

# **Protect What You Love**

*Tales From Nikoi, Below the Surface*

**Michel Lippitsch**

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This is a work of memoir. It reflects the author's recollections of events, locales, and conversations from his own experience over time. Some names and identifying details may have been changed.

First edition.

## Author's Note

I did not set out to write a book. For years I kept a blog — *Tales From the Islands* — because it was the only way I knew to hold on to what I was seeing underwater before the next monsoon changed it, or the next net took it, or I simply forgot. I wrote proposals nobody read all the way through, survey notes for university students, captions under photographs of things I couldn't otherwise explain to people standing on dry land. It was scattered on purpose. A dive log doesn't need a table of contents.

But going back through all of it now — the cuttlefish seasons, the storms, the turtle nests, the nets we cut and the ones we couldn't, the races of small wooden boats called Jong, the fishermen who let us into their world a little at a time — I can see it was always one story. It is the story of a reef on the Sunda shelf, off the east coast of Bintan, shallow and murky and, for that exact reason, almost nobody's idea of paradise — and of an island called Nikoi that decided to try to look after it anyway.

My official title there was Marine Conservation Officer, which mostly meant I cleaned beaches before the guests woke up, counted turtle nests, argued with fishermen and government officers in roughly equal measure, and went underwater as often as I could, because that is where the actual information is. But the title was never really how I thought of myself. At heart I am an environmentalist, plainly and before anything else — I believe our life support system, our biosphere, is the thing that matters most, and the ocean above all the rest of it, because whatever else we are, we live on a water planet.

I am not with Nikoi anymore, not as staff. But I never actually left. I live on the mainland now, right across the water, and I see her every single day from the shore — the island I spent all those years looking after, close enough to recognise, too far to reach without a boat. It is a strange way to love a place, watching it from across a channel the way you might watch a lost lover go about her day from a café on the other side of the street. Every so often a friend comes to stay at the resort and wants company underwater, and for a few hours I go back — mask,

tank, the whole ritual — and it is exactly like that: two people who once knew each other completely, finding out the current still runs the same way it always did. Everything in this book happened. I have arranged it — journal entries beside the longer essays I wrote for the website, the proposals beside the poems — so that it reads less like an archive and more like what it always was underneath: one person's account of falling in love with a difficult, degraded, still-astonishing piece of ocean, and of the people who share it with him, above and below the water, then and now.

The title comes from something I wrote in 2011, in the very first entry of the blog, and I have not found a better way to say it since. You only protect what you love. Everything else in these pages is really just me trying to make the case for loving this place — reef by reef, storm by storm, nest by nest — so that somebody besides me has a reason to keep doing it after I'm gone. I am still watching from across the water. That still counts.

— *Michel Lippitsch, on the mainland, across the water from Nikoi*

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# **PART ONE: THE SHALLOW KINGDOM**

## **Before Nikoi**

Long before there was a reef to protect, there was a reef to collect. As a child, on summer holidays in Italy, Spain, and the south of France, I gathered shells along the tideline with a kind of single-mindedness that once got me properly lost — divers going into the water, a helicopter overhead, the whole beach looking for a boy who had simply wandered too far chasing something beautiful. I was not deterred. Sea shells led to pale flower-like formations I had no name for, which I now know were coral, and which I wanted so badly that I bought pieces of them, one by one, until my bedroom had become its own small reef: a fisherman's net hung across one wall, sea stars pinned up, a dried seahorse, urchins, shells, whatever coral I could find. Every Christmas my family knew exactly what to get me — a semiprecious stone, another shell, another book. One of the first was Cousteau's account of the Red Sea, and I went through it until the spine gave out.

But the collecting was never really the point. The point was being in the water. In winter, back home, I would forget the whole cabinet of treasures the moment I could get a mask on and go looking for more of it myself. My stepfather liked to fish, and some afternoons we sat on the docks together catching mostly inedible things, but catching them all the same. In Greece I spent whole days in the water after octopus and urchins. With another branch of the family, in Brittany, I learned an entirely different sea — going out behind the retreating tide for crabs, small shells, mussels, whatever the sand gave up.

I did not see an actual coral reef until I was twenty-two. Within a week I had learned to dive, and for the next two years I was in the water three times a day, every day, without exception. On the days the sea was too rough to take a boat out, I strapped a tank to my back, got on my silver Vespa, and rode to the old dumping grounds instead, hunting port bottles and ink bottles and clay pipes in the rubble. The reefs of Bermuda are not famous by any world standard — the diversity is genuinely low — but they sit at the highest latitude of any reef on earth, kept alive by the Gulf Stream's warm water, and I did not know enough yet to care that they weren't spectacular. I dove the same sites so often I made actual friends there. I still had the collecting habit in

me, and the law said you couldn't take a live shell, so I found my way around it: I knew an octopus that kept to the same hole, and I would leave an empty shell at the entrance of its lair and come back a day later to find it cleaned out for me. I tamed a fat green moray eel over that same stretch of reef. My apartment filled up with what the wrecks around the island gave up — cannonballs desalinating in the toilet cistern, copper nails, brass spikes, bottles of every age — until the place looked less like a home and more like a pirate's hoard. Within a month I was working the dive shop as an unofficial divemaster, without the certificate to prove it, because I already knew the reef by a kind of inner compass and could find my way back to any formation I had once seen. I was reliably the last one out of the water, and I dove alone more often than not.

From Bermuda I moved to Florida for my instructor's licence, and it was only there that I understood how lucky those first two years had actually been — diving in Florida was a business, run like one, and the romantic idea I'd been carrying of diving as a kind of brotherhood mostly evaporated on contact. But there was still a reef to learn, a different one this time: the length of the Florida Keys up to Jacksonville, freshwater springs, mangroves at night, seagrass flats thick with manatees and the occasional alligator. I rode a giant sea turtle once, without meaning to. I swam through a school of eagle rays that I still see clearly when I close my eyes. I dug fossilised teeth from extinct giant sharks out of the limestone on the west coast, and found shells there that don't exist anymore. Without ever deciding to, I was building an entire education in reefs — not always as a bystander. I taught a few people to dive in those years, but I loved the water too much to ever turn it into a business the way everyone around me had.

And then I was waiting, without knowing yet what I was waiting for. I was waiting for a black ship to come and take me away.

I did not arrive at a coral reef in Bintan by any straight line. I first met the Heraclitus in Miami, in 1995, without any idea what she'd eventually cost me or give me. Not long after, we took her through the Red Sea at ten knots, dolphins riding the bow wave, the sun coming up over the Sinai where Moses is supposed to have come down with the

commandments that shaped everything after him. I wrote, at the time, that the journey east had only just begun, that we were headed toward our own initiation with the sea — diving, and in a way, coming home. I did not know yet how literally that would turn out to be true.

Three years after Miami, in 1998, I was helping rebuild and sail her — an eighty-five-foot ferrocement junk out of the Institute of Ecotechnics — starting on a dry dock in Darwin, Australia, with almost no money and a deadline nobody believed we'd make. We poured cement onto her deck like wet concrete onto a wound, hands laced open by the wire mesh underneath it, and kept it wet around the clock so the structure would hold. Someone at a party the night before the big pour dosed a cake heavily enough to put elephants into a trance, and by some blessing from somewhere the cement itself refused to set properly that night, which probably saved the pour. I remember thinking, even then, half out of my mind with exhaustion: without the threat of falling, we wouldn't dance at all.

