

Do you want to cross the Pacific on a boat made of plastic bottles?" I was asked a year-and-a-half ago. "Yes," I replied without hesitation. I figured it wasn't a question that would come up again soon. The Plastiki adventure began when David de Rothschild, the British adventurer and environmentalist, came across a United Nations report on the state of the world's oceans, which pointed to the fact that our seas and their ecosystems are dying, suffocated by millions of tons of human waste, in particular plastics. There was also the "discovery" of huge gyres of plastic waste "the size of Texas" trapped in oceanic vortices. Sailor and environmentalist Charles Moore had sailed through one of these Pacific "garbage patches" in 1997 and brought back grim samples: a briny soup in which plastic nanoparticles outnumbered plankton by a ratio of six to one.

Inspired by the famous Kon-Tiki expedition, David decided to build a one-of-a-kind expedition vessel incorporating that ubiquitous item of rubbish, the plastic bottle, and sail it across the Pacific to encourage the world to "beat waste". He was keen to show that with more efficient design and a smarter understanding of how we use materials, waste can be transformed into a valuable resource. The Plastiki is the result of nearly four years of design, boat-building, hipster environmentalism and cutting-edge research into plastic polymers.

I started documenting the adventure for a National Geographic Channel film nearly two years ago, when the Plastiki was still just a bunch of wild sketches on a naval architect's notepad and a pile of dirty recycled bottles in a San Francisco workshop. Work at the construction site was slow and disorganised. All of the plastic materials used to build the boat's structure were untested and, to his credit, David insisted on a hull design that incorporated recycled plastic bottles in their original form. Whatever vessel was going to emerge from this zany endeavour would have to be strong enough to sustain months of battering and ultra-violet degradation under the punishing equatorial sun.

I went 100 miles out to sea for a weekend trial with a crew I barely knew. Five men and one woman. Most of us hadn't ever sailed before. David spent the entire time vomiting his guts out and we lost a few bottles from the hulls (which we retrieved); but skippers Jo Royle and Dave Thomson reckoned the Plastiki was ready as she would ever be. The morning we set off in March this year, a hard-boiled sailor warned me I was mad to be taking part; the Plastiki would never make it past the Golden Gate Bridge, let alone 8,398 miles across the Pacific.

Could we prove him wrong? One thing we did have to give up on was sailing to the infamous northern "garbage patch"; the Plastiki couldn't get us there. Despite its sci-fi appearance, the boat is more like a raft than a conventional sailing vessel. It can't sail upwind, nor can it really battle against currents and weather systems. It can only go with the flow, in our case, from East to West following the Pacific currents and trade winds. The garbage gyre lies north of Hawaii and from our launch in San Francisco it was beyond our reach.

Cooped up for weeks on end in a sweaty plastic cabin the size of a tent or roasting under a fierce equatorial sun, I tended to forget what the mission was all about. Life boiled down to basics: sleeping, eating and helming around a 24-hour watch system or tending to nautical chores (and coping with the interminable noise of the Plastiki's 12,000 odd bottles dragging against the sea and the rest of the boat).

I was also distracted by my own self-centred emotional experience of life at sea and hypnotised by endlessly changing vistas of sky and ocean wilderness. But I wasn't there to change the world; I was aboard to film a bunch of people trying to make it across the Pacific on a crazy plastic boat. And to blog and tweet just about every nautical mile of the way...

23 March

Leaving San Francisco

David de Rothschild, expedition leader

So, we've made it, day two on board the Plastiki! Seems I got away with it on the first day but have started to feel sick again due to what seem to be massive swells surrounding the Plastiki, although the sun is out, which makes it really 'amazing' to be out here. Spray seems to be hitting every part of the boat covering the decks, cabin and us with salt water.

We have a new crew member – a flying fish hanging out in the bottles. Olav [grandson of Thor Heyerdahl – see box, right] is trying desperately to prise it out for dinner. Max is talking to himself on the helm – which is entertaining the rest of us. Off to get a sleep before dinner, although with Olav cooking I might give it a miss; got a feeling it could be flying fish.

Early April

Dawn watch

Max Jourdan, documentary maker

Waking up for the 4am watch, feeling like the ship's cat has shat in your mouth. You stumble around head bowed under a red glow looking for damp clothes in the cramped space. In the cabin you pass half-undressed members of the other watch. "Morning." "Good night."

