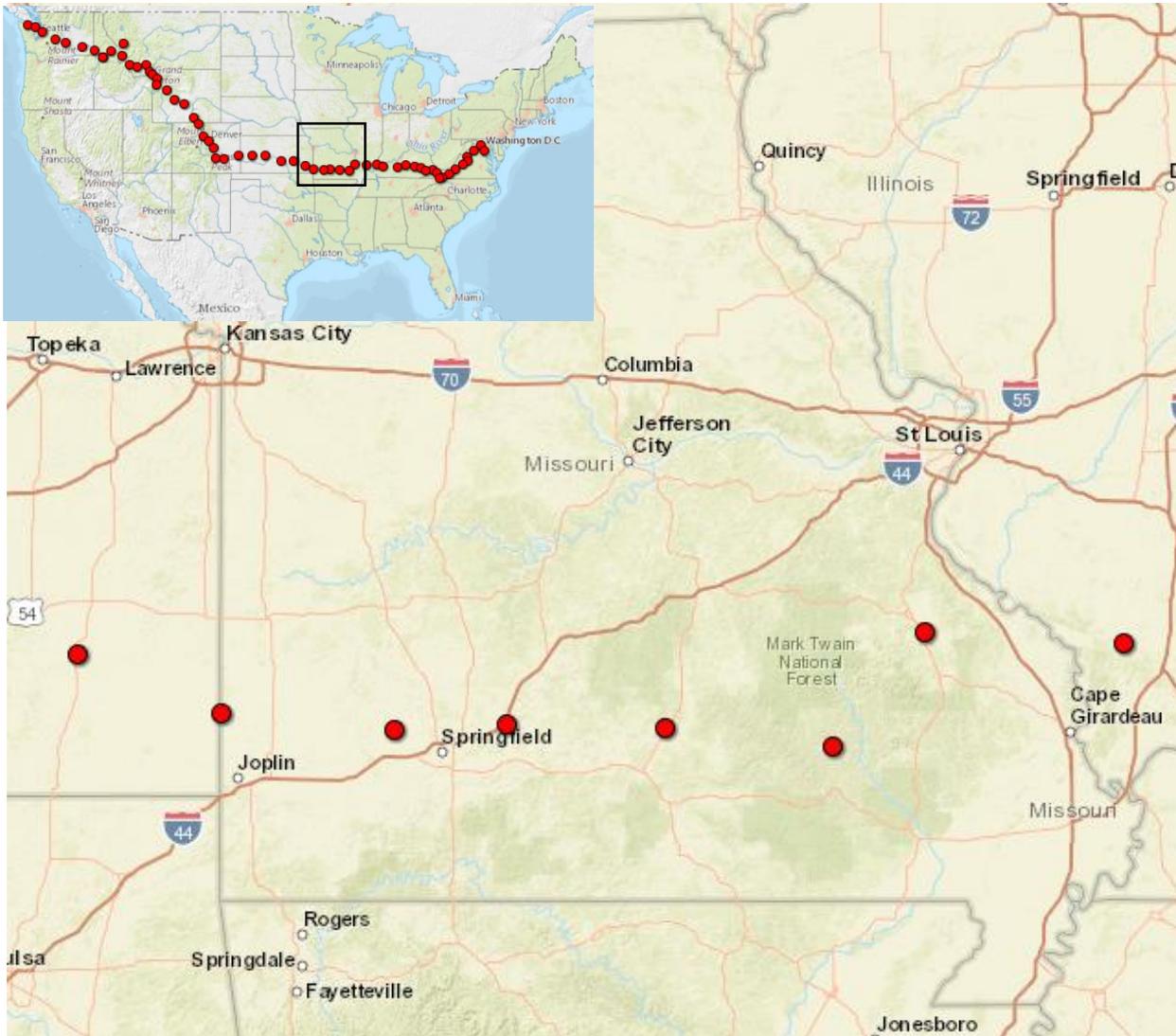


Figure 21: Route through Missouri. Map produced using GPSVisualiser.com (Schneider, 2016).

Jakob, Joel and I had a lovely welcome to Missouri. Whilst on a bridge across the Mississippi we had a prime example of a gentleman lean out of a van window and shout “Get off the fucking road!”. I was stumped as to where he wanted us to go. As far as I could tell, right next to the bridge was a long drop to a large river and nothing else. I would have been grateful if there had been a bit more explanation in his statement.

We had now entered the state of steep hills (where we were going anyway). The second day in the Missouri consisted of the most dangerous roads I rode on. The roads were steep with blind corners and were on a route used by trucks carrying lead. These drivers were paid by the load and wanted to get as many loads in as possible and didn’t care who was in their way. Climbing steep hills at 5mph, lead trucks would fly by at excessive speeds dangerously close around blind bends. With no shoulder, there was nowhere to go and when one truck ran me off the road I just managed to keep control, but cut up the back of my leg on my pedal studs.



Figure 22: Eerie climbing into the Ozarks.

Joel and Jakob were both doing higher average milage than me, so on the third day I was back to cycling by myself, which I found I didn't mind at all. I really got on well with Jakob, but had discovered that most of the time I liked the peace and pace of riding by myself. That said, I discovered that I also enjoy the company in the evening.



Figure 23: My favorite sign.

That morning was a very enjoyable piece of cycling, a thick fog covered the hills and made for an eerie and atmospheric cycle up into the Ozarks. I had heard from eastbound cyclists that this was a steep section and everyone seemed to have hated it, but I didn't find it too bad. I made sure I got up early to give myself time to go slowly. It was steep (up to 16%), but in my granny gear it was ok. I was slow, but four hours and 35 miles later I was at the highest point and saw my favorite sign (see Figure 23), followed by equally steep rolling downhills. From here the hills started easing up in preparation for Kansas.

Another example of people's generosity occurred on my last day in Missouri. I had been hearing about the pies at a place called Cooky's Café in Golden City since I had entered the state 300 miles earlier. As a result I pulled in for lunch and relaxed for a couple of hours whilst talking to some of the other patrons. When I asked the waitress for the bill one of the guys I was talking to offered to pay, but he was told that a couple two tables up (who had left and I hadn't even spoken to) had already paid the bill. Not only had this never happened to me before, but two sets of people offering it in the same place was incredible.

The pie was excellent.



Figure 24: Blue skies and steep hills.

