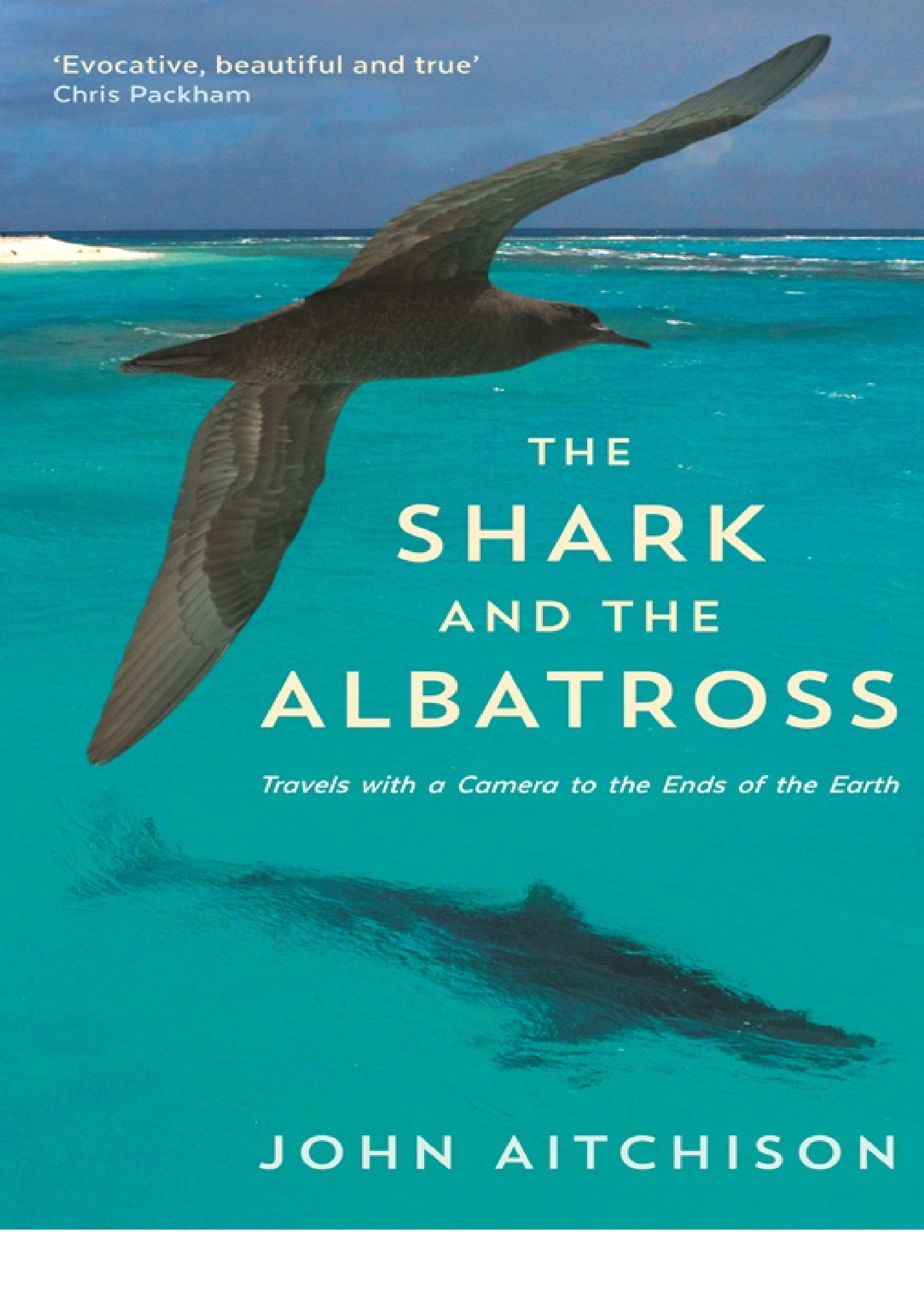


'Evocative, beautiful and true'
Chris Packham

A large albatross is shown in flight, its wings spread wide, flying over a vibrant turquoise ocean. In the background, a white sandy beach is visible under a clear blue sky. In the foreground, the dark dorsal fin of a shark is seen breaking the surface of the water.

THE
SHARK
AND THE
ALBATROSS

Travels with a Camera to the Ends of the Earth

JOHN AITCHISON

THE
SHARK
AND THE
ALBATROSS

JOHN AITCHISON is a wildlife filmmaker. He has worked with the BBC, National Geographic, PBS and Discovery Channel on series including *Frozen Planet*, *Life*, *Big Cat Diary*, *Springwatch*, *Hebrides* and *Yellowstone*; and programmes such as the BBC's *The Amber Time Machine*. His many awards include a joint BAFTA and a joint Primetime Creative Emmy, both for the cinematography of *Frozen Planet*.

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This book is dedicated to my family,
and to the memory of my grandma, who taught me to notice



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INTRODUCTION:

THE SHARK AND THE ALBATROSS

Cloud shadows. Water-dapple and dancing light. A strip of sand, blindingly white: an island made entirely of broken coral and shells and, at my feet, the sea. This sea, the colour of glass, stacked layer upon layer: a clear and vivid green, like the eyes of a cat. There are seven squat bushes on the island, moulded by the salt wind and decorated, like low Christmas trees, with birds called noddies. They are terns, chocolate-coloured, evenly spaced, all facing the wind: the ever-present wind. Most of the island's birds are black-footed albatrosses: big, dark brown, with pale faces and, well, you can guess the colour of their feet, but it's their wings that mark them out, that define them. Their wings are wider than I am tall.

A shower is coming. As the sky darkens, the sea turns to turquoise milk. A strong gust sweeps across the island and the albatrosses respond, opening their wings. All of them. Hundreds of them yearning to fly. They live for this wind. They are all young birds, just a few months old. The boldest lift a metre into the air on the gust and teeter there, trailing their feet. It's their first taste of flight. They will spend most of their lives in the air: the ones that live to leave the island.

This is part of French Frigate Shoals, four days away from Honolulu in Hawaii, and I'm seeing it from a tiny platform, thirty metres offshore. The waves are just a metre below me, with another three to the seabed. It's a bit precarious but perfect for filming the young albatrosses as they are gradually drawn to the sea.

At sunrise I sit beside one of them on the beach, just an arm's reach away. She takes little notice, just one peck at my shoe – before turning back to the water. I follow her with my camera. Her dark eye fills the viewfinder. I can see the waves reflected there, the beach and a man, silhouetted, crouching behind his tripod under the bright circle of the sun. It is humbling to be trusted by her as she opens her wings to the wind. In two weeks she and every other albatross on this island will have left, or died in the attempt. I shift focus and frame a view of the albatross's feet: black triangles on the sand. The shadow of her head falls exactly between them, completing the image of the bird. A wave curls in and hides her feet, but the shadow of her upper half remains on the froth until the wave retreats and restores her. The shadow of a frigate bird streams across her back, across my face and on across the bright sand. I am often drawn to filming shadows. I like the way they hint at reality without being the thing itself, as photographs do, or films. I like the way they are made, by light and matter touching. Later my own shadow does that, when it falls across another's eye.