Emerging into the strange night you venture to the deck's edge and grab hold of a mast stay, flexing cold-metal with every movement of the ship. You fumble with layers and zips as you lean over the edge for a piss. Jo said, "Most sailors lost at sea are found with their tackle out."

You sit at the helm and steer the course: 150 degrees. "The Pacific covers an area larger than that of all of the Earth's masses combined," you read, and contemplate the curving horizon with rising emotion. There's a full moon. Mesmerising, huge, white, round and dead ahead.

The hours flash by. You hand over the helm and stand up. Looking at the boat's wake, you realise dawn is approaching. The ocean is iridescent purple, and lines of orange and blue edge the sky. The entire sky is humming, as light from the sun arcs through the atmosphere. Overwhelmed, you just want to scream, but the rest of the crew is asleep.

6 April

How to kill a tuna fish

Max Jourdan

1.4 billion hooks are deployed annually on long lines. Some of these can be as long as 75 miles, allowing a fishing vessel to gather 50 tons of fish in one haul. We are trawling one fluorescent, feathered, garish lure on the end of a line and rod. I'm the first to get to the rod after we become aware of the whine of reel. The rod is bent in half and it feels like I'm dragging an oil drum in the boat's wake. "Make sure the line doesn't snap," someone advises. But I am confident in the gear. The lady at the Sausalito tackle store told me we needed 50 lbs test line. "There's some big fish out there," she had warned.

"Maybe we need something tougher, then," I said.

"Let me tell you something..." she replied and paused. "Anything bigger you don't want to be pulling up on your boat."

I am inching monofilament back on to the reel. "I hope we haven't caught a shark," I think aloud. Finally it surfaces by the boat. Flashing silver and blue and yellow. "Fuck. That's the biggest tuna I've ever caught," mumbles Olav who previously spent two-and-a-half months floating across the Pacific on a replica of the Kon-Tiki. "Must weigh nearly 25 kilos."

The tuna flaps around the deck, spraying blood everywhere. Olav hits it with the bat and I plunge a knife into the back of its head to reach his spine. We don't measure it, just start butchering it on deck. The flesh convulses powerfully in our hands and Olav and I look at each other. Conveniently the rest of the crew seem to have disappeared. We cut the whole fish up into steaks passing them through to the galley.

8 April

Notes from the 'Plastiki' tramp

Max Jourdan

23.3 degrees of latitude. Sounds exotic; so why is it so f'ing cold? Jo told me, "By day five you'll be in a pair of shorts and T shirt." I've woken up on deck wrapped in a wet, grey, wool blanket; the kind the Salvation Army hands out to homeless people in winter. Did I remember to brush my teeth last night? Mouth all dry. Hair stiff like salty rope. Glasses frosted with spray. Trousers are torn and disintegrating. Maybe dragging them by a rope in the boat's wake for a few hours and drying them in the sun was a mistake. But it's better than wearing the smell of tuna blood. I'd like to see myself as a hobo riding the Plastiki Pacific Slow Boat to Somewhere; but really I'm the official Plastiki tramp. Crawl through to my hutch. The cabin smells, like six teenage, grubby, farting campers are living here. Five men. One woman. Poor Jo.

15 April

The middle of nowhere

Max Jourdan

I'm not out here on some jolly, organic, culinary cruise across the Pacific. I've got a job to do. So when Jo pops her head out of the cabin and looks out at the ocean and grey dawn with a this-is-not-just-another-day-at-the-office expression I pick up the camera. Turn on, press record, frame, focus, re-frame. Jo's blue eyes crystallise on the LCD screen. I can sense the thoughts formulating on her lips. "What's up, Jo?" "We're more than 1,000 miles from any landfall," she says. Jo looks profoundly happy. "What does that mean, Jo?" "It means it would take someone quite a while to rescue us. It means we're alone." The announcement is electric.

This is precisely why I took this assignment on, I think. In my peripheral vision, I can sense some members of the crew don't share our mutual delight.

19 April

Let them eat cake

Max Jourdan

24 days at sea and maybe 20 more to go before landfall on Christmas Island. There are some pressing concerns; water is being consumed too fast, toilet paper is running out, the furling system starboard side is broken and the foresail ripped. Running out of bread is a serious problem. Just look what happened to Marie Antoinette. I'm not saying this as a Frenchman, but because bread is part of the ritual of our daily lives; it provides sustenance, pleasure and even bonds people.