Kansas, Days 30 to 36, 506 miles

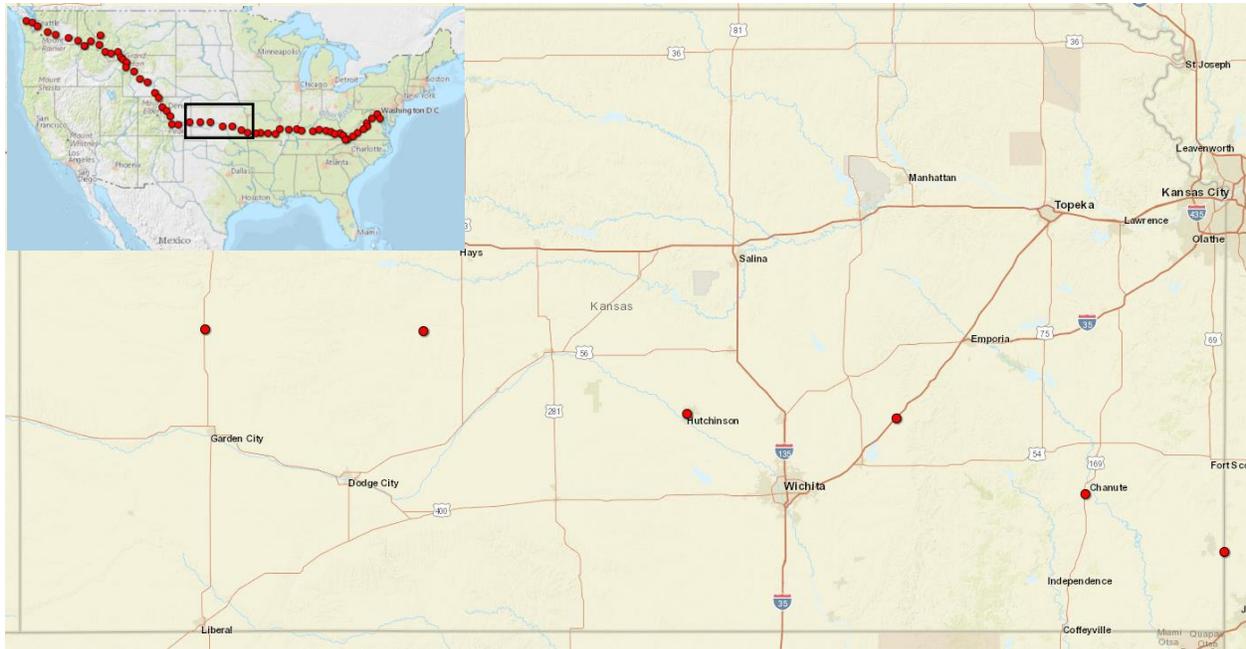


Figure 25: Route through Kansas. Map produced using GPSVisualiser.com (Schneider, 2016).

From the state of steep hills to the state of no hills, which meant lots of wind. There are no features to break up the wind to the west for hundreds of miles until the foothills of the Rockies in Colorado. The prevailing winds meant that I was supposed to have head winds across the state, but luckily the weather pattern whilst I was there was one of easterlies in the morning and westerlies in the evening. In the middle of the state I took advantage of this and after a large burrito for dinner in Larned, I was feeling good and hopped back on my bike to cycle 50 more miles that evening to complete my longest day of the trip, 120 miles. This consisted of some beautiful night riding through the prairie for an hour or so before pulling over, downing a litre of chocolate milk and crashing in my tent.

Most significantly, whilst I was in Kansas a total solar eclipse occurred. A friend, Rob, was also travelling in the US at the time and we arranged that he would pick me up and I would take a rest day while we drove north to get into the path of totality. He picked me up in Chanute and we drove 200 miles north only to be stuck under cloud (see Figure 26). However, we still got amazing 360° sunset affect at full coverage and the rapid darkening of the sky. I also found it surprising how much light just 1% of the sun provides.

Once Rob dropped me back off where he picked me up I continued on through Kansas. There really wasn't much to see or do in Kansas. I kept myself amused with podcasts and audio books whilst all I could see in every direction was the horizon, sometimes interrupted by a huge grain silo, letting me know I was coming up on another town.



Figure 26: The best picture I got of the eclipse. ~ 98% coverage.



Figure 27: Straight roads and flat land as far as the eye can see.

Colorado, Days 37 to 48, 521 miles

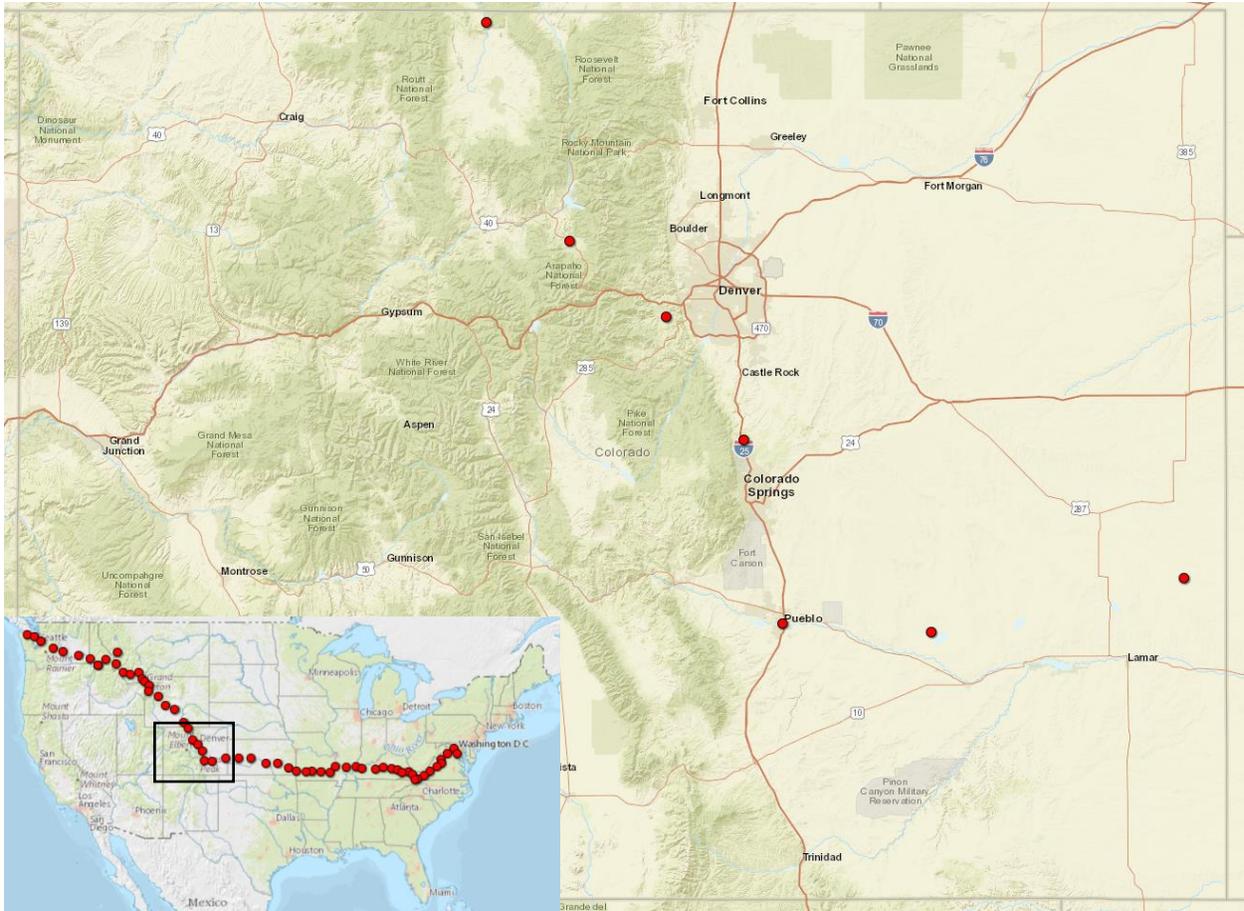


Figure 28: Route through Colorado. Map produced using GPSVisualiser.com (Schneider, 2016).

In Colorado I started to hit some beautiful scenery. The east is still flat, but you begin to see the foothills of the Rockies rising up in front of you after a couple of days cycling.

As I crossed the border from Kansas I hit a slight down-hill with a strong tailwind, cruising along at 20-25mph for nearly an hour without having to pedal. Perfect. This led me into Ordway, where I stayed with a Gillian, a Kiwi who had had her share of adventures in her life. She was a host on Warm Showers, but had been hosting cyclists who passed through for years before the organization existed. Her deal was a shower and place to sleep in exchange for 15 minutes work on her farm. For me that consisted of digging up two fence posts to allow truck access to a field. We then spent a couple of hours discussing how a thermosiphon may be included in a sustainable home she was building to incorporate solar water heating.

The next day I headed to another Warm Showers host, Mike, in Pueblo. It was strange, but oddly comforting to be in a city again. It was basically the halfway point of the route at 2,000 miles. Since Washington DC I had been travelling exclusively through small town America and hadn't hit any cities, and whilst I really enjoyed the scenery and solitude this provided, I enjoyed taking a rest day in Pueblo and seeing the sights there. Mike was an excellent host, taking me to the city centre and giving me a short tour the evening I got in. Leaving Pueblo, I was now off route for a couple of hundred miles while I detoured to Kittredge, just west of Denver, to spend Labour Day weekend with a friend,



Figure 29: Happy to leave Kansas.