From my filming platform I scan continuously. Looking out. Looking down. The water surface is fascinating. Impressions of the seabed filter up through its restless lens: sand ripples, like fingerprints that compress and stretch, while webs of light dance to the wave-rhythm and from every wavelet and every curve comes the image of the sun, a million, million times. This camera could slow the motion down for me to study it, to probe the optics of the sea, but I don't even try because I don't want to break the spell. Instead I watch and revel in the beauty of this dancing light; but within this enigmatic sea there are other shadows moving: large ones, sometimes larger than me, and that's why I stand here, day after day. I am looking for shadows, but they are shape-shifters: green turtles splinter and re-form,

surface with a monk seal's whiskery face. Others shimmer but stay put and become rocks or coral heads. Some shadows are longer and darker and more sinuous. More dangerous.

Another gust hits the beach and the albatrosses paddle the air with their wingtips. To fly from here where their toes are wetted by the surf, would take them out over the water for the first time. If they knew what was waiting for them I wonder how many would choose to stay and starve upon the beach.

The shadow of my platform leans towards the shore, cast down through the sea and stretched out upon the sand: three boards to stand on, a handrail, the tripod, then me – and into this space, between me and the shore, swims a fragmented shape. It is twice as long as I am tall. Beyond it I can see the albatrosses exercising: naïve, oblivious. The shape swims into my shadow. My shadow-head falls across its eye, across the sharpness of its fin and across its skin: skin striped like sun-dapple and built to hide in shifting light and shade, like its namesake, the tiger – but this tiger is a shark. Beneath my shadow it changes course. The tiger shark has seen me too.

Feeling the breeze and lifting onto tiptoe, the albatrosses are exquisitely aware of the air flowing over their wings: they sense it in their every feather-filled pore. They are almost ready now. I think it is better that they do not know. Suddenly my coming here to film these birds dying seems horrible, but if I do not record what happens I will have failed; and yet these albatrosses are young and beautiful and some are on the brink of meeting killers fit for nightmares. So can I wish that every albatross evades the sharks? I can wish it, I suppose; I know it won't make any difference, and still I must film what happens. Even if I wanted to prevent them dying I could not: sharks have to eat.

We Must not Interfere. It's our mantra, our creed as filmmakers: to document but not to touch, and sometimes that's very hard.

From the beach an albatross lifts clear and cuts its ties with the land. It heads my way and for each of us the test begins. The bird is unsteady in the air. I imagine the effort it is making, trying to stay level, trying to stay dry. It passes me, flying slowly, too slowly, and it settles on the sea. Through my lens I can see it swimming calmly. I start the camera. The bird folds its wings with an efficient, three-way bend and paddles on. I'm completely still, intent on focus, composition and the dozen other things that are my job and which make the camera work, or not. Much of this is second nature and I find I have just enough spare thinking time to be there, on the sea, with the albatross. Again I see its eye but this time the only reflection is the bright point of the sun. This young albatross is entirely alone.

The shark is shocking when it comes.

The sea erupts. A head four times wider than the bird hurls it towards the sky, its wings trailing. In this liquid world the shark is astonishingly solid, the antithesis of water, like a blade. Its eyes are blank white circles, zombie-like membranes, closed for protection as it attacks, but they mean the shark must strike blind and it doesn't see the albatross slide sideways from its enormous head unharmed.

A triangular fin cuts past, inches away and far taller than the bird. The tail thrashes as the shark turns to try again. The camera runs. I haven't breathed. Another lunge and I see the shark's jaw bulging forward through its skin as it prepares to bite, but the bird is deflected sideways by its bow wave and again the shark misses.

The albatross grasps its opportunity and runs. Literally runs, scrabbling for footholds on the water and pumping its wings. It gains the air and heads out to sea, and this time it doesn't stop. The shark makes two more frantic passes and then it's gone. Who knows how much it understands of flight. Perhaps the albatross appeared to it briefly, only to vanish again, leaving its footprints patterning the sky.

There will be others in the coming days. The sharks will wait for them and so will I, but I can be honest with myself now: I am glad at least the first one escaped.

I filmed this drama from the albatrosses' perspective, so perhaps it was inevitable that I would sympathise with the birds, but there were divers on our team as well, filming what happened underwater. They saw things differently and, despite taking much greater risks than I did, they surfaced from every dive full of admiration. They spoke of the sharks' exquisite sense of timing and their extraordinary navigational skills, which bring them every year to that tiny speck of land just as the first birds fly. They pointed out that sharks are vital to the health of the ocean and in hushed voices they described their beauty and their shocking decline, through overfishing.

The way in which a film is shot, edited and narrated affects which animals we sympathise with and there is no doubt that many of the programme's viewers will have taken sides, as we did – but do we really have to choose between sharks and albatrosses?

Each chapter in this book is about one of the journeys I have been privileged to make in the two decades since I started filming for broadcasters such as the BBC. In these pages you will find some of the world's great wildlife spectacles and you'll meet some of the people who are usually hidden behind the scenes: people as varied and interesting as the animals themselves, and who are just as important to the filming. I have chosen these stories because each one says something about wild nature matters. I hope they also show that learning about wild animals through films can make a difference to our lives, and sometimes to theirs.

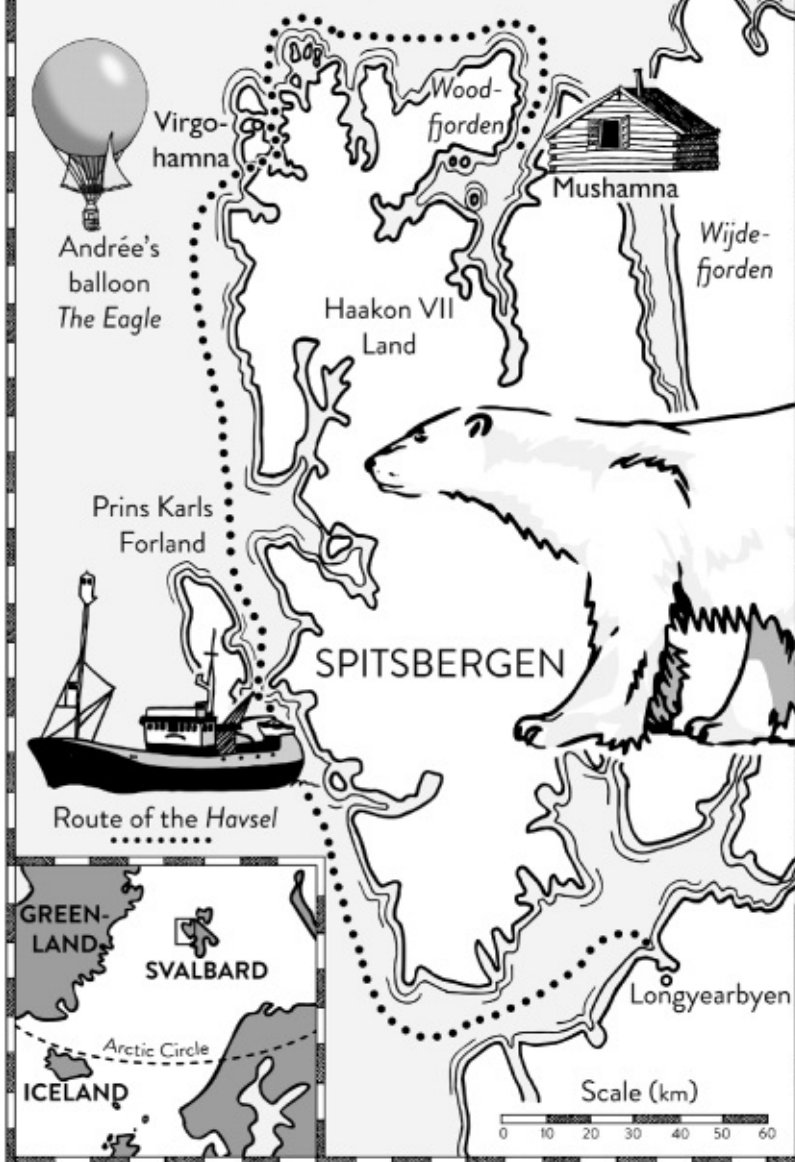
It is impossible to travel widely without seeing that many wild animals are struggling. On French Frigate Shoals, for example, we came across dead albatross chicks, choked by plastic brought to them by their parents, who had mistaken it for food. Having spent time with those albatrosses, the tiger sharks and many other animals, it is clear to me that we all face choices about how much we care, just as I did on that filming platform. These are vital choices. Ultimately, they are about how to share the planet's resources. We can make them consciously or we can drift along half asleep, but either way we are choosing now.