An ocean-crossing is all about being self-sufficient, from mending sails and water pumps to baking bread. Unfortunately, we've got only a solar oven (delusional dream of some wacky hippy baker). The wrapping and instructions displayed a perfectly roasted Thanksgiving turkey. It's so hot out here you could fry eggs on the plastic deck, but I still haven't got the temperature above 120C. "What bread can we bake with no oven and a miniature grill?" I ask Jo. We run through the naans, flatbreads, galettes, rotis and chapatis of our desires. Olav suggests the chunky Norwegian black rye bread of his youth. In the end we opt for pitta.

Late April

The Doldrums

Max Jourdan

"L'enfer, c'est les autres" ("Hell is other people") purports the existentialist slogan. Inching our way along the seventh parallel under a blistering sun, I would tend to agree. The edge of the Doldrums. The Plastiki is spinning around like a top going nowhere fast, even backwards at times. Some mornings you wake up with your entire soul in a minor key. Feeling like you just want to line the crew up on deck, make them beg for mercy and pop them all in the head with the flare pistol. Wham. 35 days at sea in a Tupperware box, like rancid cheese. What do you expect.

30 April

Christmas Island

David de Rothschild

We arrived on Christmas Island yesterday, very early in the morning. We got a tow in [after overshooting the island] from one of the local ferry-boat handlers, who managed to pull us into the very shallow lagoon; getting in and out of these atolls can present real challenges. On shore we received a 'welcoming ceremony from the local community; there was an amazing dance from some local school kids to welcome us.

The first thing I did on land was eat some chocolate and drink a soda. We ate some local fare – coconut cakes and some coconut water. While we're here we're going to be meeting local environmental and agricultural groups, and visiting a number of bird sanctuaries and wildlife projects that have been funded by the New Zealand government. We will also be replenishing the hydroponic garden, maybe with some bananas. Community spirit here seems amazing; people are always smiling and very welcoming.

4 May

Leaving Christmas Island

David de Rothschild

It's been almost a week since we reached Christmas Island. Although it's hard to tell really – we've all switched on to "Island Time". It has been a very full schedule, lots of school talks and meetings. The boat maintenance consumes a lot of our days. Matt and Graham have been fixing the rudders which got a little damaged as we were towed into the dock. David T has been working on repairing the sail with Jo. We've also now replenished our kitchen stocks with some new food for the next leg of the journey.

We're getting close to hitting the high seas again. We'll be welcoming some new crew and fresh minds on board. The new crew members have already flown in: Graham Hill from [sustainability blog] TreeHugger, Luca Bambini the photographer and also the new National Geographic film-maker, who will be replacing Max until he rejoins us in Samoa.

9 June

On Samoa

Jo Royle, skipper

Mr T and I have been extremely busy since we got here; we're trying to prepare the boat for another long leg towards Sydney, where we expect to see the worst weather we've seen on the voyage. I've serviced all the electrical gear. We've still managed to survive off 100 per cent renewable energy since we left San Francisco, which is incredible because we have lots of "Digital Dave [de Rothschild]" and "Digital Graham [Hill]" using our computers and communications.

[After a few weeks with another female crew member] I will be back to being the only girl, which I'm a bit apprehensive about, as it's always good to have another girl to giggle with. It's not a bad swap, though, as Max and [the photographer] Vern Moen will be joining us. And I can't moan too much; the guys are great. There are six of us living in this tiny cabin and we've been at sea for 60 days. To be honest, the most annoying habit is probably the boys showing me their spotty bums; they have very spotty bums from sitting down all the time and I don't need to see that!

Western Samoa is actually environmentally leaps and bounds ahead of some English towns; we've got to catch up, otherwise it's a bit hypocritical for us to go around the Pacific spreading this message. They already use [biodegradable] BioBags, as plastic bags were banned in 2006.

Mid-June

Needlework

Max Jourdan

4am again. Outside already. Average seas and drizzling rain running cold through briny hair. Chart littered with oceanic shelves, mounds and deep troughs named after French navigators. Just let me lie here on deck in the dark. No. I am awake, just resting a little. "Foresail's ripping. Need to finish patching the other one before they're all fucked," says Jo.