By 2006 there were two ships instead of one, and I was in Singapore learning to love a new one while the Heraclitus stayed lodged somewhere permanent in my chest — hoisting hundred-and-fifty-kilo steel cables thirty metres up with nothing but rope and rigged ladders, breathing smoke from forest fires burning across the strait in Sumatra, watching six pallets of a year's provisions come aboard in a human chain. A symbiosis is necessary for a life at sea, I told myself. You learn to let go of one thing while you learn how another one moves.

Somewhere in the middle of all of that, years before I ever set foot on Nikoi, I wrote down a list of plain facts about fish and money and time, because I'd noticed that nobody arguing about overfishing was actually thinking it through in order. There is less fish than ten years ago. There are more people than ten years ago. Everyone needs more money than ten years ago. Two fish will spawn millions of eggs; one fish alone cannot spawn; if I leave the fish in the sea, they'll grow. The economics of it never followed the plain arithmetic, and by the time I got to Bintan, I already knew that whatever I did here would have to work with people's actual incentives rather than against them, or it

would simply fail the way every lecture about conservation I'd ever sat through had failed.

I tell you all of this because none of what follows — the cuttlefish, the storms, the turtle nests, the proposal — happened to someone encountering the ocean for the first time. It happened to someone who had already spent most of his adult life learning, the hard and physical way, what it actually takes to keep something afloat, and who had already decided, a decade before he ever saw Nikoi's reef, that the sea was owed something back for everything it had given him. Nikoi is simply where I finally got to spend that debt on one particular, specific, shallow, murky piece of water, instead of on the abstraction of an ocean too large to actually love.

## **You Only Protect What You Love**

*November 2011*

Most people think of the sea the way they think of the moon or Mars: a place that exists, technically, but has nothing to do with them. I understood this properly for the first time not underwater but on the beach, watching fishermen's children play a few metres from a drift of plastic rubbish that had washed in overnight, entirely unbothered by it, because it was simply the world they had been born into. Nobody had told them it was supposed to look different. I realised then that I do the same thing underwater, every single dive — I edit with my eyes what I don't want to see. I find the one healthy coral head in a field of rubble and I photograph that. By nature, if you are passionate about something, you learn to look past the wreckage of it. I have watched myself do this in so many places, and I no longer think it's dishonesty. I think it might be the only way anyone stays underwater long enough to do something useful.

The people who make the documentaries send a crew of a hundred to the far corner of the earth to capture four exciting minutes of footage, and everyone at home nods and says the ocean is dying, and then they go back to not thinking about it, because it is still the moon. Meanwhile the people who actually live beside it — the fishermen anchoring their kelongs off Bintan, the families who have never once put a mask on and looked below the surface of the water they were born beside — have even less reason to love a place they've never seen. You cannot ask someone to protect a stranger.

You only protect what you love. Not what you're afraid of, not what a report tells you is declining eleven per cent a year. What you love. I am seeking hope to contradict the parts of my own mind that already know how this usually ends. It is not all finished. It is not all doomed. There is a chance to recover — but only if enough people are given a reason to fall for this place the way I did, by seeing it, by being shown a cuttlefish laying eggs in a coral head or a seahorse curled around a night-dive torch beam, close enough that the moon or Mars stops being the right comparison.



## The Shallow Kingdom

The reefs around Nikoi sit on the Sunda shelf, which means they are shallow — nowhere deeper than about twenty metres — and that shallowness explains almost everything else about this place, good and bad. Strong tides move through here constantly, scouring the bottom, stirring silt off the seabed and out of the rivers on the Sumatran and Bintan coastlines, so that for most of the year you are lucky to see five metres in front of your mask. It is not the water people fly in expecting. There is no vast blue drop-off, no wall of thirty-kilo trevally cruising past out of the murk, because the shelf is too shallow and too shifting to hold the big pelagic congregations you get elsewhere in this ocean.

What it holds instead is everything else. In the space of one short boat ride you can cross fringing reef into mangrove flat into sand flat into rubble patch into seagrass bed into a garden of soft coral hanging off a granite boulder, through swim-throughs and under ledges, each with its own particular residents. I have come to think the murk is not a defect but a kind of screen — it keeps this place off the postcards, which has meant, until recently, that it was mostly left alone by anyone except the people already living beside it.

Most of the reef here shows the marks of having been fished hard for a long time. But since the resort began and a few zones went quiet, groupers have started coming back into water they'd abandoned. Coral cover is, on the whole, healthier than you'd expect, except right along the beach itself, where the sand shifts with the seasons and buries what tries to grow there. Crown-of-thorns starfish turn up occasionally but not in plague numbers. Sea cucumbers — a commercial species almost everywhere else on this coast — still crawl across the sand near the jetty, mostly because the fishermen who might otherwise take them have quietly agreed not to, at least here.

None of this makes Nikoi special in the way a coffee-table book about coral triangle superlatives would want it to be. It is a shallow, murky, overworked, still-recovering piece of shelf reef, and I would not trade it for a cleaner postcard reef anywhere. It rewards the kind of looking

you can only do slowly, over years, which is the only kind of looking I know how to do anyway.

Nikoi sits at the outer edge of what marine biologists call the coral triangle, the stretch of the Indo-West Pacific between the Philippines, Indonesia and Papua New Guinea that holds the richest concentration of reef life on the planet — a hundred and seventy-five species of butterflyfish and angelfish alone in these waters, against fifteen in the whole Atlantic. The Atlantic has about sixty species of coral. The Pacific, on our side of the world, has over seven hundred. We are on the outer rim of the richest ocean real estate there is, and it shows the moment you put your face in the water.

Many of the reefs closer to the Bintan mainland have already collapsed, with no realistic hope of fast recovery. Nikoi, by contrast, still holds enough of nearly everything — not unlike Noah's ark, if I can borrow an image that isn't originally mine — to make a real case for protecting what's left before the balance tips the other way for good.

## War on the Reef

People who have never been underwater imagine a coral reef as something peaceful. It is not. Look at any healthy patch of it for more than a minute and you are watching a war, fought in extremely slow motion, over the single resource every sessile animal on that reef needs and cannot get more of: space.

When two coral colonies grow to within about two centimetres of each other, they can sense one another chemically, and one of them will throw out its own digestive tissue and simply start eating its neighbour alive, leaving a bleached no-man's-land of bare skeleton behind as it advances. You can see the scar tissue of these border wars all along the crowded reef near I Pod Rock, and past the mangrove, white margins tracing exactly where one colony's mucus strands have spent months quietly consuming the coral next door. The slow growers tend to be the most aggressive; the fast growers are more likely to survive by being subordinate, defending themselves with chemical weapons of their own or with sweeper tentacles that come out only at night, so that the entire war for sunlight and territory takes place, every single evening, under cover of darkness.