Figure 30: Berthoud Pass.

further north in Wyoming and Montana, and whilst this made for a reduced view of the mountains, it gave some beautiful sunsets and sunrises. When we got back to Colorado, I put the new tyre, a new cassette and a new chain on my bike. I had been unable to find a cassette with a large enough gear on it ($\geq 32T$) since Illinois. All the bike shops I stopped into only had road cassettes, and a 24 tooth gear would have made the mountains very hard work. Riding out of Kelsey's I could use all my gears again for the first time in 1,000 miles!

The rest had done my legs the world of good. My knee had stopped hurting at about the beginning of Kansas, but I only just felt I could take the kinesiology tape off my left Achilles. The right Achilles was still niggling when I didn't have the tape on, so that stayed on (not the same strip, I replaced them every five days). My first day in the Rockies proper was a beautiful 2,000m climb up to Berthoud Pass. The first 30 miles passed quickly, with my legs feeling so fresh, and after lunch I started the 12 mile climb up the switchbacks to the pass. Those 12 miles was the most difficult of the whole trip. Whether it was the altitude, smoke, wind or a full stomach, the climbing felt harder than it should have done, and three hours later I was very happy to have reached the top (the highest point in my journey) and to cross the Continental Divide. I was on the Pacific side now and wouldn't have to cross it again - or so I thought. The next day I crossed the Continental Divide again and was back on the Atlantic side.

My last night in Colorado was the most beautiful campsite so far, in Medicine Bow National Forest and waking up to a beautiful sunrise.

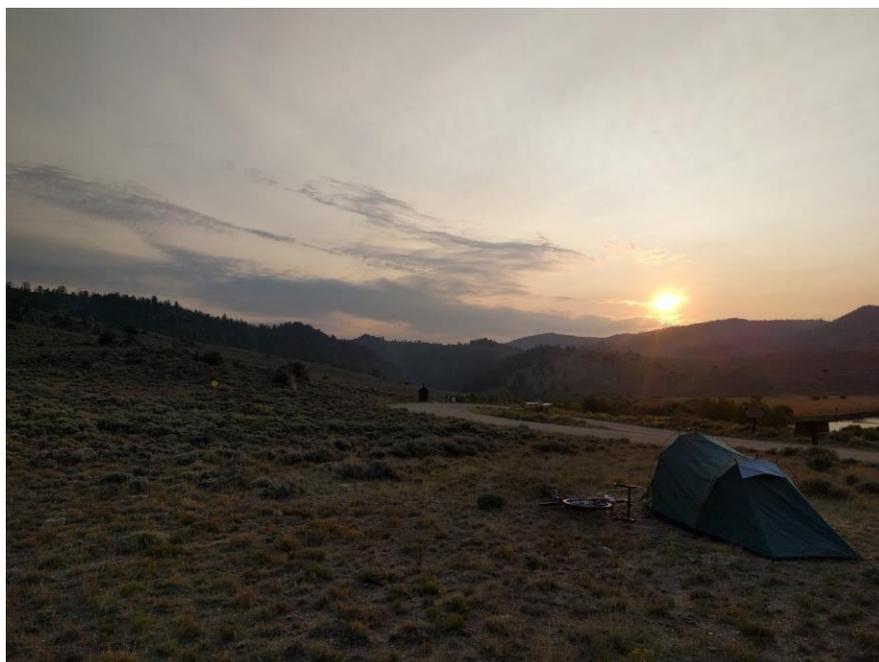


Figure 31: Camping in Medicine Bow National Forest, my last night in Colorado.

Kelsey, and pick up my cold weather kit that I had posted to her from DC. I took a dirt road north and stumbled across a cycle trail heading further north through Colorado Springs, where I bought a replacement rear tyre.

Skirting around Denver I passed through a state park where I managed to hire a canoe for free for half an hour and chill out on a lake, then had a beautiful few miles climb winding up through a river gorge to Kittredge. Arriving at Kelsey's I was warmly welcomed by her parents, Kim and Kurt, and the next day we all headed up to their farm in Wyoming, where I got a few days of much needed rest and a lot of food. There was a lot of smoke in the air at this point from forest fires raging

Wyoming, Days 49 to 55, 416 miles

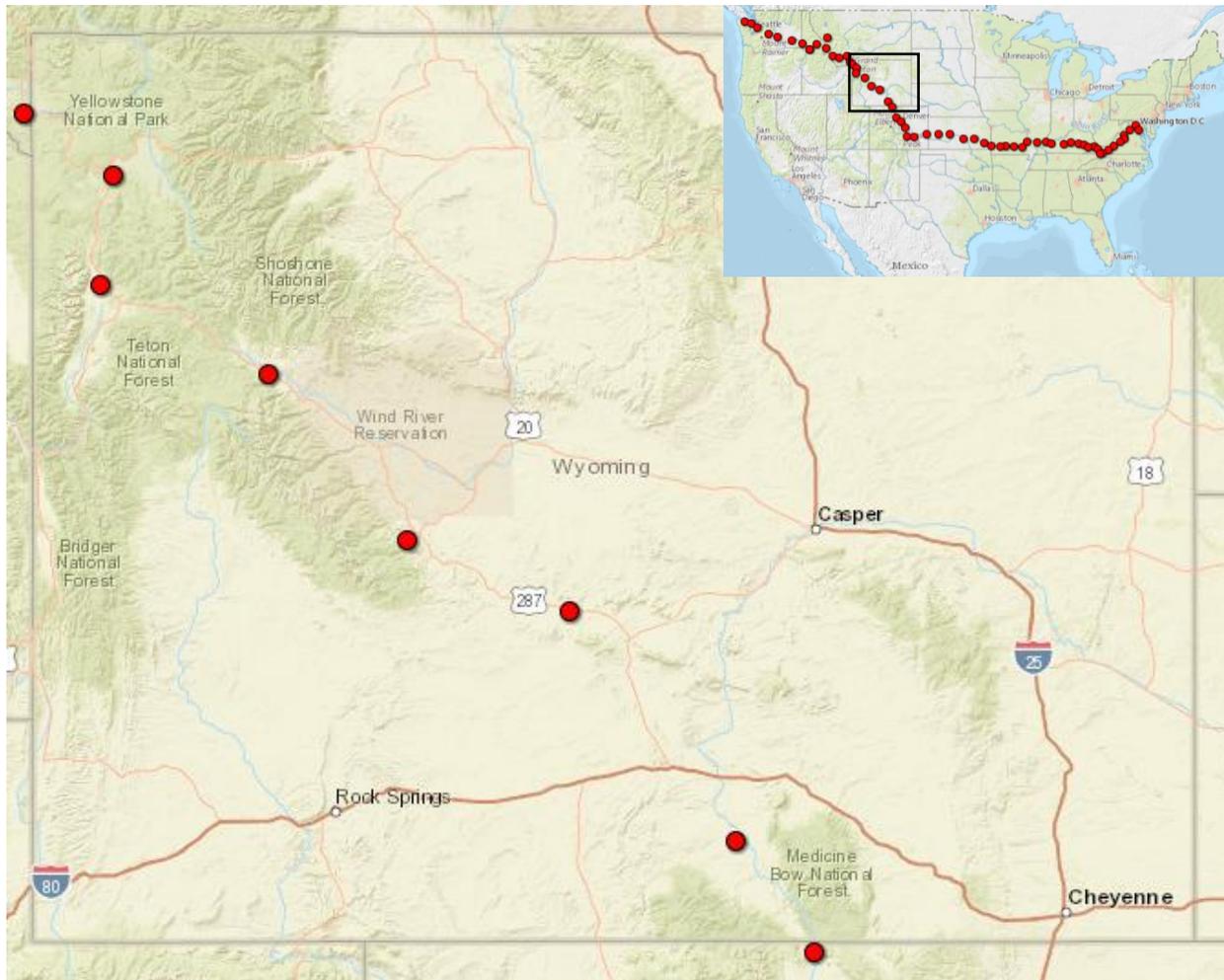


Figure 32: Route through Wyoming. Map produced using GPSVisualiser.com (Schneider, 2016).