The most important choice is not whether we prefer predators or prey, it's whether we are on nature's side or against it: whether we want the shark *and* the albatross, or neither. This book is about that too.

Wildlife filmmaking does not always take place in tropical paradises. Most of the journeys in this book have been to the colder reaches of the planet – the Arctic and Antarctic, the Falklands and the Aleutian Islands (all for the BBC series *Frozen Planet*), as well as to China and Yellowstone National Park in the winter. I am occasionally sent to warmer parts as well: to India and even to New York City in the spring.

Two of the world's most exciting animals are the emperor penguin and the polar bear. Both live close to the poles but at opposite ends of the world and for years I had dreamed of filming them. Working on *Frozen Planet* gave me a chance to go to Svalbard, in the far north of Norway, where I joined a team trying to film polar bears hunting. I knew that living and working in the high Arctic would be very different from filming sharks and albatrosses in the tropics, but none of us had guessed how much we would struggle even to find hunting bears, let alone to film them.

North-West Svalbard



– ONE –

HUNGRY POLAR BEARS

A small ice floe drifts by, carrying eight footprints. Each one is larger than both my feet put together. The bear's back paws have left marks shaped like shoeboxes, while the front ones are rounded and pigeon-toed. Every pad shows that it walked purposefully across the ice but the last print ends in dark water. The bear was here: the bear has gone. The floe grinds along the ship's hull and spins away, the tracks pointing everywhere and nowhere, which seems to sum up perfectly our failure so far. We don't know where this bear came from or where it went, but if filming polar bears is hard it is nothing compared to being one.

The producer in charge of the shoot, Miles, is hoping to film the bears at their most difficult time of year. Surprisingly this is not during the dark days of winter, when the Arctic Ocean freezes over. Polar bears are well insulated against the cold and they roam freely across the frozen sea, hunting seals where they haul out onto the ice to rest or give birth. For them the winter is a time of opportunity. Their hardest time is now, in the summer, when the bears can either carry on looking for seals on the dwindling ice, or come ashore in places like Svalbard, to search for other food.

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The islands of Svalbard belong to Norway and they are surprisingly busy, despite being more than 700km (about 460 miles) north of the mainland and twice that far above the Arctic Circle. The only town, Longyearbyen, has housing for more than 2,000 people, a supermarket and even a university where, during their first week, all the students are taught to shoot. It is against the law for anyone to leave town without a gun and at the camping store you can rent rifles by the day. Longyearbyen's road signs make no bones about the reason: they are standard red and white warning triangles, but with bears in the middle. In Svalbard polar bears outnumber people.

Our ship is called the *Havsel* and we know little about her except that her name means 'ocean sea' and that on the way north from Tromsø, her crew stopped to fish for cod – they are Norwegians, after all. Miles chose her, not just because the other ship he was offered had a harpoon gun mounted on the bow, but also because the *Havsel's* lower deck is large enough for the extraordinary amount of equipment we have brought. It is evening when we start to load the ship, passing boxes from hand to hand across the deck and down the hatch. The ship's engineer lifts the lid of one case labelled *Guns and Ammo*. It is filled with weapons and cans of 'bear spray' made from chilli peppers. He pulls out one of the cans: 'For a polar bear this would be sauce!'

As we work through the night the sun never sets, which is quite a contrast to the team's first visit to Svalbard, back in the winter. Then, even at noon, the sky was as dark as night and the temperature hovered around -20°C (-4°F), but for us that was ideal because we had come here to be taught about filming in extreme conditions. A large part of the course covered how to deal with polar bears. We were told that, almost uniquely among animals, some of them choose to hunt people. One photograph from the course has stuck in my mind. It showed the foot of a man who had been dragged from his tent

by a bear. His heel had been bitten away, the gap extending more than halfway through his leg. He had saved himself only because he slept with a loaded rifle. Using the *Havsel* as a base, rather than camping, makes sense for this reason too.

We had spent that day at a firing range with an instructor from Svalbard University who, in a country where it is normal to be called Odd, had the quite un-Norwegian-sounding name of Fred. He didn't seem fazed to be teaching a group of British naturalists how to kill bears and began by explaining why it might be necessary: two teenage girls, he said, had been walking close to this range when a bear surprised them. Neither of them was armed. One ran and the bear killed her.

'If she had thrown down her mittens the bear might have stopped to sniff them. She could perhaps have bought herself a little time, but if the same thing happens to you *this* will be your first line of defence.' He showed us a wide-mouthed flare pistol. 'The sea ice often cracks and bears hear many loud noises, so flares are a better deterrent than the sound of a gun.'

To show us what he meant he fired a brilliant red firework into the sky. The flare was impressive, bright against the darkness but individual bears have different characters and it seems that some are not frightened by flares. Fred described what happened when one such bear tried to break into a cabin. Someone inside opened a window and fired a flare. The ball of blazing magnesium flew past the bear's nose and bounced away along the ground. The bear chased and swallowed it, then returned to the hut as if nothing had happened.

'So we will also practise with rifles,' he said.

The targets were all photographs of bears.

'Four rounds, commence firing!'

I lined up the sights and squeezed the trigger. Bang! Pull the bolt to eject the cartridge and push forward hard to load the next round, aim and squeeze, trying not to shut my eyes. Bang! Bolt in and out, aim, squeeze. Bang! Again. Bang! The shots echoed off unseen mountains as snowflakes settle bright in the floodlights of the range.

The bears in the photographs stared at us as we walked towards them to inspect the bullet holes. The cameramen had all done well, perhaps because we spend so much of our time aiming long lenses, but I said I would much rather use the chilli spray if we were to meet an aggressive bear, instead of shooting it. Fred agreed that we should always try to scare bears away first, but added that with some there may not be time to choose.

