REPORTAGE

Ghost species and shadow places

Seabirds and plastic pollution on Lord Howe Island

Cameron Muir

I WANT TO walk the shadow places. These are sites of extraction and production: think coal-seam gas fields and their attendant communities, think eroded landscapes and marine dead-zones, think sweatshops – all the places from which we extract resources, or to which we outsource disorder, risk and pollution. They provide for our material comfort, yet in the words of philosopher Val Plumwood, they are places 'we don't know about, don't want to know about, and in a commodity regime don't ever need to know about.' Is it possible to expand our responsibilities beyond care for home and the places we love, to the degraded, broken and overlooked?

The sparse plains of my own childhood in western New South Wales were marked by conflict, chain-clearing, water theft and suicide: all out of sight, out of mind for most of us. Perhaps that's why I seek shadow places, walk scalded ground, touch dead trees, smell contaminated water, and discover how people cope, adapt and live with the slow violence of grinding ecological damage. My hope is to render vicarious experiences of the shadow places of the Anthropocene, and in this way, shed light on them.

When Val Plumwood conceived of 'shadow places', I'm not sure that Lord Howe Island was the kind of place she had in mind. It is a World Heritage site, an iconic paradise moored in the Tasman Sea, far from the destruction wrought by human industry. But I've come to follow researchers who are working in an ecological community under siege, who witness death

and suffering each day. I'm exploring the plight of one species of bird, the ways in which million-year-old patterns of migration, courting, breeding and chick-rearing are being disrupted by human actions – a process environmental philosopher Thom van Dooren labels 'wasted generations'.

IT'S EARLY AUTUMN, and I'm on the island to learn about flesh-footed shearwaters and the biologists who study them. Twilight has arrived quicker than I expected, and the palms are silhouettes against an ink-blue sky. In the distance I can just make out the volcanic tops of Mount Lidgbird and Mount Gower. The sound of the ocean bends towards land. It strikes me I'm in open seas: Lord Howe Island is 600 kilometres off the east coast of Australia, a tiny perch of weathered volcanic rock protruding from the ocean, supported from below by a sea mount rising from the depths of the Pacific. I continue to the shearwater colony in the dark.

Tonight, chicks are emerging from their burrows for the first time since hatching three months ago. The parent birds have taken turns caring for their sole chick, stuffing them with food until the chick is up to a third bigger than the adults. By the end of the three months, the parents look dishevelled and gaunt, feathers sticking out or missing. They sacrifice their wellbeing for their offspring. Circumstances that are, perhaps, familiar to many of us.

I'm sitting cross-legged on a tarp across from Jennifer Lavers, a marine eco-toxicologist and seabird expert at the University of Tasmania. She clasps a chick between her hands as she peers into its face.

'Look at your hairdo!' she says. Her voice is deep and hoarse from flu – and incongruous with her small frame. The bird's smoke-grey down gives it the appearance of wearing a boa shawl, or having big fluffy ears. 'Like a grandpa,' says Jenn.

She's banding birds with her student, Peter Puskic, while, on the other side of the tarp, Alex Bond – curator in charge of birds at the UK's Natural History Museum – leans over a bucket and attaches tubing to a pressure sprayer. Somewhere in the darkness is Ian Hutton, curator of the Lord Howe Island Museum, searching the forest for chicks.

Our time is divided into day work and night work. Every sundown, we set up a field site in the shearwater colony near Ned's Beach. An LED floodlight illuminates A-frames, backpacks, tubs of lab equipment, and a tarp spread across the forest floor. Salt air glints in our headlamps, banyan

trees tower overhead, and the whole place smells of shearwater – a dense, greasy odour. Some say it's to do with the birds' fondness for eating oily marine life. To me it's like lanoline and newborn swaddling – something corporeal, intimate.

The team is pushing to finish before midnight. And there's a sense that time is running out – not just for tonight's work, or the end of the field trip in a few days, but for the birds themselves. A recent global survey published in *PLOS ONE* found seabirds have declined by more than 60 per cent since 1950, a loss of around 230 million birds in just sixty years. The birds that Jenn and her colleagues study are among the most prolific but also among the most at risk: populations of shearwaters and petrels have plummeted by 80 per cent in the same period.