I was welcomed into Wyoming by some free hot springs in Saratoga, so I took the afternoon off to relax where I was. Despite this, the next day I started the ride feeling pretty awful, but by lunch I had perked up and headed into the Red Desert to cross the Continental Divide again... and again a few miles later. Whilst cycling into the desert I saw a couple of hikers sat in a layby, so pulled over to chat to them. The two ladies were walking the Continental Divide Trail, but had started further north in Canada and were heading for Mexico. Whilst chatting a couple pulled up on a tandem who were mountain biking the Great Divide Trail and we spent some time comparing kit. Eventually I set off again on a stunning ride through the desert into the night until I reached the ghost town of Jeffry City.

With a population of several thousand when it mined Uranium, the population dropped off suddenly in the 80s when the mines were closed and is now 58. After a 116 mile cycle I was ravenous and pulled into the bar (one of the three businesses in town, the other two being a motel and a pottery shop run by a unique character) and got some food. There were a couple of locals and three cattle truck drivers already there who all bought me a drink after hearing I'd just cycled from Saratoga. I got chatting to Bob, one of the locals, who said he wished he had been to Europe, but couldn't, and when I asked why he told me he was a felon. Bob was about 60, so I just thought he'd done something while he was younger and didn't think much more of it. I had mentioned the luxury I really missed was a shower, so as I was about to leave to camp, Bob offered me a shower, which I accepted.

Entering his trailer he showed me how the shower worked and just before he left he mentioned he had a spare bed and I could sleep there, but at that moment I turned around and saw his living room wall (See Figure 33)

and quickly thanked him for the offer but said I was quite used to sleeping in my tent by now. He then left for the bar, telling me to make sure the door locked as I left. Having said that, I wasn't going to miss out on a shower, so I washed up and left.



Figure 33: Bob's living room wall.

I felt a bit worse for wear the next morning and wasn't impressed by the head wind that buffeted me all day. After 20 miles I passed a campervan just down a dirt track where a lady waved me down and asked if I wanted any food. Behind the van was a table loaded with energy gels, fruit and biscuits and two barrels of sports drink. It turned out that Racheal and her husband Andy were manning the half way aid station for a 131 mile gravel cycle race that had started at 6am that morning and was finishing in Lander, my destination for the day. They told me to help myself as they only had one more rider to come through, I warned them I would eat a lot, then sat down and ate for an hour while chatting to the couple. At 11:45, 15 minutes before the cutoff time, the last rider, Todd, checked in, but finished his race there. I then proceeded to ride back to Lander with Todd, but it was just getting windier and halfway there he got a lift in a pickup. As I left them Racheal and Andy gave me their number and told me to look them up for a place to stay when I got into town. Struggling into Lander I met up with the cyclists at their post-race drinks, and after feeling a bit of a wimp for struggling all day, I felt a bit better about myself when I heard that from the ~30 that had started, only five had finished.



Figure 34: Wind River Reservation.



Figure 35: The Tetons through the smoke.

A couple of days later I crossed the Continental Divide for the fifth time at Togwotee Pass to start the amazing descent into the stunning Grand Teton National Park, with the rugged peaks of the Tetons in the distance. Spending the night at Coulter Bay Village campground I took a short trail down to Jackson Lake where I washed up and cooked with the lake to myself for a couple of hours at sunset, a magical experience in the crowded National Parks of Grand Teton and Yellowstone. The beautiful ride through Grand Teton and into Yellowstone the next day was only detracted from by the constant stream of traffic along the narrow road. The views and wildlife were spectacular and in Yellowstone the landscape in the caldera

was otherworldly. I wish I could have stayed longer, but it was due to start snowing the next day and I wanted to make sure I got out in case the road closed. Unfortunately in Yellowstone I discovered that the floor of my tent wasn't waterproof anymore during a storm, so bought a tarp to put under it when I got to West Yellowstone.



Figure 36: Solitude at sunset on Jackson Lake.

Montana, Days 56 to 64, 379 miles

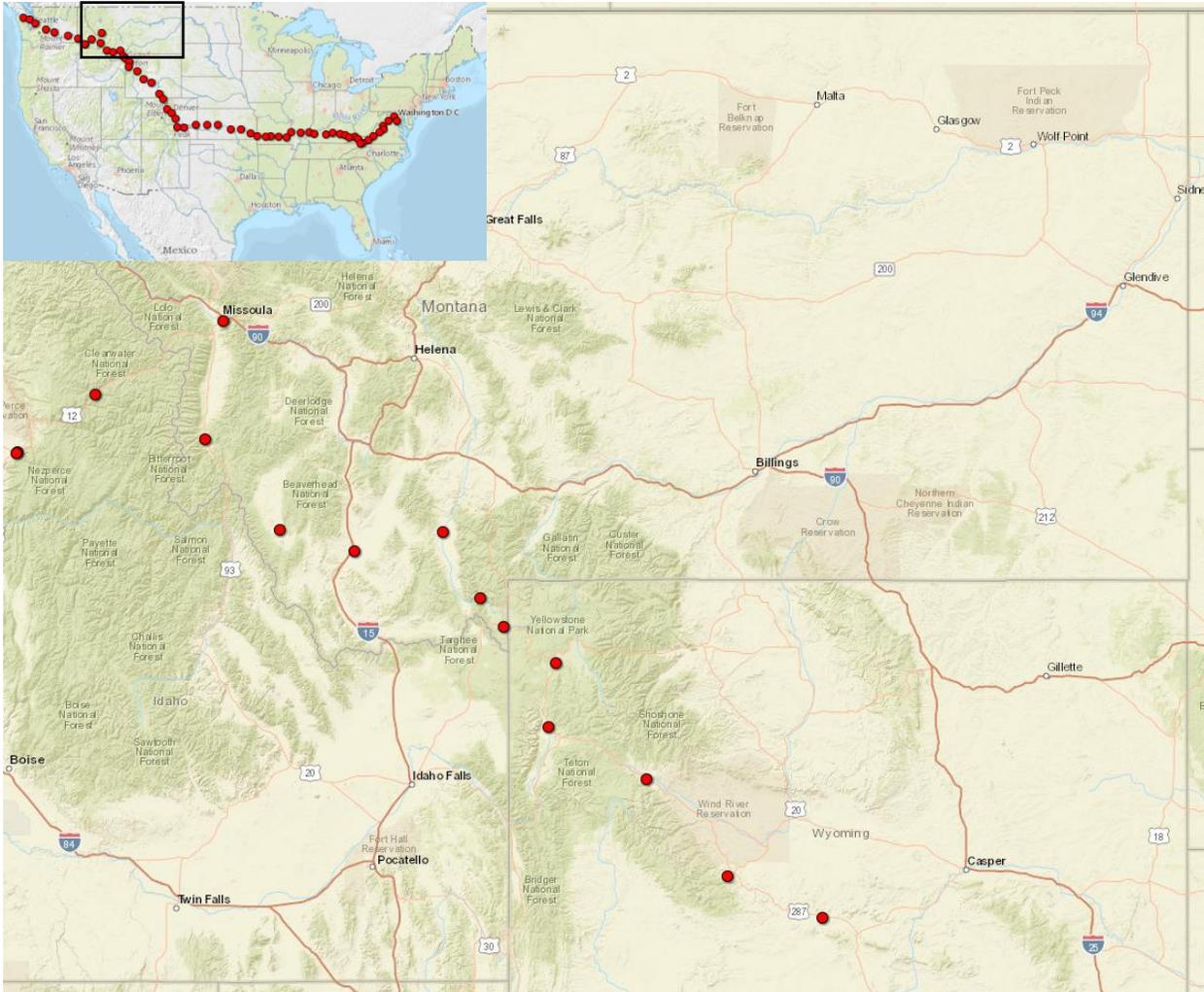


Figure 37: Route through Montana. Map produced using GPSVisualiser.com (Schneider, 2016).