'This bear was shot soon after the photograph was taken. It was just over a metre away. Your targets were set at thirty metres. How long do you think it would take a running bear to cover that distance?'

The answer was four seconds, just enough time to aim and fire four times.

'Don't wait too long to decide.' He paused by my bear, looked at the cluster of holes over its chest and said, 'Well done, dead bear.'

It was the least welcome praise I have ever received.

f

Siberian hunters may have been the first people to visit Svalbard. The first Europeans were probably Dutch explorers, led by Willem Barentsz, who came here in 1596 while searching for a North-East Passage to Asia. Barentsz reported that the fjords were packed with whales. Dutch and British ships soon came to hunt them. In time the whales were wiped out and geologists prospecting for minerals replaced the whalers. They noticed that the islands' cold rocks contained fossilised plants from much warmer climates, which even included the remains of ancient rainforests in the form of coal. They solved this puzzle later, by determining that Svalbard had moved north, carrying its fossils with it.

1906 an American called John Munro Longyear opened the first coal mine in the town, which still bears his name. It was an uncomfortable place to work: after dodging polar bears the miners had to crawl through ice as well as rock to reach the coal.

During the Second World War Longyearbyen gained the dubious distinction of being the only town to be shelled by the German battleships *Tirpitz* and *Scharnhorst*. They scattered the small Norwegian garrison and set fire to a mine. It was quite a sledgehammer to crack a nut but the attack had more to do with weather forecasting than with coal. Cold Arctic air affects the weather over much of Europe and accurate forecasts, incorporating the latest information from Svalbard, were vital to both sides for planning bombing raids, aerial landings and attacks on convoys. Under cover of the shelling the German Luftwaffe landed a team of meteorologists on an out-of-the-way island, where for some time they remained unnoticed by the returning Allies, who hurriedly rebuilt their own critically important weather station. Later there were occasional skirmishes and one unlucky weatherman was shot as he returned to his hut after photographing birds – a salutary tale for any wildlife filmmaker. By 1944 four separate groups were sending encoded weather data from Svalbard to Germany. When the war ended some of them were stranded and became the very last German troops to surrender, four months after everyone else.

Svalbard is still an important base for science, with an observatory for studying the Northern Lights and a seed bank housed in vaults dug deep into the permafrost, where plant seeds from all over the world are stored and will remain frozen even if civilisation collapses. Of the many expeditions to have used Svalbard as a base, the most fascinating set their sights on the North Pole, starting here because in most years, these islands are the easiest place in the high Arctic to reach and travel around by ship. When we arrived in Longyearbyen to start our search for polar bears, we found that this summer was proving rather different.

f

Our skipper, Bjørne, is a smiling man wearing a cardigan and an Errol Flynn moustache. He says that our plans may be affected by the unusual amount of ice around the north of Svalbard, then takes me to the bow to point out fifteen codfish dangling from the rail: ‘They are drying,’ he explains. ‘It will take weeks.’ He thumps his chest. ‘This is grown-up food, not for children!’

He supervises the last piece of equipment coming aboard. It’s a large aluminium boat. The *Havsel*’s winch tightens and the steel cable jumps, smoking around its drum. We all grab lines to guide the boat gently onto its wooden cradle, with an inch of deck space to spare on either side. This belongs to Jason, the ebullient Australian who is in charge of our logistics. He calls his boat the *Bustard* and it has been set up to try something new. A crane mounted in the middle carries a sophisticated stabilised camera of the kind more usually found on helicopters. It has a very long lens and will be operated by a cameraman called Ted, sitting in the boat and watching a monitor screen. A third cameraman, Mateo, and I will be sharing a cabin in the *Havsel*’s stern. It’s below the waterline but at least it seems nice and quiet. The last member of the team is Steinar, our Norwegian field assistant. He and I will spend most of our time together, filming with a simpler camera in the old-fashioned way, with a long lens and a tripod.

We finish loading our gear in the early hours of the morning. The only cargo left on the dock is a basin for a new kitchen, brought on the ship from Tromsø for a friend of Jason’s. It seems we really are taking everything but the kitchen sink.

‘So – we go!’ Bjørne shouts. The mooring lines are cast off and a gap appears between the *Havsel* and the pier. It’s the first small step with which all journeys begin. As we leave, Steinar points out four other ships at anchor in the fjord. Within the last week each one has tried to sail north around the

islands but they all became stuck in the pack ice and had to be rescued by an icebreaker. We are going that way too, in our search for bears.

f

Bjørne steers from a corner of the wheelhouse. From the bow I can see his face hemmed in by the radar, the echo-sounder and his radio equipment. A fulmar passes on stiff wings, like a miniature albatross, as much at home riding a wave or surfing the air displaced by the ship. As it goes by its eye meets mine.

The coast is lined with saw-toothed mountains, interspersed with glaciers. The landscape is unremittingly black and white and from time to time I glance at the *Havsel's* painted deck, to be reminded of green. Barentsz saw these mountains when he made his first landfall. He called the largest island in Svalbard's archipelago Spitsbergen, which means 'jagged peaks' in Dutch. Jason joins me at the rail and asks how far away I think the mountains are. They seem startlingly close but double my guess to twenty kilometres. He tells me it's more like forty: there is so little moisture in the cold air that it's gin clear. Aside from the Norse in Iceland, Barentsz was one of the first Europeans to meet a polar bear. His men shot at it, then, finding their muskets made little impression they used a lasso to hoist it aboard their ship and when the bear became truculent they killed it with an axe. Encounters like that set the tone for human-bear relations until the 1970s.

I can think of little worse than coming here to film bears and having to shoot one instead, but it is a possibility we have to face because they are formidable animals. In Longyearbyen I studied a male bear, stuffed and standing upright in a hotel lobby. His eyes were considerably higher than my head and he had weighed five times as much as me. Dropping mittens in his path would probably not have delayed him very long. I have filmed large predators before but always with somewhere to retreat close at hand, most often a car. Now we have left Longyearbyen there are no cars and scarcely any roads. When we meet bears we will be either in boats or on foot.

f

Bjørne beckons me inside to look at the charts. 'There are so many glaciers in these valleys that most of them don't have names,' he says. 'They are numbered alternately, like houses on a street. Even you can understand it.'

On the chart table there are some photographs showing him standing on a riverbank, surrounded by birch trees and holding an immense salmon: 'At home in Alta,' he says proudly. He lays a chart on top of them. It shows the whole Arctic Ocean with the coasts of Russia, Alaska and Canada enclosing it almost completely. There are only two places where water can enter and leave: the Bering Strait above the Pacific Ocean, and where we are now, at the top of the Atlantic. There is only one deep water channel, a trough in the seabed just west of Svalbard. Above it runs a current flowing all the way from the Caribbean. It brings enough warmth to fill the sea with life and it helps melt the ice, making the west side of these Arctic islands usually accessible by ship. The north coast is a different matter.