'Seabirds are declining faster than any other bird group,' Jenn tells me – a fact I find astonishing. But everything I hear astonishes me. A couple of years ago, a shearwater from one of the island's first banding projects in the 1970s was recaptured, making it thirty-eight years old. As chicks, the shearwaters imprint the forest and the beach, then fly out to sea alone and won't touch land again for five to seven years; they roam as far as the Sea of Japan and return to breed within metres of their burrow. Pelagic seabirds such as shearwaters, petrels and albatross keep vast olfactory maps of the oceans in their memories; they can smell exactly where they are in the world.

Also, they vomit plastic. The parent shearwaters here are slowly feeding their chicks to death with plastic.

STEVE ROTHSTEIN WAS probably the first person to record birds eating plastic. In 1964, as an undergraduate at Brooklyn College, he spent a summer on Kent Island in the Bay of Fundy, studying petrels with senior ornithologist Chuck Huntington. He noticed pieces of plastic among the contents of the petrels' stomachs. Huntington gave him specimens from 1962 and these contained plastic too. At the end of summer Steve filed the data and returned to his coursework.

Two years later, two biologists stationed on the remote Northwestern Hawaiian Islands found plastic in 74 per cent of the birds they collected. They published their results in 1969, including a photo depicting the skeleton of a Laysan albatross. In its stomach cavity were pieces of toys, container caps, and other fragments of plastic. In 1972, an article in *Science* reported that

plastic was accumulating on the surface of the Sargasso Sea, and researchers remarked on the swiftness with which it had entered the environment. Plastics had only been manufactured on a large scale for the preceding fifteen years.

Steve Rothstein is now an emeritus professor of zoology at the University of California, Santa Barbara. 'I didn't think the plastic particles I found in the Kent Island petrels were especially important until I saw the paper in *Science* in 1972,' he told me recently.

After reading that *Science* article, Steve dug out his data and published his findings in 1973, confirming to the scientific community that sea birds were ingesting plastic and had been for at least a decade. His short paper was prescient for noting that adult birds must be feeding plastic to their chicks and that the petrels weren't picking through rubbish near urban shores but foraged the plastic from the open ocean, hundreds of kilometres away.

The slew of scientific papers that followed reported different marine animals ingesting plastic or getting tangled in discarded nets, fishing lines and plastic bags. And each year, the plastic counts increased: an estimated five trillion pieces are now floating on the world's oceans.

OUR DAY WORK begins early. We must be on the beach by dawn to collect birds that were too weak or stressed and perished on their first flight. I ride my bike down the hill towards Ned's Beach and pass a yellow, diamond-shaped road sign bearing a black image of what looks like a duck with a hooked bill. Underneath it warns, MUTTON BIRDS ON ROAD. 'Mutton bird' is the name European sailors gave to several species of shearwater in Australia and New Zealand. The most abundant is the short-tailed, which breed in millions along the southern coastline between New South Wales and Western Australia, mainly on the Bass Strait islands. Aboriginal and Māori coast-dwellers harvest shearwaters each breeding season, as they have for generations. In the early days of colonisation, Europeans ate hundreds of thousands a year.

The sun rises over the eastern head and I find Alex scanning the shore through binoculars. 'No,' he says. 'Just a flesh-foot shaped log.' We begin walking the length of the beach. Tourists sometimes throw the washed-up birds into the dune heath or bins. The fresher the bird the more valuable it is for research – that's why we walk at first light.

In the days before I arrived on Lord Howe Island, a BBC film crew spent the better part of a week shooting scenes with Jenn and the others for a documentary on plastic. The week before that, the researchers hosted a *National Geographic* photographer. In 2017, Jenn's photos of tons of rubbish washed up on the shores of the uninhabited Henderson Island in the South Pacific, one of the most remote islands in the world, went viral and received global news coverage. She contributed to the marine conservation film *Blue*, and received invitations to speak at ideas festivals and conferences around the world. The recent public attention on marine plastic debris has meant that this year, for the first time, Jenn and Alex received support from their employers for their shearwater research. For the previous ten years they funded it themselves, using up their annual leave and frequent flyer points. They are thrilled the problem is gaining interest, but the rush of media, politicians and volunteers has meant they've needed to find ways to adjust.