Inside. We sit opposite each other across the mess table. A roll of twine, bag of needles and strips of sailcloth. Eyes wide open and pupils dilated. We start to sew under the red glow of night lights. Pitching and rolling in our pod. Darkness all around. We could be in deep space or attending a Sunday patchwork class on LSD.

Patching is done. I take the helm. I could cycle across the Pacific faster than the Plastiki can sail. Maybe that's why it's taking me more than 2,000 miles of ocean crossing before deciding to try out the stationary bike bolted to the foredeck. We take turns on the bike. It's a sit-down contraption that spans two cross beams. When you are in the saddle you are suspended over the big blue. I don't know what this is doing to my fitness level, but the blind aggressive pace feels all wrong and out of place on this boat.

15 July

Storm force

Matthew Grey, expedition co-ordinator

"It's 3.51," Graham singsongs in his most mumsy voice. "Urghh, thspp," is all I can muster.

He's sent grabbing for the corner of the doorway, as a huge wave whumps against the boat.

I went to "bed" two hours and 45 minutes ago.

Wet means wet-weatherwear and judging by the sound of the waves breaking across the deck, I'm gonna need it. Slipping into a wet pair of dungarees at 4am is no one's idea of fun. The pants are like a halfway house: they ease you uncomfortably from warm sleeping bag to violent seas and driving rain. The last piece of the puzzle is the lifevest.

Welcome to winter in the Southern Hemisphere.

Last night we had a "blowout" on our headsail and with 35 knots of wind tonight we can't risk destroying the second and only spare. Instead we're flying our utilitarian orange storm gib. A handkerchief-sized piece of fabric is strung up where our big billowing powerhouse once was. It's designed for the worst; when all other options are exhausted and the wind is pummelling us at 50 knots we would point the boat away from the waves and tuck our tail between our legs with just this little sail to guide us.

16 July

Samoa to New Caledonia

David de Rothschild

The temperature inside the cabin has just reached a distracting and uncomfortable 39C! The situation seems oddly perverse; on one hand I am surrounded by a horizon that holds all the promise of reprieve from the sweltering heat, yet on the other, the 15 knots of breeze means we don't have the option of dropping sails in order to give way for some underwater activities. I am firmly trapped within the confines of a 20ft by 60ft floating plastic solar oven.

If only I'd had the prior insight to design some form of swimming platform; what was I thinking to miss that particular detail? But, then again, hindsight is a luxury of the now. Which makes me ponder the notion: would I even be here on this mission in the first place had Leo Hendrick Baekeland realised that by presenting the world with the first fully synthetic plastic, Bakelite, back in 1909, he would be ushering in the modern era of plastics.

I wonder if at any point during his research and development he anticipated that the very durability he most likely worked tirelessly to engineer and perfect was in fact going to become an Achilles heel for all things organic and natural, invading and conquering almost every ecosystem worldwide in one way or another.

Hindsight or not, what's crazy about the issues of these plastic fingerprints that are tragically tarnishing our natural environments is that it doesn't have to be this way! If the development and build phase of the Plastiki taught me one thing, it was that innovation can come from the most unexpected places.

Late July

Epilogue

Max Jourdan

Our arrival in Sydney on 26 July wasn't what we had expected – we'd arrived in the Tasman Sea 10 days before, but much too late in the year, so the Plastiki spent the last week of its voyage under tow. Which was a bit of an anticlimax. Was the expedition a success? David always said it's not about the expedition, it's about the message, and he certainly worked hard getting the message

across, blogging, tweeting, working the press – he even went live on The Oprah Winfrey Show mid-voyage. And we certainly spent a huge amount on satellite communications. In essence, David was at the office for about 80 per cent of the voyage.

But the more communication we had with the outside world, the less unity there was among the crew. And it's a pity that we weren't able to visit the plastic "garbage patch". So, for me personally, the voyage of the *Plastiki* wasn't quite the adventure it might have been.

But we were treated to a phenomenal reception in Sydney Harbour: helicopters, police craft, and a flotilla of little boats, not to mention a huge press reception. After that, the crew went their separate ways. And the *Plastiki*? If current plans come to fruition, she will sail on, sort of, travelling the world in a showcase as an oceanic exhibition piece. Her voyage is far from over.