Then there are the invaders from outside the ordinary rules. The crown-of-thorns starfish feeds at night, ejecting its entire stomach through its mouth so the digestive enzymes reach the coral tissue directly, well before any of it would otherwise reach the animal's mouth — it can clear about two square feet of living reef a day, moving from colony to colony leaving nothing behind but skeleton. I have counted only two crowns-of-thorns in an entire circumnavigation of Nikoi, which is a genuinely good number, though I know there will always be more than I've actually seen.

Not everything here is predator and prey in the way you'd expect. *Fungia*, the mushroom corals, are not permanently fixed to the reef at all — when the current is right they extend their tentacles like the sail of a small ship and simply travel with it, and if a wave turns one upside down, it can right itself by expanding and contracting its own body until enough water has shifted to one side to flip it back over,

sometimes helped along by a tiny worm that lives in a cavity on its underside for exactly this purpose. Watching a mushroom coral right itself, slowly, stubbornly, over the better part of an hour, taught me more about persistence than most of the conservation literature I've read.

Cuttlefish here have their own reputation for ruthlessness that the cuddly camouflage videos never show you. I once watched one work through an entire fish trap on the reef left of the jetty, attacking and eating the stingrays and every other small fish caught inside it, until it was the last thing left alive in the trap after a full week — an animal small enough to sit in your palm, functioning as the apex predator of its own accidental aquarium.

Sea cucumbers, by contrast, are the reef's unglamorous janitorial staff: a single animal can pass something like two hundred pounds of sand through its body in a year, extracting whatever organic matter is worth having and putting the rest back into circulation, one of the most effective waste-treatment systems in the sea and, not coincidentally, one of the most heavily poached — easy to find, impossible to outrun, worth real money the moment it's boiled and dried.

Clownfish run their households on a rule that still strikes me as sensible every time I explain it to a guest: every individual is a hermaphrodite, the largest and most dominant fish in each anemone is always female, and the moment she dies, the largest male simply changes sex to take her place while the next-ranked juvenile matures as fast as it can to become the new breeding male. There is no vacancy, no succession crisis, no wasted generation. The colony just adjusts.

And green turtles, digging their nests above the tide line at the end of an exhausting crawl up the beach, appear to cry while they do it — tears running visibly down their faces in the torchlight. It isn't grief. It's almost certainly a way of keeping the eyes moist and the sand out while they work. I know that. I still find it very hard to watch without feeling something anyway.

None of this is peaceful. All of it, taken together, is what a healthy reef actually looks like — constant construction, constant war, and just

enough resilience most years to still be standing come the next monsoon.

## A Walk Through the Reef

If I had to take you underwater myself, dive by dive, this is roughly how the tour would go.

We'd start at the House Reef, right off the jetty in shallow water, where a fringing reef holds a whole field of sea anemones with their resident clownfish, families of them, close enough to the surface that you barely need to descend to find your first one. The algae here grows thicker than it should, a straightforward symptom of fishing pressure removing the grazers that would otherwise keep it in check, but look past that and there is a genuinely strange cast of characters: cardinal fish and soldierfish tucked into every crevice, schooling fusiliers moving overhead in a single silver sheet, and if you are patient and lucky, a giant pipefish holding dead still against the sand, or a baby cuttlefish the size of a thumbnail, or a bright green filefish doing its best impression of a piece of drifting weed. In the sandy patches between coral heads I find gobies, flatfish, nudibranchs — the House Reef is where I bring people who want to understand what sediment does to a reef and what recovery looks like when it's given even a small chance.

Further out, past the pool, there's a site the dive team started calling Magic Behind the Pool, which holds up better hard coral cover than you'd expect and turns into a genuine spawning ground in season — clouds of juveniles moving through, big angelfish patrolling underneath them — though it only opens up properly during the southwest monsoon, when the current lies down enough to dive it safely.

Out at Yogi Outcrop, a hundred metres offshore, submerged boulders catch whatever current is running, and when the visibility cooperates you get big trevally slashing through, sweetlip holding steady near the rock, angelfish, and near-permanent shoals of anthias flickering over the top like static. I Pod Rock is fiercer water but worth the current: ledges carpeted in fully bloomed yellow Tubastrea coral, big sweetlip and grouper working the shadows, cuttlefish, blue-spotted stingrays tucked into the sand, and down around sixteen to eighteen metres,

gardens of sea whip swaying in a current strong enough to make you hold onto the rock with one hand and take photographs with the other.

The Cave Rock is a cluster of boulders honeycombed with soft-coral caves, home to schools of sweepers and big parrotfish — on one dive there we counted twelve blue-spotted stingrays in a single circuit, which even after years of diving here stopped me in the water. The Last Rock earns its name from the current, not the geography; turtles — greens and hawksbills both — use the lee side of it to simply rest, tucked into the cracks between boulders where soft coral has taken hold. Jetty Dua is a gentler southwest-monsoon site, anemones and clownfish, patches of seawhip, shallow hard coral — until the northeast monsoon turns the same spot dangerous with breaking waves. Out at Mini Drop Off, boulder formations lead down to an eighteen-metre trench where big angelfish and sweetlip cruise past enormous stingrays lying half-buried in the sand. And at what the team named Turtle Hang Out, the reef is close to untouched — seawhip gardens, crevasses I still haven't fully explored — and what may honestly be the last lobsters left on this stretch of coast.

None of these are dramatic reefs by the standards of a diving magazine. They are shallow, current-swept, sometimes murky, patchworked with damage and recovery in the same coral head. But I have dived every one of them more times than I could count, and each still shows me something I hadn't seen the time before.

## Five Kinds of Water

It took me longer than I'd like to admit to stop thinking of "the reef" as one thing and start seeing it as five or six different neighbourhoods stitched together by tide.

The soft coral gardens are the ones people photograph — seawhips rising off granite boulders and off bare sandy rubble alike, thick enough in places that identifying species properly means collecting a sample and putting it under a microscope, because from a metre away half of them look the same shade of ripping current-fed purple. The tidal current that makes visibility so unreliable here is the same current that feeds these gardens; you cannot really have one without the other.

Then there are the sand banks, which look, to anyone glancing down at them, like nothing at all — flat, pale, empty. They are not empty. Baby cuttlefish hide there, sand anemones, giant pipefish standing on end to look like blades of grass, stonefish doing what stonefish do, which is disappear in plain sight, and sea stars scattered across the bottom like something dropped from a great height. Some of the strangest animals I have found on this reef, I found on sand that a less patient diver would swim straight over.

The seagrass beds hold the bottom together in a completely different way, stabilising sand that would otherwise shift with every tide, and they support their own cast: cephalopods, filefish, tunicates, gobies, eels — and, critically, they are food. Green and hawksbill turtles both nest on our beaches, and it's the green turtles that come back to feed in these seagrass meadows — hawksbills favour the sponges out on the reef instead — so the health of the grass and the health of the nesting beach are tied directly together in a way that is easy to say and much harder to actually protect, since a seagrass bed doesn't photograph as well as a coral head and so gets a fraction of the attention.

The fringing reefs are the hard coral you'd expect, bordering the island itself, at their best on the northeast coast where conditions stay relatively pristine, and again on a shallow northwest bank between three and six metres, though what grows there shifts season to season as water clarity and light come and go with the monsoon.