Figure 38: It was a bit snowy.

Now into the state of snow. Leaving from West Yellowstone I had planned to go 70 miles that day, but ended up camping after just over 20 due to heavy wet snow. The next day, after pulling over for lunch I got back on the road and noticed other cycle tracks in the snow on the shoulder. I caught up with Filipe at the top of the next hill to find his bamboo bike upside-down and him fixing a puncture. He was travelling fast and light and had opted for CO₂ cartridges instead of a pump. The only problem was that every time he screwed a cartridge into the adaptor to inflate his tyres all the CO₂ escaped around the threads on the adaptor. It was too cold and either the threads or the O ring weren't biting properly. Fortunately my pump got him back on the road.

Over the next two days cycling with Filipe I made good time despite the snow. As he was staying at motels or Warm Showers hosts every night and so only had a rack-top bag, he didn't mind me drafting him, significantly increasing my average speed. However, due to my

extra weight I was much slower up hills, so as we climbed up to the Continental Divide for my ninth and final time he dropped me. With snow blowing in my face, it wasn't a pleasant climb, but as I reached Chief Joseph Pass the sun came out, allowing me to enjoy the set of steep switchbacks down the other side into the Bitterroot Valley. I warmed up that night with a Warm Showers host, Curtis, who fed me some delicious bison burgers before we chatted about a tour he was planning to the UK in 2018.

Luckily, being down at a lower altitude than I had been for the last couple of weeks meant that it was too warm for snow and I had to settle for drizzle instead the next day for the cycle into Missoula, a very cycle friendly city and the location for the offices of the ACA. In Missoula I took a couple of rest days, during which I found Freecycles, a community bike shop with the largest collection of second hand bikes and bike parts I've ever seen. They also had free to use tools and so I bought a new bottom bracket and replaced my old one, which had been wobbling since Virginia. The ACA offices encourage anyone passing through on a bike tour to visit and get their photo put on the wall, and whilst there I bought a half frame bag (black bag within my bike frame in Figure 47). I had been thinking about getting one for a while to get things out of my pockets and get other, bulkier items I regularly used throughout the day out of my panniers and accessible on the move. I'm very glad I did, the bag provides a lot of convenience and will definitely stay as part of my touring setup.

One positive about the snow and rain over the previous week was that it had finally put out the forest fires that the emergency services had struggled to control in the north. As well as letting people return to their homes, it also meant that Lolo Pass was open again, which was my route out of the Bitterroot Valley and into Idaho.



Figure 39: A cold morning in Jackson Hole.

Idaho, Days 65 to 68, 240 miles

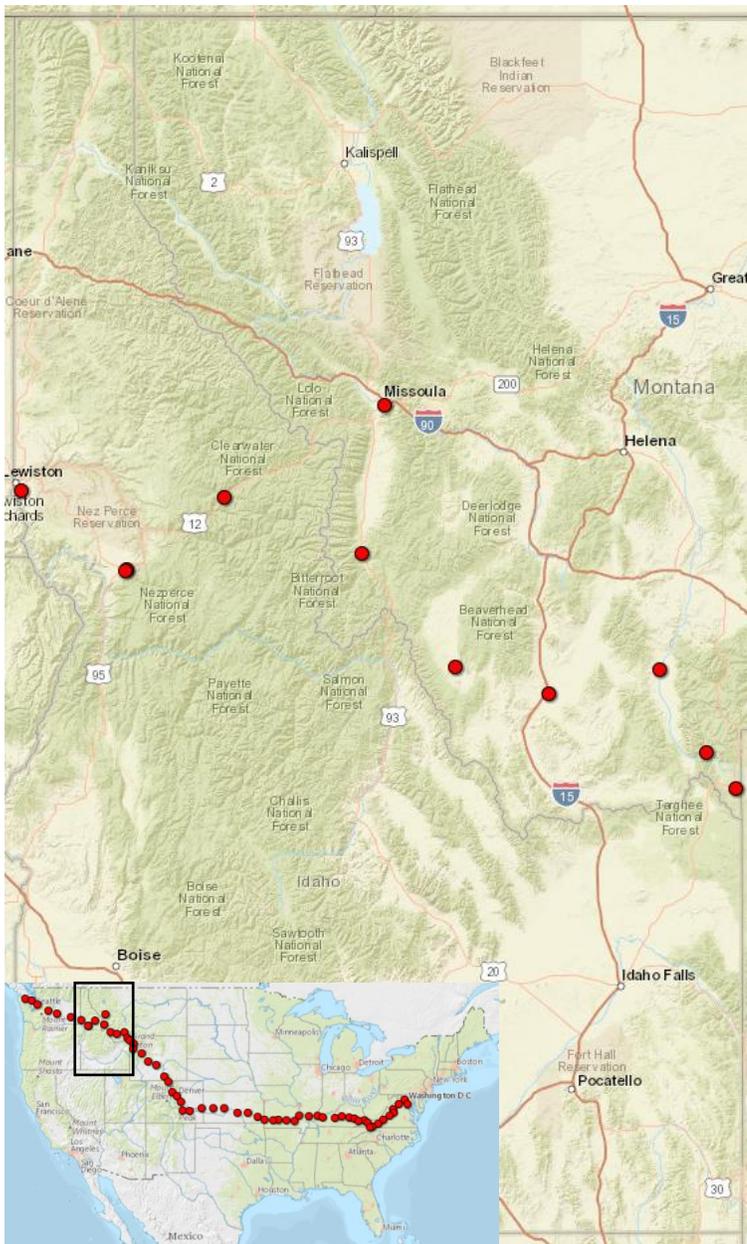


Figure 40: Route through Idaho. Map produced using GPSVisualiser.com (Schneider, 2016).



Figure 41: Descending alongside the Lochsa River.

Entering Idaho I entered my fourth and final time zone and began with a long descent from Lolo Pass alongside the Lochsa River. Whilst in Idaho I met up with Claire in Grangeville. Claire had cycled from Chicago and I had met her originally in Yellowstone. She had taken a more southerly route after Yellowstone (avoiding the snow) and our paths crossed again on a hundred mile stretch of road south of Grangeville. From there we headed north-west into Washington.



Figure 42: Claire on wide shoulders in Idaho.