Max Jourdan's film for Renegade Pictures of the voyage of the 'Plastiki' will be transmitted next year on the National Geographic Channel. 'Plastiki: An Adventure to Save Our Oceans' by David de Rothschild will be published in early spring next year. For more information, see theplastiki.com

Pacific heights

The trailblazing 'Kon-Tiki' expedition

On 28 April 1947 the Kon-Tiki raft left Callao, Peru, manned by Thor Heyerdahl (inset), a 32-year-old Norwegian explorer and trained zoologist, a crew of five Scandinavians and one parrot, aiming for Polynesia. The raft was built from nine balsa-tree trunks and fixed with hemp ropes, using only materials and construction methods available to South American indigenous peoples, pre-Columbus.

"Kon-Tiki" was an alternative name for the Inca sun god, Viracocha, who, according to oral tradition, led the first settlers to Polynesia. The expedition aimed to challenge the widely accepted view that the settlers of Polynesia had migrated there from Asia. Heyerdahl pointed out that the Pacific's currents circulate clockwise, making the journey difficult. South American migrants, however, could have drifted towards Polynesia on these currents. Heyerdahl found references in ancient manuscripts to balsa-wood rafts that, he suggested, could have made this journey. When presented with this theory, the academic Herbert Spinden asked, "Really – would you want to sail a balsa craft from Peru to Polynesia?", to which Heyerdahl retorted: "Well, maybe I will."

The Kon-Tiki sailed westwards along the Humboldt current, the crew living off water stored in bamboo tubes, coconuts, sweet potatoes, bottle gourds, and fish, dolphins and sharks caught along the way. On 4 August, it reached Angatau Island in French Polynesia, and, three days later, the boat struck a reef and was beached on an inhabited islet off Raroia Island in the Tuamotu group. The raft had travelled about 3,247 nautical miles in 101 days at an average speed of one-and-a-half knots. Although the project had succeeded, the academic world remained unconvinced. One scholar, Sir Peter Buck, commented, "A nice adventure. But you don't expect anyone to call that a scientific expedition."

Nonetheless, Heyerdahl became a hero. The Kon-Tiki story inspired an Oscar-winning film, a TV series, and a book that was translated into 57 languages and sold 20 million copies. The story offered an escapist, desert-island dream and a celebration of human potential that was seized upon by a public tired of post-war apathy. Heyerdahl had pioneered a form of learning that prized practical experiment and re-enactment over academic study.

Many have followed his lead. In 1976, the explorer, writer and film-maker Tim Severin sailed across the Atlantic in a skin-covered boat, following the path of Brendan, a sixth-century Irish saint believed to have discovered North America. In 1999, Phil Buck, who as an 11-year-old in 1974 had read Heyerdahl's book, sailed from Chile to the Easter Island on a reed boat called Viracocha. And Heyerdahl's grandson, Olav, himself built an updated version of the Kon-Tiki in 2006 to retrace his forebear's route. Olav went on to join the *Plastiki* crew.

Lettice Franklin

The *Plastiki* is a 60-foot (18 m) catamaran made out of 12,500 reclaimed plastic bottles and other recycled PET plastic and waste products.^[2] The craft was built using cradle to cradle design philosophies and features many renewable energy systems, including solar panels, wind and trailing propeller turbines, and bicycle generators. The frame was designed by Australian naval architect Andrew Dovell. The boat's name is a play on the 1947 *Kon-Tiki* raft used to sail across the Pacific by Norwegian explorer Thor Heyerdahl, and its voyage roughly followed the same route.^[3]

On March 20, 2010, the sailing vessel set off from San Francisco, California to cross the Pacific Ocean with a crew of six: British skipper Jo Royle, co-skipper David Thompson, expedition diver Olav Heyerdahl, filmmakers Max Jourdan and Vern Moen, and expedition leader David de Rothschild.^[4] The expedition projected landfall in Sydney, Australia and included plans to visit several sites en route of ecological importance or which were susceptible to environmental issues caused by global warming, for instance the current sea level rise, ocean acidification and marine pollution.

Plastiki arrived in Sydney Harbour on July 26, 2010, accompanied by a small flotilla of boats.^[5] Shortly afterwards, it was towed to the Australian National Maritime Museum in Darling Harbour, where it was on display