And then there is the open sea beyond all of that, which I can't survey the way I can survey a reef — I can't put a transect line through open water — but which sends things to us anyway, usually after a storm: jellyfish stranded by the hundred on the beach, purple sea snails that build their own bubble rafts to ride the surface and hunt those same jellyfish. The open sea is the part of this ecosystem I understand least and think about most, because everything that happens out there eventually washes up at my feet.

## Reading the Current

Most divers ask for clear water and a gentle drift. I have come to think there's a different, better mood available — diving strong current with no visibility at all, not knowing what the next metre holds. It is the closest thing this reef offers to a deep decompression dive's particular darkness, minus the depth. Plankton-thick water, moving fast, feels less like swimming and more like flying through some small local cosmos, and what you actually see depends entirely on where you let your eyes settle. So much of it comes down to that — attention, and what you choose to give it.

In heavy current, the fish are fighting it too, which changes what's possible. Species that would normally keep their distance end up pinned close beside you, both of you working against the same push of water. Watch a soft coral fan in full bloom, bent nearly flat under a three-knot current and still feeding — you can shelter behind it for a moment, the same trick the fish use. Closer to the reef or the bottom contour, the current breaks apart into small eddies, and if you follow them instead of fighting the main flow, you can actually work your way upstream, eddy to eddy, toward the next calm spot.

Fighting the current directly is a waste of air. Better to use the counter-current together with fin power to move sideways instead, body held loose and undulating, offering as little resistance as possible — look at a sea whip in the same water and you'll see it's already solved this problem perfectly, holding its ground on almost nothing. Don't be afraid to roll, to turn full circle, using your own body as a sail when you need more resistance rather than less, the same principle a sailor uses trimming a sheet. If there's air in your BC, know exactly when you'll need the inflator hose in hand. Play with your own breath — when to exhale, when to hold, when to let a touch of BC inflation do the rest — until the two are tuned to each other.

And watch the mantas, when you're lucky enough to have one in a current pass like this: they do full back flips in it, riding the turbulence on purpose, somersaulting to build momentum and using it to drive themselves back down close to the bottom, following the contour the

whole way. Your own arms become balance devices in water like this, hands acting almost like bow thrusters, a coordination between arms and fins that lets you steer sideways when nothing else will. It takes a while to trust it. Once you do, strong current stops being something to survive and starts being something to read.

## **PART TWO: THE PEOPLE OF THE EAST COAST**

## Is There Anything More?

*January 2012*

The storms came through last Christmas harder than anyone remembered, and they didn't just take our north jetty — up and down the mainland coast of Bintan they tore out kelongs, wrecked the long piers fishing families depend on, and buried whole stretches of beach under debris and plastic that had been sitting somewhere offshore, waiting for exactly this kind of push. I spent the weeks afterward doing what I always do after a bad storm, which is clean, and somewhere in the middle of it I found myself thinking: we are living in the oil civilisation. Take away everything directly or indirectly made from oil — every piece of plastic, every tin of paint, every synthetic rope and float and flip-flop — and look at what's left on this beach. Not much.

Some days the sand disappears completely under what the storm brings in. Tar shows up more often than it used to, thick black clots of it that stick to everything and take real effort to get off your hands, evidence of something being flushed or dumped well offshore, entirely outside our ability to prevent it. The plastic bottles and fishing line and polyester floats and light bulbs are one thing — you can pick those up. What worries me more is what the storms have done to the beach itself: the sand has moved, season on season, enough that both the green turtles and the hawksbills that nest here are choosing different stretches than they used to, and I don't fully understand yet what that will mean for them.

What keeps me from simply despairing about it is that we are not doing this alone anymore. Students from the Marine University of Bintan have started coming out to help build a proper long-term monitoring programme, week by week, for the benefit of the reef rather than for a single research paper. And I have started allowing myself to say, out loud, what I actually want: a no-take zone off Bintan's east coast, a stretch of water where nothing gets pulled out at all. I know already that this will never happen through government enforcement alone — there simply isn't the will or the manpower for that, not here. It will only happen with the fishing community itself

deciding it's worth doing. That is the harder, slower path, and it is the only one I actually believe in.

## New Sheets on the Bed

*February 2012*

Jaslan holds the rope on the north side of the jetty while I go down after the wood — old wooden debris that's been rotting into the reef there for who knows how long — and Darto manages the retrieval up top with two of the others, hauling each piece up as I send it. It's not glamorous work. But partway through, I notice something that stops me mid-task: anemones have colonised some of this waterlogged timber, actual living anemones, taken hold on wood that's been down there long enough. We relocate them to natural reef instead of hauling them up with the rest of the debris, and the clownfish that live in them come along for the ride, visibly unsettled and then, within minutes, visibly not. I hadn't known an anemone could be moved and simply carry on. You learn something new almost every time you do this kind of ordinary maintenance work, which is most of what conservation actually is.

Before any of the guests are awake, every single morning, someone from the team is out on the beach picking up what came in overnight — plastic bottles, general debris, drifting algae, and, often enough now, tar. It is like putting brand new sheets onto a bed, and the turtles — green and hawksbill alike — love it. I mean that literally: a clean, unobstructed beach is what a nesting turtle needs, and every bottle or tangle of fishing line we leave in the sand is one more obstacle between her and a safe nest. It is repetitive, slightly absurd work — clean the same beach every single day, forever — and I have never once managed to talk myself into resenting it.

Two days running now we've had dolphins passing close to the island, which is not something I take for granted here. Between the anemones, the dolphins, and the plain physical satisfaction of clearing a beach by hand, it was, on balance, a good week to be doing this job.

## The Fishing Community

The fishing communities strung along Bintan's east coast are not a footnote to this story. They are the story, as much as any reef or turtle nest — the ocean's future here runs through them or it doesn't run through anywhere. At Kawal, the port nearest to us, two separate fleets work out of the harbour close to the river mouth: Bugis captains, Bajau fishermen, families who've come from all over eastern Indonesia and settled here over the generations, a genuinely mixed community built entirely around the water.

Most of what they're after is ikan bilis, small fish, caught from kelongs — floating platforms that get towed between fishing grounds depending on the season and the run of fish. The whole rhythm of it happens overnight: boats out after dark, catch brought back and processed on shore in the early morning, sorted by hand by families working together, size and species and quality, kids included in every part of it because there's no part of this work that doesn't need extra hands. From there it goes to market in Tanjung Pinang.

Nikoi itself sits inside this working landscape rather than apart from it. Fishermen use the island as an anchorage when the weather turns, and in all the years I've been here they have been, as a rule, extremely respectful of it — a trap here, a net there, never anything close to the pressure they put on open water elsewhere. I don't think that respect is an accident, and I don't think it's permanent either. A relationship like that has to be maintained, actively, by both sides, and I've come to believe it matters for reasons well beyond this one reef: if a working fishing community and a small conservation-minded resort can build something workable together here, on this unglamorous stretch of coast, it's a case for what might be possible up and down the rest of Bintan.