'It's slowed down our processing of birds, extended our work hours,' says Alex.

It's also broken the intimacy of their research group. 'These trips to Lord Howe Island are our only opportunity to catch up,' he says. Alex seems the most reserved of the team and feels that the intrusion by film crews and people like me has reduced his time for private solace with his friends.

'The most emotionally draining period of my year is coming out here,' he says.

Any dead birds we find on the beach will go to the research station, where Alex dissects them. People talk a lot about the oceans having resilience, he says, but rarely about how those involved in this work cope with its constant barrage of negative news.

Alex heads for his bike and breakfast back at Ian's house. On my way back up the road I see a dead shearwater on the bitumen. Some ants have gathered and one crawls on the bird's half-shut eye. I put the bird in my bike's front basket and continue.

THE RESEARCH STATION is clad in weatherboard and nestled among kentia palms. Two faded couches welcome you on the veranda. There are some basic living quarters and a small communal kitchen with an informal library, as well as the lab, which is the largest and brightest of the rooms here.

Alex places the shearwater I found this morning on its back and then draws the scalpel down its front.

'This bird was obviously roadkill, you can see massive internal bleeding,' he says.

He uses scissors to open the stomach. Everyone groans and waves at the air in front of them.

'Certainly not fresh!' says Alex.

Ian is visibly upset and sighs. For years he's contributed to several conservation programs on the island, including a campaign to prevent roadkill. Later, one of the island's residents tells me some locals deliberately run over the chicks; they call it 'going popping'. Ian moves to a quiet corner and begins washing shearwater vomit from sample containers.

Ian is grey-haired, softly spoken, and a devoted contributor to the island's community. He was probably the first to document plastic ingestion by birds in Australia. In 2001 he was walking in the forest near Clear Place Point when he noticed a skeleton of a shearwater in the leaflitter with coloured pieces of plastic beneath its rib cage. He tried to draw attention to the threat and urged for research, writing to scientists, politicians and newspapers. Three years later, a biologist friend showed Ian the gastric lavage technique for inducing birds to regurgitate the contents of their stomachs. In 2007, after six years trying to raise awareness, he published his own research paper, using gastric lavage to show parents were feeding plastic to chicks.

It takes about twenty to thirty minutes to process one bird. Alex cuts open the stomach of the next bird, one that Ian found dead in the colony at Ned's Beach last night, and begins pulling out piece after piece of plastic. The fragments are thin and about the size of a bread clip. This is the type of scene that the documentary-makers come to film. It's what's shared on social media and garners views on YouTube. When my eldest son watched a dissection like this in the film *Blue*, he drew his hand to his mouth, shaken. On a sheet of paper towel, Alex lays out more than eighty pieces of plastic from the bird's stomach. It's colourful and visceral: adjacent to a bird with its insides exposed, a bleak artwork of found objects.

Ian dries the pieces and piles them into the weighing dish. Nearly thirteen grams, and the bird weighed 250. It had consumed more than 5 per cent of its bodyweight in plastic. In a human about my size, that would be equivalent of three and a half kilograms.

'The record holder was 276 pieces and sixty-four grams,' says Jenn. 'Its stomach was translucent.'

Down floats in the air. Everyone works in silence for the next ten minutes.

NO ONE KNOWS for sure why the birds eat plastic. A study led by Chris Wilcox, principal research scientist at the CSIRO, estimated 90 per cent of seabirds are now eating plastic. Within a few decades, it will be virtually every seabird. Shearwaters, petrels and albatross consume the most. They are generalists who feed on whatever they can find. Some research suggests the pieces of plastic smell like food to these birds, as they provide homes for microorganisms that release a gas called dimethyl sulphide that attracts krill and other crustaceans, which in turn attract prey for birds. This chemical signature therefore acts as a 'dinner bell' to the birds. Ian favours this explanation.

Lord Howe Island is the main breeding site for flesh-footed shearwaters, with an estimated 30,000 burrows clustered in the island's colonies, home to around 17,000 breeding pairs each season. Earlier in the year, three birds that the team had banded as juveniles, one in 2011 and two in 2014, returned.

'We were elated,' says Jenn. 'But only three recaptures in a decade? It's worrying.'