Today's sea-ice map has just arrived by email. At its heart is Svalbard, coloured grey. There is a precious little open water and most of the sea is covered by blue cross-hatching, showing the varying ice density. It is an incredible jumble, reflecting how the currents swirl around the islands. Here on the west side the water flows north, but on the other coast, where the ice is thickest, it flows south and it is on this conveyor belt from the high Arctic that we are most likely to find polar bears hunting seals. To reach them we must first pass along the north coast of the main island, Spitsbergen, and that's where

Bjørne says we will meet a wall of ice. He compares today's map with the one from two days ago. The north coast then was a mess of blue checks, like a ragged tablecloth, with ice pressed hard against the shore. In the same place today there are mostly blue circles indicating 'very open drift ice', according to the key. These maps are drawn from satellite pictures, so no one has been able to check how accurate they are. Bjørne peers like a schoolmaster over his half-glasses.

'It seems to be opening a little but who knows?'

On either side of us the map shows ice extending hundreds of kilometres further south. To reach most of the bears we have no choice but to go on.

f

In a whole day travelling, the only flat area we have passed is at a place called Virgohamna. In 1897 it became the base for an expedition to the North Pole that was extraordinary, even by Svalbard standards. From here, on a globe, the pole seems within easy reach but, by the late nineteenth century several expeditions had slogged north across the frozen sea, only to find they were further south at the end of the day than when they had started. The conveyor belt of ice was moving in the opposite direction faster than they could walk. It must have been soul-destroying. To a Swedish engineer called Salomon August Andrée the answer seemed obvious: he would fly there, and in style.

Andrée came to Virgohamna with a balloon which he called the *Eagle*. It had been stitched together by seamstresses in Paris from panels of varnished silk. He mixed acid with an iron compound to release hydrogen gas, which filled the balloon. Fully inflated, the *Eagle* was 20 metres (67ft) across and it made an impressive sight while Andrée's team made their final preparations. In a posed photograph, Andrée is working on a paper plan with three companions, including Knut Frænkel and Nils Strindberg, who were to fly with him. His face is impassive but one of the other men stands with his hand to his head, as if he is dismayed at the prospect of the journey. He had every right to be because to pass over the pole, and then reach the safety of Alaska or Siberia, the *Eagle* would need to fly at least 2,000km (1,250 miles). Andrée had placed a great deal of faith in technology. He planned to hang ropes from the basket, to drag across the ice and help him steer, and he even took a remote-controlled cooking stove, which could be lowered and lit out of range of the flammable hydrogen. When the meal was ready it would be hauled up and eaten from specially made plates, bearing the expedition's initials. He seemed to have thought of everything.

The *Eagle* was photographed just after it took off, on 11 July 1897. A few figures stand silhouetted in the foreground, frozen in that moment of hope and excitement. They had no idea that for the next thirty-three years they would hear nothing more of their friends in the balloon. In the Arctic such stories of failure are alarmingly common.

f

The ship's propeller shaft passes under the floor between Mateo's bunk and mine, so our cabin sounds like the inside of a cement mixer. Earplugs help until I lay my head on the pillow, when my teeth start to vibrate. Then we hit the ice. The *Havsel* rings like a dull bell and the floes growl along her side, less than an inch away through the hull. It is less noisy and more interesting in the wheelhouse, because we are rounding the tip of Spitsbergen and for the first time we can see the north coast ahead. The pack ice is a few kilometres away, a bright line like a frozen wave, but in front of us the water is open where, just two days ago, ice would have blocked our way.

Bjørne points out that when the ship hits a large floe the mast vibrates like a ruler twanged on

desk. He seems unconcerned and explains that his ship's hull has been strengthened and her rudd and propeller are safely enclosed in steel housings. Below the waterline the *Havsel* is shaped like an egg, so she should pop up if she is trapped between floes. He is more worried that the ice might be blown towards us, trapping us against the rocks. He climbs to the crow's nest and steers from there, squeezing his ship between the ice edge and the shore.

f

In the golden light of late evening flocks of little auks skim the water, black and white like the dappled mountains. Every small iceberg is fringed with them, standing upright and evenly spaced, and preening their feathers. We enter a wide fjord and the *Havsel* cleaves a mirrorcalm sea as we pass our first bearded seal, hauled out on the ice. Its body is long, with a small head and a snub-nose like an otter. Its eyes are rheumy in the cold and its cheeks are pale and round, like apples, dotted with regular spots where its whiskers sprout. They are more of a moustache than a beard, but splendidly long and curled none the less. Others roll in the water, showing just their glossy backs and dark crowns. This is encouraging: if there are seals here there might also be bears.

The water is choked with icebergs but this is not low-density sea ice, one or two years old: the pieces have fallen from a glacier and Bjørne is less sanguine about hitting them. Ice becomes as hard as concrete after thousands of years of being compressed by the weight of more ice accumulating above, and it floats low in the water where it is difficult to see.

‘What would happen if we ran into that piece, Steinar?’ Miles asks.

‘It would make a big hole in the ship.’

Bjørne brings the *Havsel* to a stop, 100 metres from the glacier. It's almost eleven at night and the fjord is perfectly quiet. A long blue-white wall drops sheer into the sea, except in one place where it rests on a rock. Jason says this island was barely visible three years ago: the glacier is retreating.

‘Bear!’ I follow Bjørne's pointing arm and see it striding along in a beautiful setting below the glacier front, where the ice is bluest and most crevassed. Against the cold tones the bear's fur is the colour of rich cream.

‘It's a male,’ says Steinar, at my shoulder. ‘His neck is much thicker than a female's, shaped like a cone. It's impossible to fit radio collars to male bears, they just slide off.’

The bear eases himself into the sea, as though his bulk might crack the fragile margin. He swims without a ripple and pulls himself out onto a small iceberg, raising and lowering his muzzle to test the air. He is hunting. The others rush to launch the *Buster* while I keep track of the bear. Jason has filmed bears from a small boat before and he says the trick is to choose carefully: small bears are likely to be wary and they will swim away, while larger ones are often too curious or aggressive. This one is ideal, a medium-sized bear but he's already swimming quickly through a maze of icebergs and we will soon lose sight of him from the deck. The boat crew must put on immersion suits in case they fall in, but they are struggling with the unfamiliar zips and Velcro. Eventually they scramble down the rope ladder, Jason starts the outboard and they're off. By now the bear is just a distant head. Steinar and I guide the boat towards him by radio.

On the distant ice we can see two dark shapes. At this range it is hard to tell whether they are seals until the bear surges from the water onto the same floe. The shapes do not move: they must just be blemishes on the ice. Perhaps he also mistook them for seals.

‘When bears are hunting they can swim a long way underwater and change course if they think you are following,’ Steinar says. ‘They'll surface behind some ice to check where you are, just by smell. It's easy for them to lose you.’

He says that ‘fjord bears’, like this one, behave differently from the bears on the pack ice because

their hunting grounds do not melt in the summer. Some use the same fjords for many years and they will also take nesting birds. Steinar and I are hoping to film a bear searching for eggs or chicks, when the *Havsel* drops us on the other side of the fjord tomorrow – today actually; it is already after midnight.

The boat is returning and, although the bear did not find any seals, everyone comes aboard smiling. Ted plays back his rushes and it is clear from the first shot that this is something special. The camera tracks smoothly alongside the bear as he swims. We are at his eye-level, almost in the water with him. Ice drifts through the frame, sometimes blocking him from view then sliding aside. He feels close enough to touch but the lens is so powerful and the boat so far away, that without his monitor Ted could not see the bear at all. When he climbs onto a floe, rings of light, reflected by the ripples of his swim, travel his full length, defining every curve as if the sun is scanning him. It's a promising beginning: if he had found a seal to hunt, the pictures would have been extraordinary. In the final image Ted has framed the bear with the light directly behind him, so his warm breath condenses into a golden cloud.