I can set my watch by it. The sound of a motorcycle coming down the track, low tide, and the fishermen arrive to hunt the shallows in front of my house — it has become its own kind of biological clock. There are regulars. One man spent the better part of a month building a small kelong out of sticks he carried in from the forest, a few at a time,

until it stood on its own. He checks it almost every day now, and most days he comes up with cuttlefish.

One afternoon he came up with nothing but a complaint instead — dead fish everywhere, and the reason was tuba, a plant poison some fishermen use that kills indiscriminately: not just the fish you're after, but their eggs, the reef itself, anything living nearby. It's an offence that carries up to three years in prison, on paper at least.

Another regular, older, used to fish these same waters back when Nikoi still had its own permanent kelong. He remembers something worse than tuba — the dynamite years. “We used to catch big king mackerel between Nikoi and Bintan,” he told me. “In one night we would pull two hundred, sometimes three hundred kilos of red snapper, five-kilo fish, easy.” He says it without any particular anger, the way you'd describe weather that doesn't come around anymore. It is the closest thing I have to a baseline for what this reef held before anyone I know was watching it.

If it doesn't harm the fish, is toxic fishing even bad news — for the fish? No regulation, at the prices these species now command, was ever going to be enough to let them survive on its own. A few slip through the cracks, but the more their market value climbs, the more resources go into finding and taking them anyway, and the technology keeps getting better at doing exactly that. So: toxic fish. Bad news for who, exactly? Not, in the end, for the ones asking the price.

## The World of Jong

"You need to get married with your Jong," Zakir told me, late one night, sipping coffee on the beach. I first met him on New Year's Day, watching him sail with a few friends while a crowd of kids ran along the sand — the sails caught me the way they seem to catch everyone, like a magnet. I have always loved sailing, not just the boats themselves but the whole spirit that moves people to go be with the element and brave the sea, and a Jong, I would learn, is a genuinely seductive way into that spirit.

A Jong is a small unmanned sailing boat, and in the western sailing world we always call a boat "she" — with a Jong, that habit turns out to be more literal than a habit. You start by flirting from a distance, watching them, curious, inspecting. You strike up a conversation with the owner and get a glimpse of the boat's name and its personality. Eventually, the way these things go, I got married too: I bought two Jong during a racing event in Teluk Sebong, off the Jong makers of Bengalis in eastern Sumatra, with Zakir choosing them for me the way a matchmaker would choose a wife. We renamed them together — he picked Bule Kampong, "the white man from the village," and I'd originally wanted Planet Samudra, ocean planet, before we cut it down to simply Planet.

The design itself is older than it looks. It predates the arrival of Islam on this coast, rooted instead in the animist world of spirits that came before — Jong were first built to send gifts of betel nut and other sacred food out across the water, before the tradition evolved into the racing art form it is today. The design stays fixed even as builders keep finding new ways to improve it: rooted in geometry and symmetry, based on the proportions of the human body. Zakir and I spent a lot of nights, together and separately, speculating on the mysteries that still surround the world of Jong. They belong, more than to anyone else, to the Orang Suku Laut, the original sea nomads who once controlled these waters and went on to become something like the navy of the Malay sultanates, and something like their court magicians too. Even now, ordinary Malays speak carefully around the power of Orang Laut

magic. You do need a kind of magic to properly sail a Jong. You need, Zakir told me, to keep your heart clean.

We organised our first race together in Teluk Bakau, in March 2013, on the northwest monsoon, purely to see whether the local community could rise to something this logistically strange. It could. What was meant to be a small event grew until four villages were competing, and the evening ended in a dance nobody had planned. All of it ran on gotong royong — people doing things to help the community and each other, no other reason required. From there we settled into a rhythm the seasons themselves seemed to hand us: a utara race for the northwest wind, a selatan race for the southeast.

By six in the morning on a race day, the whole crew is already up: poles going into the sand, a last sweep of the beach, chairs and food arriving before most of the island is awake. By seven the first Jong start arriving too — some by car from hours away, some by bike, some on foot — until the beach is a genuine field of colour, over a hundred boats open and drying in the sun, more than eighty of them about to fight through the preliminaries into the finals. I raced in it myself, boat number 27, walking Bule Kampong to the line with ten others waiting on the whistle. *Satu, dua, tiga* — go, together with the whistle, wind strong enough that the whistle was the only thing I actually heard over it. Bule Kampong took third in her heat, enough for the final. Planet, my second boat, was a wilder animal entirely — bigger, harder to hold, and true to form she rammed a friend's boat mid-race, the friend we all call Kacamata for his thick glasses, and still somehow limped across the line in time to qualify.

In the final, Bule Kampong took an early lead, let Zakir's own boat slip past her right before the line in a move I still can't fully explain, and finished second. Planet, having just rammed her way clear of the boat she'd collided with, found an unbelievable closing sprint and came third. I couldn't quite believe either result. Luck, that day, walked beside me the whole way down the beach.

What I keep coming back to, though, is not the racing but who shows up for it: the oldest villagers down to children barely old enough to hold a Jong steady in the wind, whole families turning out behind

their own village's colours, students from the maritime university wandering through taking photographs between heats. It is a competition with no carbon footprint at all, an art of precision and attention built entirely from materials you can find at home, and it is, more than anything else I do here, a tradition kids are visibly starting to want for themselves. That, more than any single race result, is the part that will decide whether any of it survives another generation.

## The Utara Race

The 2015 utara race celebrated the northeast monsoon and its long run of clean, reliable wind, and it was, by any measure, the biggest one I'd seen. Twelve villages from around Bintan each brought ten boats to the beach — a hundred and forty Jong laid out in the sand at once — and by the time registration closed the organisers had actually had to turn people away, which had never happened before. Groups of ten were released together toward the beach, the fastest three from each heat advancing to a semifinal for trophies and prize money that actually matters to the families competing for it.

The wind that made the racing so good also made it brutal: gusting past twenty knots at points, hard enough to blow out cheap plastic sails and put more than a few boats out of the race entirely before they'd covered any real distance. Children handled setup and rigging rather than racing themselves, learning the boats from the ground up the way everyone before them had. Whole families turned out behind their villages, and this year there were visitors from well beyond Bintan too, drawn by word of what this had become — Nikoi, the Biosphere Foundation, the local tourism department and others helped put the day together, but it never once felt like an event that belonged to sponsors rather than to the villages themselves.

Every boat on that beach had a name and a paint job that meant something to whoever built it — some carried rocket designs, some needlefish, decoration running the full spectrum from old-fashioned to defiantly modern, and it struck me again, watching a hundred and forty of them lined up together, that a Jong really is an entire naval architecture tradition you can build at home with materials on hand, refined over generations by people racing each other on a beach for the sheer occasion of it. I don't know how many more of these races I'll get to watch. I know I'll keep showing up for as many as I'm given.

## **PART THREE: CREATURES I HAVE KNOWN**

## Cuttlefish Season

Every year, without fail, there comes a stretch of weeks when the cuttlefish move onto the reef to mate and lay their eggs, and every year it stops me in my tracks the same way it did the first time.