It could be that the researchers simply missed the banded ones among the birds they saw, or it could be a symptom of a declining population. Habitat destruction, longline fishing, road kill and changing ocean ecologies are taking their toll. Flesh-footed shearwaters are listed as a vulnerable species in NSW. Plastic adds to the pressure. Plastic can block the digestive tract, reduce space for food, leave the birds susceptible to disease and pierce their internal organs. Graphic images of plastic impaction draw public attention, but little is known about the sublethal health effects of ingesting plastic. The plastic in birds exposes them to toxicants, including heavy metals accumulated from the ocean, and plasticisers such as phthalates and BPA, which are endocrine disruptors (chemicals that interfere with hormones and the reproductive system).

Peter is investigating the sublethal effects of plastics for his honours project and plans on expanding it into a PhD under Jenn's supervision. He collects tissue samples in jars of formalin to take back for lab analysis.

BEFORE JENN STARTED researching on Lord Howe Island, she worked on Tern Island, which is little more than an airstrip sitting on a coral atoll in the Northwestern Hawaiian Islands. Tern is part of the chain of islands that includes Laysan, where albatrosses were ingesting plastic in the 1960s.

'Albatross were dying all around me and inside them were cigarette lighters and bottle caps and toothbrushes,' recalls Jenn. 'I sat there thinking, they can't be the only species affected.'

At least ten other seabird species that she knew of were foraging in the same places. She came up with a plan to investigate other species – but in the southern hemisphere, to determine whether this was happening across the globe. At that stage few people had taken notice of plastics, save perhaps at Midway Atoll, part of the marine reserve where Jenn was working in Hawaii. She was unable to secure funding for her project.

In 2007, Jenn took a job working with fisheries to deploy trackers that monitored longline bycatch of flesh-footed shearwaters in the Lord Howe Island marine park. She noticed bits of cigarette lighters and bottle caps in the bird colony, just like on Tern, and soon met Ian, who shared his findings on plastic ingestion. In her spare time, Jenn began pouring her own money into research and field trips – and telling anyone who'd listen about what was happening to birds in this remote place.

'Every species needs its champion,' she says. 'There's so much that they can teach us. When you see the light in those eyes and the cogs ticking… They're so intelligent in a way that we can never understand.'

And yet, she says, human actions have reduced them to garbage collectors. 'They're like the dustbins of the ocean. The numbers for these birds aren't good.'

SMOKE FROM A beachside firepit drifts across the bay and some quiet tourists prepare for dinner on the grass at dusk. It's time for night work.

At our field site, the shearwaters fly out of the forest – low and awkward, testing their wings – and then crash and tumble through our gear. It's like a real-life version of Angry Birds, as if someone is bundling up shearwater chicks and catapulting them at us. One stumbles around the A-frame and our bags then heads towards the beach.

'And that's the last time we'll see him for five years,' says Alex.

A chick comes wheeling in, clips my shoulder and lands dazed beside me.

'Grab it,' says Alex.

Here's an easy one for us to capture, weigh, measure and release. They are so soft and light and I'm afraid I'll hurt it. I tentatively extend my hand, the chick flaps and squawks, I jump, and it runs into the darkness of the forest. The whole field site pauses and turns to look.

'Are you an animal person, Cameron?' asks Jenn.

I'm not sure, but I have a new wonder for seabirds, which makes our work here even more heartbreaking. Ian pads into the light holding a downy shearwater and hands it to Peter, who lets the chick clamp onto his finger with its beak open and gently positions it over the bucket.

'If they get you with the tip it hurts!' says Peter. He has bites on his fingers, hands and chest.

Alex feeds a thin tube down the bird's throat and pumps saline water into its stomach until there's a sudden gush of liquid from the bird's beak. In the bucket, sitting in the oily, broth-like vomit, are pieces of plastic. One is the long, flattened grip from a bottle cap.

The next chick is severely underweight: barely any feathers, lots of down. When Jenn presses on its stomach you can hear the plastic crunch. Alex begins feeding the tube down its beak but it gets blocked. The tube can't get past the plastic. The chick doesn't seem to mind and looks calmly at us, our headlamps, the glossy leaves.