It is three o'clock in the morning. To celebrate filming our first polar bear we eat some of the world's most northerly bananas, then, in the silence of the fjord, we fall asleep.

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One of the many explosive devices in the *Guns and Ammo* box is a tripwire with four spring-loaded launchers, which can be placed around a tent, allowing campers to sleep without nasty surprises. A visiting bear is supposed to displace the wire and trigger the flares but sometimes this goes wrong. On one occasion Svalbard University sent out a group of scientists, one of whom was a professor called Bjørn. It's a common name in Norway but 'bjørn' also means 'bear'. The group camped for the night and carefully set up the tripwires and flares around their tent. In the small hours Bjørn woke up needing a pee and left the tent quietly, remembering to step over the wire. On the way back he forgot and the exploding flares woke his friends, who grabbed their guns in a panic, expecting the thin walls of their tent to be shredded at any moment. All they could hear outside was the professor shouting in Norwegian: 'It's bear! It's bear!'

Steinar and I are also expecting to camp, so he takes me through the guns and ammo in order to avoid any similar mishaps. There are four signal pistols, which can fire flares, two handguns in holsters and two cans of pepper spray. We will also take a rifle.

'Take care with the spray,' he says. 'If it goes in your face you'll be really sick, in bed for two days.'

He tells me that the guns will always be loaded because it will be too late to start fumbling for ammunition if a bear appears nearby: 'In Longyearbyen there's a polar bear incident about once every ten years, but five times a year people fire bullets by mistake. Film crews worry me the most because I think one day someone will pick up a gun to pose for a photo and shoot the photographer. Guns are more dangerous than bears.'

We are going to a place called Mushamna, where there are two cabins close to a huge colony of Arctic terns. A few weeks ago a woman called Linda arrived to spend a year in one of these cabins. After talking to her on the radio Steinar has changed his mind about camping. Linda says that a large number of bears have been visiting her cabin – there were three yesterday – so Steinar is hoping we might be allowed to stay in the second cabin instead.

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A pan of noodles is bubbling on the gas stove. It is ten at night and we have just finished making the cabin habitable. It is almost filled by the single bed we've built from wooden slats, bales of straw (intended as bedding for Linda's dogs) and our equipment cases. The tiny window is too narrow to admit more than a bear's head but the walls are flimsy and so is the door. When it's closed, bent nails stick through the wood like claws. For perhaps seventy years, summer and winter, this hut was home to a succession of fur trappers. They must have been hardy people and very familiar with bears. A hundred metres away is Linda's sturdier cabin, built more recently using driftwood logs from Russia which wash up on the beach. Beside it there are two kennels, an outhouse and a tall A-frame.

Steinar has kindly chosen the first night-watch and once the noodles are done I'm going to turn in. He says he is happy, with a beer cooling in the stream, his cigarettes and coffee, a book and a view of the sun turning the northern sky to gold. He will wake me if a bear comes or when he can't stay away any longer. We are doing this, not just because the hut is too small for us both to fit inside, but because Linda was right about the bears: their tracks are everywhere. Earlier we followed footprints through the snow to where one of them had slid down a slope on its belly, giving a leisurely push on one side then the other, each time leaving the marks of five claws. Through the binoculars we followed the prints around the bay until they climbed an apparently sheer cliff and meandered to a halt, where the bear himself lay curled up. Young males like this one are particularly untrustworthy. Steinar says they have recently left their mothers and he describes them as spoiled, still expecting every meal to be provided: 'They are insecure and they'll have a go at anything.'

It is obvious why so many bears are coming to the cabin. Linda feeds her dogs with seal meat which she stores high on the A-frame. Its smell must carry for miles and the bears find it irresistible. Even though it is out of reach, they watch the meat store closely and they are clever enough to exploit any lapse. Jason told us earlier about a bear that had watched him all morning as he carried seal carcasses up a ladder to a similar store. When he stopped for a rest, the bear noticed that the ladder was still there and climbed it without hesitation. It knocked some meat down, then tried several times to descend the ladder head first, before realising it would be easier backwards. It's this flexibility that makes bears successful as well as dangerous.

As I fall asleep in the hut I'm aware that something is missing. We have not yet searched for the Arctic terns but their colonies are always noisy places and I cannot hear the cacophony of their voices. We will have to look into it in the morning.

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Steinar wakes me at six. It is cold and the sky is veiled. He points out that the bear in the distance has not moved. It is lying flat on its chest, watching us. He says they sometimes make the child's mistake of hiding their heads but leaving their backsides showing. This one blends in so well with the snow and the stony ground that it would be easy to walk almost on top of it.

'Remember – the bear that gets you is not the one you've seen,' he tells me, and goes inside to 'start the machinery'. Within minutes the wall at my back is vibrating in time with his snores. The hut blocks the view inland, so I walk round it, checking that there are no bears in that direction. Linda's dogs are asleep outside their kennels. They should bark if a bear approaches, so I can safely look the other way.

A single Arctic tern flies over. *Sterna paradisea* is his formal name, the paradise tern, and with good reason. He flies with slow wingbeats, exaggerating his shape and showing off his tail's gorgeous streamers, which seem as long as knitting needles. He points his blood-red bill at the ground and his black cap glistens. A female takes off and flies close behind until he lands and droops his wings crooked at the wrist. He points his tail skyward and struts on legs that are barely more than landing

gear. I've probably just watched him walk as far as he will ever need to. He weighs about as much as a hamster, but he's flown from the Antarctic to be here and three months from now he will make the same journey in reverse. The latest research shows that, in their lifetimes, some Arctic terns will fly the equivalent of three times to the moon and back. The pair take off and cross a snow patch where their shadows are banished by the rebounding light: ice-birds gleaming against the sky. But where are the rest of them? When Steinar was here at this time last year he could not leave the shore without being hit by terns defending their nests. This year there is still snow on the beach and the late spring seems to have forced most of the terns to move elsewhere.

In the Arctic, conditions change so much from one year to the next that the risk of failure is very high, for birds and for people too. Arctic terns live a long time, so they can offset occasional bumper years against several bad breeding seasons, but it is much more of a gamble if you have to stake everything on one attempt, like the balloonist Andrée, or us.

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To keep myself awake I walk along the beach, holstered like a gunslinger and feeling ridiculous. Steinar has left the rifle propped against the wall. I have not dared to ask him whether he has ever had to shoot a bear, in case the answer is yes.

On the sea, two red-throated divers yowl like cats and, where a ridge cuts off my view inland, a little face pops up as if it's spring-loaded. It is the colour of coffee and cream, heart-shaped with copper eyes and a black button nose. It's an Arctic fox: all nerves and curiosity. It ducks behind the ridge and reappears closer. The American writer Barry Lopez described one, 'tapping the air all over with its nose', and this fox does that now, scenting me and deciding whether to approach or flee. A pair of terns dive to peck its ears. It ignores them, searches left and right, then crouches to paddle something with its paws, and quickly eats one of this year's few eggs. The terns are in a frenzy, but there is little they can do on their own. A busy colony in full cry would be a different matter. The fox finishes its meal and bounds away like a hare.