The first season I properly documented, in March 2012, the visibility had finally cleared after weeks of bad water, and there they were — I counted six in a single afternoon, which felt, and still feels, like a genuine sign of health in a reef under constant pressure. I noticed straight away that the spearfishermen had noticed too; that's the uncomfortable truth about a cuttlefish season, that its abundance is exactly what makes it vulnerable. A few weeks later that same year I found one working a specific ability I hadn't fully appreciated before — not just changing colour but changing texture and shape, holding itself against a strand of drifting seaweed and mimicking that one specific thing rather than the reef in general. I hadn't thought to photograph the actual seaweed alongside it for comparison, and I regretted that for a long time afterward. Small fish drifted around it the whole time, unconcerned, which told me as much about the health of that patch of reef as any survey could have.

By January 2014, in the roughest visibility I'd worked in for a while — under a metre, in the grip of a strong northeast monsoon — I found six more individuals on one dive, females depositing eggs into the branching structure of hard coral, each egg a small white pointed sac, like a round teardrop, tucked carefully out of the way. Even in that kind of visibility, local fishermen had found them and were spearing them straight out of their spawning aggregation, taking advantage of exactly the vulnerability that makes this season so remarkable to watch. It is hard to reconcile the two facts sitting next to each other: that the population is resilient enough to keep coming back to spawn here year after year, and that every single season, someone is waiting with a spear at the one moment they're least able to defend themselves.

That September, on a completely different dive, I watched a female prepare her clutch properly from start to finish. She built each egg inside a kind of bubble casing with a fine filament trailing off it, then

used jet propulsion to drive the whole cluster into an anchor point inside a small cave — a level of deliberate construction I hadn't fully appreciated until I watched it happen slowly, over most of an hour, with her mate stationed directly above her the entire time. Male cuttlefish guard their mates like this quite openly, positioning themselves on top during egg-laying specifically to keep other, smaller males from getting near her — cuttlefish being, among other things, three-hearted, colour-shifting, genuinely intelligent animals capable of a kind of tactical thinking that still catches me off guard. By the time I'd been in the water with that pair for the better part of an hour, they had both stopped registering me as any kind of threat and simply continued what they were doing. I went back an hour later with a buoy to mark the exact spot, and I like to think they recognised me on the second pass. I have no way to prove that. I believe it anyway.

Not every season brings only the expected cast. In March of that same year, a single lionfish turned up on the reef for the first time — worth noting for exactly the reason it's unsettling, since lionfish are not native to these waters and, wherever they do establish themselves, tend to become a genuine problem for the smaller reef fish around them. One fish is not an invasion. But it is the kind of thing you write down and keep watching.

## **A Few Treasures From a Single Dive**

Some dives don't have a single headline event. They're just an accumulation of small, specific things that, taken together, tell you the reef is still working the way it's supposed to.

On one otherwise ordinary dive I found juvenile coral establishing itself in a spot that had been bare rubble not long before — new growth, small and easy to miss, but exactly the kind of thing that means recovery is possible rather than theoretical. Nearby, an old sweetlip that I recognised from previous dives was doing what old sweetlip do, holding dead still against a ledge, relying on stillness rather than speed to avoid being noticed at all. A cowry shell I'd been tracking for a while had visibly grown since my last pass, slow proof that something on this reef is still allowed to simply get bigger over time. And flatworms were working over a patch of soft coral nearby, unhurried, doing the unglamorous business of being a predator that nobody writes songs about.

None of this makes for dramatic photography. But put it all together — new coral, an old resident still holding its territory, a shell that's grown, a predator doing its normal work — and you have a reef behaving the way a reef should, which after enough years of counting the other kind of dive, the kind where you mostly catalogue damage, is its own small kind of treasure.

Another dive, further along the same stretch, brought a genuinely strange gathering: more than twenty black-and-white nudibranchs congregated on a single wall, laying their eggs in the tight spiral pattern that species uses, drawn there in numbers I still can't fully explain — something about a particular blue sponge on that wall seemed to be the attraction, though how twenty individual nudibranchs converge on one wall to find each other in the first place remains, to me, one of the genuine mysteries of this reef. At twenty metres on the same dive, most of the seafans and seawhips were showing signs of bleaching, and I noted at the time that heat stress alone probably wasn't the whole explanation — disease and viral pathogens likely playing some part too, layered on top of whatever the

temperature was doing. I also finally solved a small mystery that had bothered me for years: I found the actual predator responsible for opened oyster shells I kept finding scattered around the reef, having wondered for a long time who on this reef was capable of getting into an oyster at all. And tucked under a ledge, entirely unexpected after all my previous surveys of that exact spot, a mini school of roughly twenty batfish had taken up residence, sheltering from the current. You can survey a patch of reef for years and it will still show you something new.

## **The Flatworm's Feast**

I found a single flatworm working over an alcyonarian soft coral that had been uprooted, probably by current or by a careless net, and left exposed on the rubble. The flatworm had it half consumed already by the time I found it, moving over the tissue with the specific patience predators like this always seem to have, unbothered by my torch or my presence a few centimetres away.

What stopped me wasn't the one flatworm. It was noticing more of them approaching from what I estimated to be thirty metres away, converging on the same exposed coral from multiple directions at once, as though something about a dying alcyonarian sends out a signal legible to every flatworm within range. I don't know what that signal is — chemical, presumably, something dispersing through the water that I have no way of detecting myself — but the coordination of it, predators arriving from thirty metres out to a single point, is the kind of thing that makes we wonder how much of this reef's actual communication network is entirely invisible to me, no matter how many hours I spend looking at it.

## Night Visitors

Jaslan's first night dive was in front of the main jetty, under a full moon, and somewhere in the beam of our torches we found a seahorse — curled tight around a strand of something, holding its position against the current the way seahorses do, entirely unhurried by two divers hovering close enough to see every ring on its tail. It was a short dive and a short encounter, but it is the kind of first night dive I hope every new diver here gets to have: something genuinely strange, found in the first hour, under a full moon, that tells you immediately why anyone would want to do this again.

A few nights later, hundreds of small pelagic jellyfish washed up on the island's northern beach in a single tide — two related species, the Blue Button and the Blue Bottle, easy to confuse from a distance but critically different up close: the Blue Bottle stings, sometimes badly, and the Blue Button never does. Riding along with them, I found the predator that specifically hunts this exact group: the janthina sea snail, an animal that builds itself a raft out of its own mucus and bubbles of trapped air, then drifts along the surface currents preying on jellyfish it could never chase down any other way. It is a strange, elegant, slightly absurd survival strategy, and finding it stranded on our beach alongside its prey, all in the same tide, felt like being handed a complete miniature ecosystem all at once, washed ashore and laid out for anyone who cared to look closely enough to sort it out.

## **PART FOUR: WHAT THE STORMS LEAVE BEHIND**

## Never Ending Story

*March 2013*

Some problems on this reef never fully go away, they just cycle back around on their own schedule. Nets keep getting caught on the reef structure, usually because the fishermen setting them are careless, or simply inexperienced, rather than malicious — a net dragged across coral does the same damage either way. Bubu, the wire fish traps, get left unattended often enough that they keep catching and killing fish nobody will ever harvest, which is possibly the most wasteful version of overfishing I know of, since at least a fisherman who takes his catch is feeding someone.