'Shall we try again?' Alex asks. But he gives up after several attempts. They'll keep the chick overnight and give it a good feed of blended squid and tuna. Maybe that will lubricate and dislodge the plastic.

Later that night, while I'm pedalling back to my cottage, I look over my shoulder and see Jenn in the distance, her headlamp shining and her bike abandoned on the ground, shooing shearwaters off the road.

WHEN I FIRST met the research team, Jenn had urged me to climb Mount Gower. Today I do, a brief respite from the bleak rhythms of collecting, dissecting and counting. Its sheer basalt cliffs catch the humid seaborne winds and create a microclimate, shrouding the summit in a near permanent band of mist. The palms are low, the trees gnarled and everything is coated with moss and lichen and I crouch and crawl like I'm in a miniature world.

At the summit, as I sit and eat a muesli bar, a woodhen emerges from the forest. I've heard about these birds in Ian's lectures – they're a conservation success story, lauded by locals and scientists. Forty years ago, the

woodhen faced extinction. Ornithologists only counted fifteen birds. Between 1978 and 1984, with funding from the Foundation for National Parks and Wildlife, cats and pigs were eradicated from Lord Howe Island, and aviculturist Glenn Fraser spent a year on a captive breeding program, tending to the incubated eggs, carefully turning them a little each day, and waking every two hours to handfeed chicks with tweezers. Their population numbers about 300 today.

My woodhen forages in the grass and then steps a little closer. He's a drab olive-grey, with no flourishes save for some white ear coverts and mottling through his nape, and he communicates by a series of low grunts. This is the most unostentatious miracle bird imaginable. He walks under my raised knees and for a moment I'm thrilled to have this special bird so close – a creature back from the brink, nonchalantly pecking at the crumbs of my muesli bar, oblivious to how precarious his very existence has been.

But then he looks at me with his unnervingly red iris and I can tell: he knows. At that moment I think of Delia Falconer's alternative name for the Anthropocene, the Age of Loneliness: 'A future in which we are thrown back only upon ourselves.'

I say to my woodhen, 'I know, buddy.'

In James Bradley's novel *Clade* (Hamish Hamilton, 2015), set in the near, climate-changed future, a scientist cruelly tells his partner that the birds she watches out of the window are declining but no one knows why: '…they might look fine but they've stopped breeding, or if they're still breeding their eggs aren't hatching, or the heat is killing the chicks. The ones you can see here are adults because that's all that's left, and when they're gone that will be the end of them.'

He says: 'They're a ghost species.'

I look at my woodhen, this spectre from a previous epoch, and I wonder if his mates, the flesh-footed shearwaters down below, are a ghost species. I wonder if someone will intervene and breed them by hand in warm boxes. I look my woodhen in the eyes and – maybe it's the exertion of the climb – I swear he's mocking me. He knows our fates are entwined. Humans aren't so different.

IT'S THE TEAM'S final morning in the research station. The room has a hollow, metallic smell – the scent of guts and half-digested squid. The chick

they kept overnight and fed didn't improve. They euthanise it. Birds like this are emaciated and dehydrated, their veins have collapsed, and they don't have the strength to dislodge the plastic.

'It sucks at your soul,' says Jenn.

Peter is the youngest of the group and is usually smiling or joking at his own expense or doing impressions of his nonna. Today he's quiet. He prepared himself mentally for weeks before the trip. He watched the documentary *A Plastic Ocean* before coming.

'It was like watching *Air Crash Investigation* before going on a flight,' he says.

Alex lays the chick out on the lab bench and draws back the skin. We see outlines of pieces of plastic in the taut stomach. Alex nicks the stomach with scissors and immediately plastic bursts out. We watch as he lays out the coloured pieces. The room is silent save for the hum of the freezer. It takes him about four minutes to empty the gizzard and then he moves on to the proventriculus, where there are smaller fragments of plastic. The stomach has a dark red lesion, an ulcer or haemorrhaging, where sharp plastic had been jabbing it.

Everyone seems frayed after seeing this day after day. Tears begin to well in Peter's eyes.

'Oh, Pete,' says Jenn. 'You had done so well.'