Washington, Days 69 to 83, 499 miles

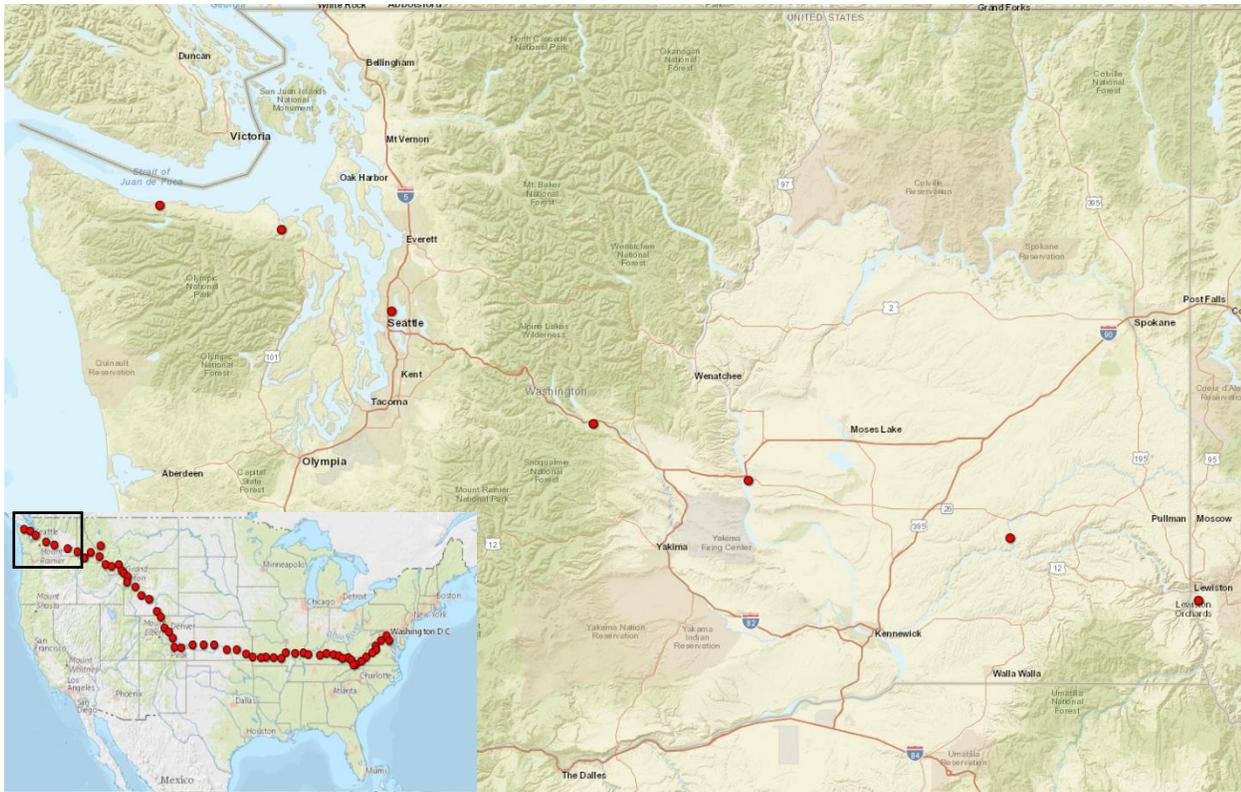


Figure 43: Route through Washington. Map produced using GPSVisualiser.com (Schneider, 2016).



Figure 44: Palouse Falls State Park.

we had to lash it back on with her rope for hanging food away from bears. Our progress may have been slow, but the views were spectacular.

Our first day in Washington was also Claire's 24th birthday and, after being stung by a bee for the first time in her life, we camped in Palouse Falls State Park with a lovely view of the waterfall and down the canyon. From there we were aiming to hit the start of a (supposedly) great gravel route over the Cascades at Ellensburg and follow that towards Seattle. When we got on the route it took us over four hours to do 20 miles and, exhausted, we just set up our tents on the side of the trail and went to sleep. The issue was that the trail was paved with deep, large chunks of loosely packed gravel, which led to a rough ride and our heavily laden touring bikes sunk in and fishtailed all over the place. It was rough enough that Claire's front rack broke and



Figure 45: Descending the from the Cascades on smooth packed gravel.

The plan the next day was to cycle the 100 miles to Seattle, but if the trail kept up like this, we weren't going to make it. Fortunately, 30 miles later, as soon as we got over the pass the surface of the trail changed to smooth, hard packed gravel and the cycle down was a dream until the outskirts of Seattle. Seattle itself is a really bike friendly city and we were still mostly on traffic free bike paths until we reached Claire's aunt and uncle's house in the middle of Seattle. Despite arriving at 10pm, Karen and Dave welcomed us in to a huge dinner and some beer and we spent until 1am conversing around the dinner table, when I started falling asleep over my drink.



Figure 46: Claire, Karen, Dave and Dave

Seattle is a great city and we enjoyed Karen and Dave's hospitality for a week, Dave being our own personal tour guide for the day at one point. Being ex-librarians, they both seemed to have an encyclopedic knowledge on a range of obscure topics. After a few days, Claire's friend (another Dave) joined us while he was in Seattle during a road trip in his van. When I cycled across the Olympic peninsula at the end of a week he and Claire agreed to come out in his van to pick me up once I reached the Pacific Ocean so that I could get back to Seattle in time to get to Portland and catch my flight.

The last three days to Cape Flattery from Seattle were uneventful and beautiful cycling through the

temperate rainforest of the Olympic Peninsula, with nice camping in the State Parks and National forest along the way. Claire and Dave met me for the last nights camping, then drove ahead to Cape Flattery and met me again there. When I got there I found the last half mile was a steep hiking trail. A couple who came up it told me there was no way I was getting my bike down there, but I wasn't going to be defeated by the last half mile out of 4,000. Getting it down wasn't too hard, but getting it back up was. Standing on the Cape was amazing, but it didn't sink in until much later that I had actually done it, travelled from one side of the US to the other by bicycle.

Whilst at the Cape I was talking to a brother and sister in their 60s and the brother mentioned it was his sister's first time back to the place she had been born. When I asked if he meant right here, he said no, she had been born on the lighthouse their parents were stationed at on an island just off the Cape (seen in the back of Figure 47).



Figure 47: Cape Flattery, Pacific Ocean.



Figure 48: Cycling along the North of the Olympic Peninsula.

15. Summary

Cycling across the US was much a story of the people I met as the places I went.

16. Bibliography

McMichael, L., 2014. *TransAmerica Trail Wanderlust*. [Online]

Available at: <https://taisiedesign.com/2014/12/16/transamerica-trail-wanderlust/>
[Accessed 7 11 2017].

OfflineMaps, 2017. *All-In-One Offline Maps*. [Online]

Available at: <https://www.offline-maps.net/>
[Accessed 8 11 17].

Schneider, A., 2016. *GPS Visualiser*. [Online]

Available at: <http://www.gpsvisualizer.com>
[Accessed 1 11 2017].

17. Acknowledgements

I would like to thank the Imperial College Exploration Board for their assistance in the funding of this expedition and consequentially forcing me to get the planning done early in order to be able to submit a proposal for consideration. I would also like to thank Tony, Meg, Tamsin and Alex for aiding me during my recovery, without which, even beginning the cycle would not have been possible. Finally I would like to thank all the Warm Showers hosts and complete strangers along the way who showed me generosity and kindness. Without them, this would have definitely been less enjoyable.



Figure 49: Split Rock, WY.

Appendix A – Risk Register

Note: impact and likelihood levels are assessed before the implementation of any controls, controls then reduce the overall risk to an acceptable level.