It's a long time before I notice the bear and then the surprise is like a jolt. Shimmering air blends her shape into the stones, but she is definitely coming this way. Steinar leaves the hut before I can call and I am grateful to have him standing by me as I film. The bear leaves the water's edge and turns towards us. There is something fascinating about the way she lifts and places her paws, folding each one below her belly while it travels, then flicking it at the last moment to place it deftly on the ground. Around each one there's a fringe of fur, muffling the sound of her feet on the pebbles. She sticks out a dark tongue, as if she's tasting the air, coming closer all the time. Through the camera I can now fill the frame with her head. She is not looking directly at us, but I can see her eyes turning. They are small and brown. She is fifteen metres away, crossing the stream where Steinar cooled his beer, the same stream I am standing in, filming her feet scattering spray: a polar bear splashing through water, an image of the Arctic summer.

She is so close that I can see her whiskers catching the light, as the fur does on her long throat when she sniffs the air. From the corner of my eye I see Steinar braced like a policeman in the movies. He is cocking a gun. She is far inside the safe distance we were shown on the rifle range, the distance which we were supposed to open fire to guarantee a kill, but the training course was about aggressive bears: bears that have not responded to flares, bears that are charging at us. Steinar has read her body language and he is aiming a flare pistol, not his revolver. He knows that she wants to reach the A-frame with its delicious smell of seal. She passes without a backward glance.

The dogs bark. The door of the larger cabin opens and Linda hurries out with her rifle on her back. She too is holding a flare launcher. She aims it above the A-frame and fires. There is a loud explosion.

and a puff of smoke against the sky. The bear scrambles wildly for a grip on the stones, sprints to the shore and swims away. It is the sixteenth time Linda has had to scare a bear away from her cabin, and now she has to coax her dogs from their kennels. They hate the bangs too.

When the bear has gone, Linda asks us to help her fish. Laying her rifle on the beach, she wades into the water and I can see why she has been reluctant to do this on her own. It would be a compromising position to be found in by a bear. She pays out a net and fixes it to a buoy offshore. An hour later she pulls the net in and untangles a beautiful Arctic charr, a fish like a salmon but with a red belly and fins edged in white. Linda invites us to dinner.

We find her standing by the window of the kitchen-cum-living room, making fish cakes and watching three Arctic foxes chasing each other across the beach. On the snow bank in the distance is the pale smudge of the sleeping bear. This is one of several cabins owned by Svalbard's governor and loaned to people on the condition that they live as traditional a life as possible, which includes hunting for food and trapping foxes for their fur. Norway's claim to these islands is contested by Russia, and in future it may be necessary to prove that Svalbard has long been occupied by Norwegians who have lived off the land. The benefit is that a few lucky, self-reliant people like Linda can borrow a cabin in the high Arctic for a year. In the summer at least, life here is not as tough as I was expecting: she offers us wine and apologises that she has no dill, although the fish cakes are delicious without it. The winter will be a different matter.

Linda tells us that last year a man was living here with his teenage sons when they had an accident. The boys set out on a three-day trip by dog sled, to visit a trapper in a cabin in the neighbouring fjord. Their dogs chased a bear onto thin ice and both sledges broke through: the boys found themselves swimming. They managed to climb out and searched for their emergency beacon to call for help, only to realise that they had packed it on one of the sledges. One of them had to dive back in to retrieve the beacon and by now both were in desperate need of shelter and warmth. By luck the accident had happened close to an unoccupied cabin where they had spent the previous night. They made it back inside and barely managed to start a fire with their frozen fingers. The rescue helicopter picked them up an hour or two later.

'The last thing everyone does before they leave a cabin is to lay logs in the stove and put matches beside them,' says Steinar. 'It's such a simple thing but it has saved many lives.'

To survive here for a year, Linda will need to know all these tricks and more. Her bookshelf occupies the length of one wall: medicine sits alongside polar history, dog diseases beside cookery books. She talks about the year ahead: how the social life will soon fade and that from September until Christmas she expects no visitors. She worries that some of the bears are becoming used to her flare while her dogs are doing the opposite, bolting inside when they see a bear, in case Linda makes more frightening bangs. She and Steinar discuss the case of a man who shot a bear to protect his dog. Svalbard has clear rules about this: it is only legal to kill a bear if it is threatening a person's life, but the man argued that, by killing his sled dogs in winter, that's exactly what the bear was doing. With her own dogs outside the cabin and the winter approaching, these are vital concerns. As we leave to go back to our vigil, Linda says she doesn't expect to be lonely through the dark months to come. Most of all, she says, she is looking forward to having time.

It is my turn to be on watch through the night and I sit outside the hut, realising that I am beginning to grasp what it means to be a polar bear: it is normal for them to walk 100km (60 miles) between meals, or to swim twice as far in water that, even in the summer, might never reach 6°C (43°F). It is normal too for the females to fast for six months, while they give birth and suckle their cubs in dens under the snow. They can dive ten metres to the seabed, run as fast as a horse and crush a seal's skull with a single blow, then climb to the top of Svalbard's highest mountain, just to see what's there. Afterwards they might sleep for a week. No other animal on Earth can do all these things and few a

so resourceful. It's clear, though, that with hardly any terns nesting, we will have to look elsewhere
we are going to film hungry polar bears hunting birds.

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The night passes quietly, no bears visit and in the morning we pile our equipment cases on the shore and wait for the *Havsel* to pick us up. The sound of her engine throbs through the fog. There's the usual flurry of loading, of hurried goodbyes, and we climb into the inflatable boat. When I look back Linda is halfway to her cabin: a small upright figure with her dogs at her side. I wonder at her resilience and that of the trappers before her, who spent their winters in the little hut with bears at the door and only their dogs to help them. I admire the quiet confidence that comes with solving your own problems, using skills acquired through decades of experience rather than on training courses: lessons learned as much from failure as success. Most of us who have specialised as cameramen, accountants or whatever else, have lost the chance to be as self-reliant as Linda or Steinar. Our ancestors had the kinds of skills and it's our loss that most of us do not.

As the *Havsel* leaves the fjord I wonder what it will be like here in a few months' time, when the terns have flown south and it is pitch dark at noon. Then Linda's only link to the outside world will be the satellite phone she uses to collect emails. To avoid spam messages she has asked her friends to include a password in the subject line, so each email she receives will be titled 'sol': the sun.

Meanwhile, we have bears and nesting birds to find. Steinar says we are going to one of the most impressive bird colonies in the Arctic.

AN UPDATE ON SVALBARD'S BEARS

Svalbard's polar bears come ashore from a large area of the Barents Sea, which surrounds the islands. For a century, hunters killed 300 bears here every year. Their numbers have been recovering since the hunting stopped forty years ago and there are now about 3,000 bears in the Barents Sea population, but their boom times may be coming to an end: some are noticeably thin, perhaps because they are competing with each other for food, and in the south of Svalbard, female bears have fewer surviving cubs in years with less ice. The same effect has been seen in the Beaufort Sea in Alaska. There, in 2005 (a year when the sea ice reached a record low) a fifth of the female bears could find no food and polar bears were seen hunting and eating each other for the first time. In another low-ice year, one collared bear in Alaska swam almost 700km (435 miles) in nine days searching for ice and seals to hunt. Doing so cost her a quarter of her weight and her cub's life. As climate change melts the ice more polar bears will face these risks. Being forced to spend more time ashore is also likely to bring them into closer contact with people.