In sixteen days, Alex has performed scores of dissections, adding to hundreds over the years: he says he'll use the long flight to the UK to manage his 'ecological PTSD'. Jenn packs all the medical supply wrappings in her luggage for recycling. Pete packs tissue samples. Ian will drive them to the airport.

I farewell them outside the research station as they ride off on their bikes, their rucksacks full of dead bird parts.

LORD HOWE ISLAND has a familiar colonial history. When the British First Fleet were startled by the French a few days after arriving at Botany Bay in 1788, Governor Arthur Phillip despatched the *Supply* to Norfolk Island to establish a settlement and claim the tall timber Cook had spotted there. Almost exactly between Sydney Cove and Norfolk lay the volcanic outcrop that would be named Lord Howe Island. From that moment, the island became entwined in European and North American

maritime imperial and colonial trade networks and the rush to exploit environmental resources.

Sailors stocked the island with goats and pigs and used it as a source of fresh water as well as bird and turtle meat. The island became a provisioning station for the whaling industry. The Lord Howe swamphen seems to have been hunted to extinction by the time permanent settlers arrived in 1834. Sailors reported the ease with which they could club the docile bird to death. Lord Howe and Norfolk islands have the worst record of bird extinctions in Australia. This island's extinct birds have been hunted by sailors and settlers, killed as crop pests, displaced by development and eaten or pushed out by introduced species.

The British literary scholar David Farrier notes that the 'same sea routes now carrying plastic' were once the haunts of whalers, seeking animals that would supply the raw materials for lamp fuel, lubricants, candles, perfumes, varnishes, paints, soaps, corsets, umbrellas and toys. 'From the point of view of their scope and utility,' writes Farrier, 'whale products were the plastics of the nineteenth century.' Observers at that time were aware supplies of ivory and whale were diminishing and finite. In contrast, the commercial production of petrochemical-based plastic for consumers after World War II promised a new era of freedom, abundance and affordability. The Bakelite Corporation 'boasted humans had transcended the classic taxonomies of the natural world: the animal, mineral and vegetable kingdoms,' writes Susan Freinkel in her book *Plastic* (Houghton Mifflin Harcourt, 2011). Now there was, in the corporation's words, 'a fourth kingdom, whose boundaries are unlimited'. Petroleum-based plastic didn't just provide a cheaper alternative to existing materials, it shaped a new culture and ways of living.

It has also erased our material consciousness: in the nineteenth century, if you owned an ivory comb, you at least knew it came from a living creature that was hunted in Africa or Asia, and similarly, you knew the oil burning in your lamp came from a whale. Plastic is so aesthetically clean and pure we forget its dirty origins and harmful by-products: fracking, wastewater spills, groundwater contamination and depletion, greenhouse gas emissions, localised air pollution and toxic waste from processing plants. Between the early evidence of marine plastic in birds in the 1960s and today's five trillion pieces floating in the oceans, the petroleum and chemical industries delayed or defeated efforts to curb plastic pollution. In 1973, the National Academy

of Sciences in the US held two workshops on petrochemical-based pollution. Among the topics discussed was plastic waste in oceans, and corporations including Esso, Chevron, DuPont, Dow and Monsanto were involved. From 1984, international conferences were held specifically on marine plastic debris, to which the plastics industry said the problem was 'beyond' their control. Industry lobby groups spent millions resisting regulations such as plastic bag bans and casting doubt over the science on the health effects of plastics – taking a leaf from the tobacco industry's playbook. Sociologist Rebecca Altman writes that since her father began working at Union Carbide in 1962, 'all living organisms have absorbed the products of twentieth-century petrochemistry. We now embody its genius, its intellectual property, its mistakes and its hubris.'

On Lord Howe Island, local workers in fluoro vests beachcomb the island's shores for mainland detritus every week. After sorting the discarded fridges, toys and fishing nets, they ship it back to Australia where it goes into landfill. I never imagined the consequences of our culture of waste would reach an island promoted as 'Just Paradise.' Yet here it is, in a continuous cycle – you just have to look.

This is the point about shadow places. They exist beyond our everyday line of sight, but they have huge implications for how we live, for how we might continue to live on this planet. The term 'shadow places' applies to a remote island where birds die on a diet of plastic. It applies to a low socio-economic stretch of the US, where plastics are manufactured, leaving a vast 'Cancer Alley' along the Mississippi. It applies to valley communities, little-known outside of China, where plastics processors spill hexane for hundreds of kilometres down waterways. I'm starting to think it applies to the whole of the world's oceans. It applies to all of these in the Anthropocene.