And then there's the oil. Tankers pass this coast regularly, and in rough weather or under cover of night, some of them dump waste oil straight overboard rather than pay to have it properly disposed of in port. We've put up a standing offer — five million rupiah to any fisherman who can identify and report a tanker doing it — because that is genuinely the only leverage we have; we cannot police open water ourselves, and the agencies who could rarely have the resources or the will to try.

What keeps this from being a purely bleak entry is that the reef keeps spawning anyway, on its own schedule, regardless of what we're cleaning up around it, and for now the kelongs over on Bintan have gone quiet, which gives everything a little room to recover. It is, as the title says, a never-ending story — not because nothing changes, but because the same fight has to be refought every season, on a slightly different front each time.

## **A Little Gesture of Hope in the Middle of Desperation**

*September 2012*

A single encircling net at Mapur caught nearly everything that swam into it that day — crabs, batfish, angelfish, and a bamboo shark, most of which were simply left to die once the net had done its damage. We found a nurse shark still alive in the tangle and managed, after real effort, to get it free. That was the entire good news of the day. The net itself had completely encircled the rock, an amount of gear and damage well beyond what we could clear ourselves, and reporting it to Coremap — the government coral reef management programme — produced, as of this writing, nothing. Steady wind for two months running has kept us from getting back out there to finish the job properly.

I wrote at the time that this felt like the clearest possible illustration of how thin our actual conservation infrastructure is out here: one net, one rescued shark, and an official reporting channel that simply absorbed the report and did nothing visible with it. The "little gesture of hope" in the title is the nurse shark, genuinely — one animal, saved, in the middle of a scene that otherwise argued for despair. I have learned to let that be enough some days, because the alternative is not doing this work at all.

## The Challenges of Shark Conservation

I want to be honest about sharks here, more honest than most conservation writing usually is, because I think the dishonest version is part of why so little actually changes.

Most of the sharks that end up in local nets here are already dead by the time anyone finds them — bycatch, not targeted hunting, in the vast majority of cases. From there they go to middlemen on Bintan known as tokes, who process them fast: fins removed and dried for one market, meat sold on to Singapore, where much of it ends up converted into shark fin soup products, or, less romantically, into fish ball filler. The fishermen doing this waste almost nothing, in sharp contrast to the big commercial fisheries elsewhere, where by some estimates over sixty per cent of total catch gets thrown back dead as unwanted bycatch. Small-scale local fishing, whatever else is wrong with it, is not the wasteful half of this industry.

I don't believe the sea can be policed the way people imagine — real enforcement at that scale means military-grade surveillance, and in practice that kind of infrastructure tends to end up serving corporate fishing interests rather than conservation ones, which is close to the opposite of what anyone campaigning against shark finning actually wants. And I understand, better than I'd like to, why a fisherman keeps doing this: money is money, and no money, no honey. It is very easy to hold a strong conservation position from a position where your own family's next meal was never actually at stake.

So where does that leave the actual solution? Closer to the consumer end than the fishing end, in my honest opinion. As long as there's a market — and there is a stubborn cultural belief across parts of this region that shark products confer some kind of health or performance benefit, a belief that seems to survive contact with any amount of contrary evidence — someone will keep supplying it, regulation or no regulation. My own list of priorities, in order, comes down to something almost embarrassingly simple: stop eating shark fin. Stop eating shark fin. Stop eating shark fin. I've stopped expecting a cleverer answer than that one.



## **Cleaning Up After Christmas**

*March 2012*

The storms that hit last Christmas were unusually strong, strong enough to take out our entire north jetty and leave us with a genuinely large amount of debris to deal with — including a surprising amount of cement, chunks of old piling that had to be hauled out piece by piece. Rather than simply disposing of it, we recycled the broken pilings into an artificial offshore reef, giving all that dead concrete and timber a second purpose as a substrate other things could grow on.

The cleanup dives themselves turned up more life than I expected to find clinging to wreckage that recent: ten live cowry shells, trochus shells, and a handful of sea anemones, all of which had taken hold on the submerged pilings in the time since the storm. We relocated what we could, and put small broken fragments of coral — casualties of the same storm, dislodged but still alive — back in place on the reef rather than letting them tumble around loose until they died. None of it undoes the damage the storm did. But turning wreckage into substrate, into shelter, into a second chance for coral fragments that would otherwise have simply rolled around and died — that is close to the entire philosophy of how we handle disaster here. You don't get to prevent the storm. You get to decide what happens to what it leaves behind.

## **Magic, Still**

*October 2013 / March 2013*

There are two short entries from this period that I've never known quite what to do with on their own, so I'll let them stand together here, briefly, the way they happened.

The first: a note, more image than words, about the fact that there is still magic here, despite the weight of everything being done to this ocean around us — a reminder I apparently needed to write down for myself in the middle of an otherwise difficult stretch.

The second: the first real, concrete movement toward a conservation no-take zone around Nikoi — an early step, mostly procedural, barely worth its own chapter at the time, except that it was the seed of everything that eventually became the formal proposal later in this book. Some entries matter less for what they say than for what they turn out, years later, to have started.

One more image from around that same stretch of reef, closer to Nikoi itself, has stayed with me longer than either of those posts: a net that washed over a patch of fast-growing *Acropora* and simply stayed there, decaying slowly across a couple of seasons. Some of the coral it landed on fought it and lost, smothered outright. But other colonies did something I hadn't expected — they grew around the net instead, incorporating the dead fibre directly into their own structure rather than wasting energy trying to reject it. The strategy of building with an intrusion, instead of only against it, turned out to be the one that actually survived. I think about that net more than I probably should. It is the closest thing to a working metaphor I've found for how we're managing to keep going out here at all.

## **PART FIVE: GUARDING THE NEST**

## The Turtle Program

The whole philosophy of how we handle turtles here can be summed up in one sentence I say often enough that the team can probably finish it for me: do less to achieve more. Leave nature alone. Stay out of the way if we can. The idea is to facilitate nesting and hatching with the smallest possible footprint on the turtles' own lives, rather than managing them the way a hatchery would.

Two species nest on our beaches: green turtles and hawksbills, the latter listed as critically endangered, which raises the stakes on every single nest we protect. What makes Nikoi genuinely unusual on this stretch of the Riau Archipelago is simple and, when you say it out loud, a little shocking: nobody comes here to collect the eggs. Almost everywhere else on this coast, nests get raided as a matter of course. Here, the overwhelming majority of eggs laid make it back to the sea as hatchlings, purely because we've kept collectors off the beach.

In 2011 alone we counted sixty-seven nests, producing something close to four thousand successful hatchlings — each nest holding anywhere from sixty to a hundred and forty eggs, incubating for about sixty days before the beach starts moving under your feet. The main nesting season runs March through September. Our intervention is limited almost entirely to fencing nests against monitor lizards, the single biggest predator threat we can't simply educate away, and to night patrols so the team can find nesting or hatching events as they happen — which lets us wake guests who've asked to be woken, so they can watch something we consider close to sacred without disturbing it.

That's really the whole educational philosophy in three words: educate by experiencing. You cannot make someone care about a turtle nest with a pamphlet the way you can by letting them stand quietly on a dark beach and watch seventy hatchlings find the water on their own. We record every sighting, photograph individuals for identification over time, and let people witness it — turtle welfare always first, human curiosity accommodated around it, never the other way around.