Colour (overall risk rating)	Action
1-3	Does not require any control
4-9	Requires low level of control
10-14	Requires several control actions
15-25	Requires high level of control or consider alternate plan that will avoid causes of event altogether

Hazard Reference	Description of unwanted event	Causes	Consequences	Impact (1-5)	Likelihood (1-5)	Overall Risk (impact x likelihood)	Controls
Biological	Severe infection of wound	Untreated/ineffectively treated wound	Blood poisoning, fever, inability to transport self, eventual death	5	2	10	Carry appropriate medical equipment and appropriately treat any wound with broken skin. Carry communication equipment for emergency and know emergency procedure for contacting emergency services. Knowledge of appropriate evacuation procedure.
Biological	General low level illness	N/A	General fatigue, loss of riding days to recover	2	3	6	Rest days built into schedule
Biological	Low level food poisoning	Consuming undercooked food/food prepared in	Vomiting, fatigue	2	1	2	N/A

		unsanitary conditions					
Biological	High level illness (including severe food poisoning)	Contact with infected person	Extreme fatigue, permanent disability, incapacitation, death	5	2	10	Carry communication equipment for emergency and know emergency procedure for contacting emergency services. Knowledge of appropriate evacuation procedure.
Mechanical, Human Capability	Severe injury (broken bone(s), severe blood loss, loss of consciousness)	Being knocked off/run over by another vehicle. Falling off bike at high speed due to loss of control.	permanent disability, death	5	2	10	Do not cycle at night unless necessary. If cycling at night, ensure front and rear lights are used. Wear a helmet. Check tyres every morning and replace when appropriate. Carry communication equipment for emergency and know emergency procedure for contacting emergency services. Knowledge of appropriate evacuation procedure.
Mechanical, Human Capability	Damage to bike (frame) such that it is un-ridable	Being knocked off/run over by another vehicle. Collision at high speed due to loss of control.	Severe delay, premature termination of trip	5	2	10	Do not cycle at night unless necessary. If cycling at night, ensure front and rear lights are used. Wear a helmet. Check tyres every morning and replace when appropriate. Knowledge of appropriate evacuation procedure.
Mechanical	Broken/ worn out components	General wear and tear, hard impacts	Severe delay, premature termination of trip	4	3	12	Check and service bike before trip. Carry simple spares and repairs kit.
Body Mechanics	Recurrence of right knee injury (very	Pushing too high a gear (low cadence), consecutive long days	Unable to ride, unable to walk far, further	4	3	12	Keep right knee warm at all times immediately before and during riding. Do not push

	specific to me)	(>100 miles), using cleats.	surgery required, early termination of trip				long days at beginning of tour. Ensure lowest gear is working properly throughout tour. Take ibuprofen (and other anti-inflammatory medication) after riding, do not take during riding as this may cover pain symptoms that can act as indicators to stop riding. Use flat pedals only.
Expedition Management	Running out of food/water	Unexpected sparsely populated stretches. Very hot weather. Wildlife stealing food.	Dehydration, malnutrition, death	5	2	10	Carry emergency high energy, light weight food (energy bars and rice). Carry stove and pan set to boil and sterilise water. Always carry 2L more water than anticipated needs and fill up at every opportunity. Store food in tree when in known bear/wolf habitat.
Environment	Encounters with dangerous wildlife (specifically bears and wolves)	Food close to/in/up wind of living area in known bear/wolf habitat.	Possible minor or severe injury, death	5	3	15	Store food downwind when in known bear/wolf habitat. Research locations of these habitats before departure. Take advice from locals about habits of local dangerous wildlife and suitable control measures. Know how to react in close encounter with dangerous wildlife.
Environment	Exposure based injury	Extreme hot/cold weather	Permanent disability, death	5	3	15	Wear sun cream and hat when appropriate. Do not cycle (set up tent) if conditions too extreme. Ensure clothes are warm and water proof enough

							for anticipated coldest climate. Ensure sleeping bag is warm enough for coldest climate anticipated. Know symptoms of the beginning of Hypo/Hyperthermia and frost-nip/bite
Expedition Management	Dehydration	Running out of water, very hot climates	Death	5	1	5	Ensure excess water is carried. Carry chlorine tablets to sterilise water. Know where next water point is in isolated/desert areas. Carry rehydration sachets.
Mechanical	Stove malfunction	Wear and tear, stove crushed in panniers if bike falls on it.	Unable to cook food or sterilise water	2	2	4	Store stove in pan to prevent crushing. Much of the area is wooded, so a small cooking fire could serve in place. Carry some food that does not need to be cooked.
Mechanical	Equipment breakage (tent, panniers, clothes)	Wear and tear, bike falling on kit in panniers, high winds (tent).	Discomfort, unable to carry equipment	2	5	10	Take small general repair kit (duct tape, zip ties, p-clamps, para cord, multi tool) and small sewing kit.
Expedition Management	Loss of all/some equipment	Theft, airline logistical error	Early termination of trip, rescue required in remote areas	5	2	10	Store important documents in the cloud so they can be obtained from any computer with an internet connection. Carry all important items (wallet, passport, travel documents, phone) on person when not physically with the bike. Knowledge of appropriate evacuation procedure.

Environment	Extreme weather/ other natural event	Hurricane, flood, forest fire	Early termination of trip, rescue required in remote areas, injury, death	5	1	5	Carry communication equipment for emergency and know emergency procedure for contacting emergency services. Knowledge of appropriate evacuation procedure. Talk to locals/ take notice of local news.
Political	Political unrest	Activism, post-election tensions	Injury	3	1	3	Avoid areas known to currently have riots or similar.
Expedition Management	Running out of fuel	Unexpected sparsely populated stretches.	No hot fuel, unable to boil water to sterilise	1	3	3	Take chlorine tablets
Human capability	Getting lost	Ignorance of general route for that day, taking a wrong turn	Lost time	1	4	4	Ensure maps are sufficient for purpose and cover enough of area surrounding route, carry compass, know how to use both, review route for next day the night before, carry phone with gps and (offline) maps app.
Expedition management	Running out of money	Theft, budgeting, under frozen card(s)	Early termination of trip	3	2	6	Take >1 credit/debit card, do not store all cash or all cards in same location (store some money in seat tube of bike). Have contact numbers for relevant card suppliers. Have back up emergency fund of appropriate amount only to be used as last resort.
Thermal	Fire	Overturning stove, vegetation below/around stove	Burns, loss of/ damage to equipment,	5	2	10	Clear area around and below stove of any vegetation, enclose stove within wind/heat

		catching alight	triggering larger fire				shield whilst lit.
--	--	-----------------	------------------------	--	--	--	--------------------