'To exist in a moment in which geological time and human time are collapsing into each other,' writes James Bradley, reflecting on the plight of oceans for *The Monthly,* 'is to be brought up against the bounds of our imaginations.' To me, the idea of shadow places assists this imaginative work. The concept is fluid and expansive, helping us grasp our multiple entanglements, and offering a moral imperative to discover, know and take responsibility.

ON MY LAST night on Lord Howe Island, rain lashes at the windows of the cottage and I put on my shell and wander outside. The sky is a void, no stars,

no moon and no sulphur glow of streetlights to give shape to the clouds. Lord Howe Island has nourished many imaginations: you can snorkel the world's southernmost coral reef, clamber up a basalt mountain to a cloud forest 850 metres above the sea, clap your hands to induce providence petrels to fall from the sky and land at your feet. David Attenborough once described this place as 'so extraordinary it is almost unbelievable'. It's the last place I would have equated with suffering and death.

I'm not supposed to tell a story like this. I'm supposed to say recycle, reuse shopping bags, bring your own coffee mug and everything will be okay. David Gessner published a sardonic cartoon in *Orion* a few years back, titled 'Nature Writing by the Numbers': find something, contemplate it, express awe, quote Thoreau, describe threats, end hopefully. Recently, geographer Lesley Head argued this relentless cultural pressure to provide positive narrative arcs 'is itself a kind of denial'. I can go back to my kids and say let's pick up rubbish by the lake shore and use bamboo toothbrushes – but it's not enough.

A torrent of plastic is coming. More plastic was produced in the last fifteen years than in the previous fifty. Production is set to triple in the next thirty years and we'll release four times more waste than all the waste we've made up to now. Jenn and her team have grit and determination, but I can't expect them to be the heroes who will save us. The burden can't rest with a handful of scientists. It's up to all of us. We need to feel their grief. Several writers and scholars have advocated for acknowledging the role of grief in the Anthropocene. Grief can garner solidarity and resolve. The collective experience of grief, argue social scientists Ashlee Cunsolo and Neville Ellis, 'may coalesce into a strengthened sense of love and commitment to the places, ecosystems and species that inspire, nurture and sustain us'.

I come from the country, so the ocean – the Pacific – always seemed so vast and lonely and threatening. Now I can see how much it is a home for the shearwaters and other seabirds. The grey-blue expanses are as familiar to them as the red and brown plains of my childhood are to me. Shearwaters live most of their lives at sea, switching off half their brains to sleep, converting salt water to fresh with their built-in reverse osmosis purifier, and know every patch of the oceans. It's not empty space to cross between destinations, it's rich with life in intimate relationships between coast and sea, water and sky, depths and surface. Seabirds even helped build the forest I'm standing in, dispersing seeds among islands across millions of years.

The rain and sea spray whip my face. There's a shearwater chick on the road and I try to shoo it away, but it moves further towards the middle. Jenn and the others would pick it up, so that's what I do, and I place it on the beachside of the bitumen.

The next day is calm and the sky is a mild blue. I ride down towards Ned's Beach, over the crest where the oily smell of the shearwaters hits me, and into the colony where we did the night work. Ian's been here at some stage and removed the tub of equipment, the sack of salt, the tripod. It's like we were never there, no sign of the drama and horror of baby birds vomiting plastic under torchlight. Then I see pieces of plastic at my foot, in the leaf litter – everywhere. I pocket some of the pieces.

On the beach there's a dead shearwater tumbled in the sand. I wish the others were here to record it, to witness it in some way, so that the chick's life – a dark and bewildered three months of hunger and discomfort, receiving shards of plastic from its parents, and dying on its first night out of the burrow – might mean something.

A warm easterly breeze comes with the sun and a sacred kingfisher perches on a rock to welcome it. In the sand I see the footprints of a three-month-old shearwater that flew out to sea in the night.

I ride back to my cottage with the plastic in my pocket, its sharp edges pressing into my leg.

For references, see griffithreview.com

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