For now, many of Svalbard's bears opt to live on the sea ice all year, while fewer 'fjord bears', like the first one we filmed, stay close to the islands. Linda became very familiar with some of these during her year in the cabin at Mushamna, especially the ones attracted to her store of seal meat. It was catch 22: she needed her dogs to protect her but their food was irresistibly attractive to bears.

Her blog contains a fascinating account of her year. Early on she wrote, 'I enjoy the beauty of the changing light. I know why I am here when I see white mountains and clear sky, with stars and a glimpse of the aurora. It is nothing but beautiful,' but by mid October the sun had set for the last time and it would not rise again until the following March. Then the first determined bears came calling in the dark. She recounts that at times there were too many for her to leave the cabin unattended.

'I made good use of the little window in the door. I got a glimpse of the back of the bear standing in the stair and was happy for a solid door! I chased him but did not dare to follow him further away. She found relief in the full moon, which seemed incredibly bright in that snowy place.

'I keep wondering who turned the light on. The mountains are shining. It's like a fairytale landscape when the soft light gives shadows to sea cliffs covered by ice and snow.'

Just before Christmas the governor of Svalbard sent a helicopter to deliver presents: fresh fruit, mail (including a small Christmas tree) and a companion who would stay for the next month or so. There were still bears to chase away (on around 300 occasions in total) but there was also time to decorate the tree and do country dances. On Christmas Day, looking forward to the light returning she wrote, 'For now the star on top of the tree is our sun.'

Her dogs slept outside, even at minus forty degrees, but her skidoo and everything else mechanised stopped working in the cold, so she skied to check the fox traps, towed by her ever-enthusiastic dog. By late January the frozen landscape was incredibly quiet: even the bears had mostly gone elsewhere as the dogs' food had dwindled. At noon there was a glow in the southern sky but Linda could still see the stars overhead; then came a storm bringing more than a metre of fresh snow in an hour and almost burying her dogs in their kennels. While she was working hard to collect and melt almost a ton of snow for drinking water, the side of the store collapsed and dumped burning wood on the cabin floor. In a wooden building with such deadly cold outside, fire is a greater threat than any number of bears. Luckily she heard the stove break and was able to put out the flames.

One morning she woke to find two polar bears mating outside her window and soon afterwards the

eider ducks returned: 'The fjord is completely calm ... it is like time is standing still. It might be lonely up here, but at least we have the most beautiful choir.'

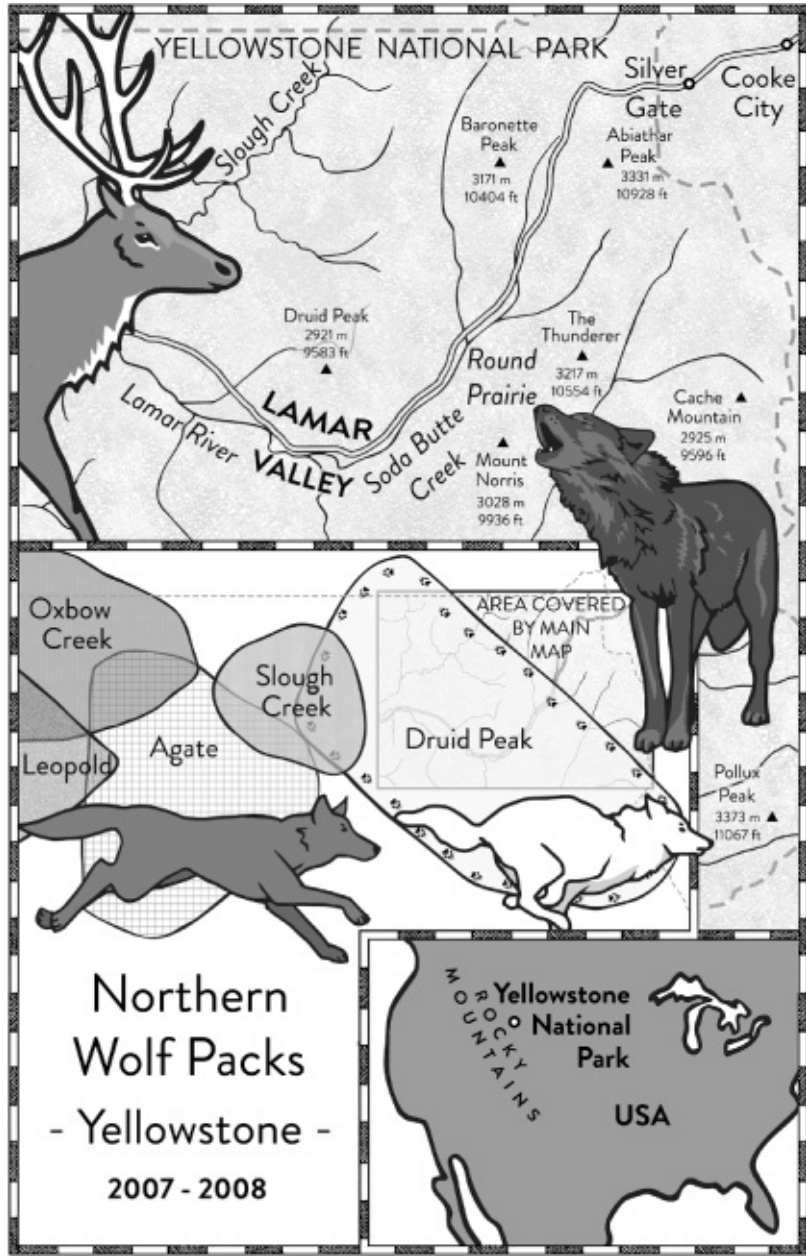
She had been on her own for a month and was craving company more than she had expected. 'Sometimes when I woke up in the morning I did not want to get out of bed ... In my dreams there were people, so I just wanted to sleep and have company.'

In the far north the light returns astonishingly quickly and by mid April Linda realised it was already light at midnight. She found it hard to believe how dark it had been just a few months earlier and 'that we had to dress up in four layers of clothes just to go out and have a pee.'

Spring came a month earlier than the year before – no wonder the Arctic terns had seemed nonplussed when Steinar and I were filming them – and by Midsummer Day the eiders and terns had started nesting. On the solstice Linda put her Christmas tree on the fire. Her time at Mushamna was coming to an end: 'My last week was full of feelings and impressions ... even chasing polar bears for the last time felt sad ... I guess a part of me will still be among the terns, eiders and floating ice.'

Since then she has had a little boy. Steinar is his godfather. As a reminder of the time she spent with the bears she has put one in her son's name: Sigbjørn. Linda is looking forward to him growing up in the high Arctic.

'I think the everlasting changes are the reason why people love Svalbard so much: fear and joy, darkness and sunlight, changing seasons, happiness and excitement. All in one.'



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