Appendix B – Detail of Change of Route in West

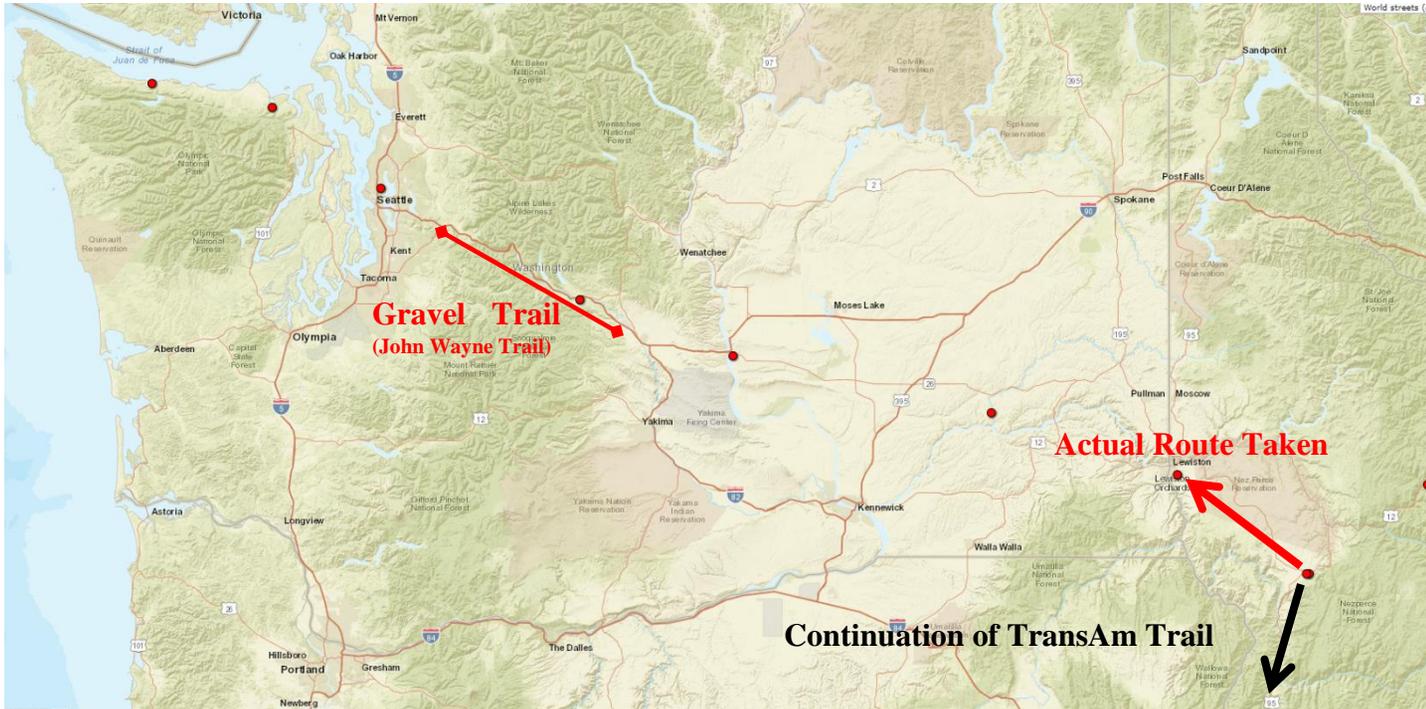


Figure 50: Change of route in the west, map mainly covers Washington State with parts of Idaho to the east and Oregon to the south. Circular markers indicate overnight stops. Map produced using GPSVisualiser.com (Schneider, 2016)

Appendix C – Insurance Details

Table 4: Insurance details

Cover Category	Year Round Premier
Cost (after discount)	£175.16
Trip Duration Allowable	100 days
Medical Expenses	£10,000,000
Cancellation	£5,000
Personal Baggage	£2,000
Money	£500
Travel Delay	£300
Cycle Hire	£100
Onward Transport	£200
Cycle Event Fees	£300
Roadside Recovery	£100
Cycle Loss	£3,000
Policy Excess	£65
Cycle Repatriation	Necessary Costs

Appendix D – Itinerary

Table 5: Itinerary

Day	Date	Accommodation		Distance miles	Notes
		Location	State		
-13	07/07/2017	Washington	DC	0	Fly into Washington Dulles
-12	08/07/2017	Washington	DC	0	Injury recovery
-11	09/07/2017	Washington	DC	0	Injury recovery
-10	10/07/2017	Washington	DC	0	Injury recovery
-9	11/07/2017	Washington	DC	0	Injury recovery
-8	12/07/2017	Washington	DC	0	Injury recovery
-7	13/07/2017	Washington	DC	0	Injury recovery
-6	14/07/2017	Washington	DC	0	Injury recovery
-5	15/07/2017	Washington	DC	0	Injury recovery
-4	16/07/2017	Washington	DC	0	Injury recovery
-3	17/07/2017	Washington	DC	0	Injury recovery
-2	18/07/2017	Washington	DC	0	Injury recovery
-1	19/07/2017	Washington	DC	0	Injury recovery
0	20/07/2017	Washington	DC	0	Injury recovery
1	21/07/2017	Bald Eagle Island	VA	56	
2	22/07/2017	Gooney Creek	VA	71	

3	23/07/2017	Mount Crawford	VA	66	
4	24/07/2017	Waynesboro	VA	31	
5	25/07/2017	Lexington	VA	49	
6	26/07/2017	Lexington	VA	0	Rest day
7	27/07/2017	Catawaba	VA	73	
8	28/07/2017	Draper	VA	54	
9	29/07/2017	Troutdale	VA	58	
10	30/07/2017	Damascus	VA	27	
11	31/07/2017	Damascus	VA	0	Rest day
12	01/08/2017	Council	VA	53	
13	02/08/2017	Lookout	KY	48	
14	03/08/2017	Hazard	KY	74	
15	04/08/2017	Boonville	KY	50	
16	05/08/2017	Berea	KY	50	
17	06/08/2017	Berea	KY	0	Rest day
18	07/08/2017	Springfield	KY	62	
19	08/08/2017	Springfield	KY	64	
20	09/08/2017	White Mills	KY	109	
21	10/08/2017	Sebree	KY	0	Rest day
22	11/08/2017	Shwaneetown	IL	49	
23	12/08/2017	Carbondale	IL	66	
24	13/08/2017	Farmington	MO	94	
25	14/08/2017	Ellington	MO	63	
26	15/08/2017	Huston	MO	74	
27	16/08/2017	Marshfield	MO	68	
28	17/08/2017	Ash Grove	MO	53	
29	18/08/2017	Ash Grove	MO	0	Rest day
30	19/08/2017	Pittsburg	KS	66	
31	20/08/2017	Chanute	KS	66	
32	21/08/2017	Chanute	KS	0	Rest day
33	22/08/2017	Cassoday	KS	99	
34	23/08/2017	Hutchinson	KS	75	
35	24/08/2017	Alexander	KS	121	
36	25/08/2017	Scott City	KS	78	
37	26/08/2017	Sheridan Lake	CO	79	
38	27/08/2017	Ordway	CO	93	
39	28/08/2017	Pueblo	CO	54	
40	29/08/2017	Pueblo	CO	0	Rest day
41	30/08/2017	Monument	CO	78	
42	31/08/2017	Kittredge	CO	65	
43	01/09/2017	Torrington	WY	0	Rest day

44	02/09/2017	Torrington	WY	0	Rest day
45	03/09/2017	Torrington	WY	0	Rest day
46	04/09/2017	Kittredge	CO	0	Rest day
47	05/09/2017	Tabernash	CO	64	
48	06/09/2017	Medicine Bow National Forest	CO	89	
49	07/09/2017	Saratoga	WY	53	
50	08/09/2017	Near Jeffry City	WY	116	
51	09/09/2017	Lander	WY	59	
52	10/09/2017	Lander	WY	0	Rest day
53	11/09/2017	Dubois	WY	75	
54	12/09/2017	Grand Teton National Park	WY	69	
55	13/09/2017	Yellowstone National Park	WY	44	
56	14/09/2017	West Yellowstone	MT	50	
57	15/09/2017	Custer Gallatin National Forest	MT	24	
58	16/09/2017	Ennis	MT	48	
59	17/09/2017	Dillon	MT	72	
60	18/09/2017	Jardine	MT	48	
61	19/09/2017	Darby	MT	74	
62	20/09/2017	Missoula	MT	64	
63	21/09/2017	Missoula	MT	0	Rest day
64	22/09/2017	Missoula	MT	0	Rest day
65	23/09/2017	Clearwater National Forest	ID	95	
66	24/09/2017	Grangeville	ID	75	
67	25/09/2017	Grangeville	ID	0	Rest day
68	26/09/2017	Lewiston	ID	70	
69	27/09/2017	Palouse Falls State Park	WA	81	
70	28/09/2017	Beverly	WA	101	
71	29/09/2017	Cle Elum	WA	52	
72	30/09/2017	Seattle	WA	101	
73	01/10/2017	Seattle	WA	0	Rest day
74	02/10/2017	Seattle	WA	0	Rest day
75	03/10/2017	Seattle	WA	0	Rest day
76	04/10/2017	Seattle	WA	0	Rest day
77	05/10/2017	Seattle	WA	0	Rest day
78	06/10/2017	Seattle	WA	0	Rest day
79	07/10/2017	Seattle	WA	0	Rest day
80	08/10/2017	Seattle	WA	0	Rest day
81	09/10/2017	Sequim Bay State Park	WA	62	
82	10/10/2017	West of Port Angeles	WA	46	

83	11/10/2017	Olympic National Forest	WA	56	Completion of ride
+1	12/10/2017	Portland	OR	0	Train Seattle -> Portland
+2	13/10/2017	Portland	OR	0	Prep for flight
+3	14/10/2017	Over Atlantic	-	0	Fly out of Portland International
			Total	4022	