It's worth saying plainly what we're up against beyond the beach itself: turtle eggs are still sold openly as a delicacy in the markets of Tanjung Pinang, at a price that makes collecting them, elsewhere on this coast, a rational economic choice for someone with few other options. Protecting one beach doesn't touch that market. It just means this particular stretch of sand gets to be the exception.

## A Season of Nests

I keep a running log of every nesting and hatching event, and reading back through a single season — 2012 — gives a better sense of what this work actually feels like week to week than any summary could.

It started on the twenty-ninth of January, the first hawksbill nesting of the year, with hatching projected for around the twenty-ninth of March. Nobody actually witnessed it — Pedro found the nest early the next morning by following her tracks up the sand, checked for eggs, and set the predator fencing before the day's first guests were even awake. Barely a week later, on the fifth of February, our resident monitor lizard won a round I still think of as the reptilian battle of the season: it dug into that same nest overnight and left us only two eggs with any real chance of surviving. We doubled down on the depth of the fencing after that one.

Through February we kept finding turtles surveying likely sites without actually laying — the sand had shifted more than usual that year, and I think they were genuinely shopping for shade and temperature rather than simply picking the first spot they found. Meanwhile in Tanjung Pinang, the traditional market kept moving turtle eggs at four thousand rupiah apiece — more, per egg, than a live turtle itself fetches at five or six US dollars. "People believe it is the local viagra," Jordan told me, which explains a demand no amount of media coverage seems to touch. For families with very little income, the lure of that kind of money is genuinely hard to pass up. On the island, at least, we don't have poachers to worry about. As Yogi put it once, simply, we can do our small part here — otherwise we'd become depressed.

On the twenty-seventh of March, two hawksbill nests went in on the same day, one beside Yogi's bar and one behind the pool, both discovered in time, both projected to hatch around the twenty-seventh of May — Pedro himself witnessed the laying beside Yogi's bar. Then, on the fourteenth of April, the monitor lizard disturbed a different nest mid-laying, and only fifteen hatchlings ultimately made it out of what should have been a much larger clutch, hatching unusually in daylight, at low tide, rather than the night and high tide turtles

normally prefer. Guests were delighted regardless. That same day, on a routine dive, I found a large adult hawksbill resting right in front of the reef by the nesting site — as though she were simply waiting her turn.

May brought two very different surprises. On the fifth, thirty hatchlings emerged three weeks earlier than expected, in full daylight, which is unusual timing by any measure, and more than half the eggs in that nest hadn't developed at all — I noted the unusually high temperatures and an exceptionally bright moon that month as possible factors, though I can't say for certain which one, if either, actually mattered. Then on the twenty-third, in complete contrast, a hundred and seventy-one hatchlings made it out to sea by nine in the morning — one of the largest single releases we'd ever recorded, with guests gathered to watch the whole thing under supervision. Barely a month later, on the twenty-second of June, seventy-seven more hatchlings made it out after we'd put a protective line system in place specifically to give them a clear, undisturbed run to the water.

By September, the season closed with an outcome that still puzzles me a little: no green turtle nests at all that year, for reasons I can only speculate about, but fourteen hawksbill nests, and more than a hundred and fifty hatchlings from them. Every season is different. Every season, I write it all down anyway, because the pattern only becomes visible if you keep the record long enough to see it.

## **PART SIX: THE FIGHT FOR A FUTURE**

## **Pukat Nets, a Disaster in the Making**

There is a kind of fishing net here called a pukat — fine-meshed, extremely efficient, and capable of clearing a reef of essentially everything living on it in a single pass. I feel a genuinely mixed emotion every time I watch one being worked: real respect for the skill and cooperation it takes a crew to land a good catch with one, sitting right alongside the knowledge that the damage it does to that stretch of reef is close to permanent. I've managed, on occasion, to get a crew to promise not to use one here again. Whether that promise gets remembered and honoured is a different question, and the honest answer is hidden somewhere in time I haven't reached yet.

The pressure on the reefs along Bintan's east coast has, by now, reached the point where it genuinely threatens the biodiversity of the whole region. Nikoi is one of the more successful island resorts in the area, drawing an expatriate crowd from Singapore and clientele from Europe and Australia, and none of that would mean anything without the underwater world underneath it — we found this out for ourselves almost by accident, when a test batch of underwater photographs posted to our Facebook page pulled in more genuine, positive attention than almost anything else we'd shared, proof that the sometimes-overlooked pull of marine life on people's imagination is real and largely untapped.

Most of what a pukat net or a wire bubu trap actually removes are grazer species — the fish that keep algae in check by eating it constantly, the way cattle keep a field of grass down. Remove them and algae gets the upper hand fast, choking out the hard coral underneath it. Bubu traps drive off the ornamental species, butterflyfish and angelfish fleeing an area rigged with them, and building the traps themselves means breaking live coral off the reef to make them more attractive to fish. On top of the local pressure, tourist-led spearfishing operators now come through with tanks and imported spearguns, working species like stingray and sweetlip out of the cracks and ledges where they'd normally be safe from local fishermen who mostly can't reach them — not because the visiting spearfishermen are targeting

anything specific, but because they will shoot whatever crosses in front of them.

I understand exactly why this keeps happening, and I try not to lose sight of it even when I'm the one asking a crew to stop. Fishing communities have worked this coast for hundreds of years. A seaman is not going to give up his life at sea and the freedom that comes with it to become a waiter or a gardener, and I'm not actually asking him to — what I want is simply an area where the harvesting stops long enough for the reef to recover. The unspoken rule out here is "if I don't get it, someone else will," and on any given day, they're right. Convincing every single person in a fishing community to hold off is close to impossible, especially when the long-term benefit is real but invisible, and the short-term reality of feeding your children is neither.

Nikoi's own reef is the logical place to start, not because it's more important than any other stretch of this coast, but because it's the one place we can actually monitor properly, with infrastructure already in place, small enough not to meaningfully disrupt the fishing community's access to everywhere else. Protect a half-mile zone here, keep the kelong platforms out of it, and juvenile fish and night-active species get to keep circling the same patch of reef instead of being fished out before they mature — and eventually, once the area is genuinely saturated with life, the surplus starts moving out on its own to repopulate the reefs around it. That is the entire logic of a no-take zone, and it is, in the end, a Gotong Royong principle as much as a scientific one: think globally, act locally, and do it as a community rather than waiting for a government that isn't coming.

## Money Talks

The reef isn't being fished harder than usual. That's what makes it worse — this is the usual, and the usual is enough, on its own, to bring it to the edge of collapse. Divers from a nearby resort came out two weekends running with expensive spear guns and took sweetlip, batfish, big stingrays, whatever presented itself. Then they didn't come back, because there was nothing left worth shooting. I have stopped mentioning, out loud, the handful of big fish I still know the location of on two or three reef patches — I have learned, here and elsewhere, that information like that only ever travels in one direction. Even our own staff, people who fished off the kayaks for pleasure as much as food, have quietly stopped. Nobody told them to. They simply stopped catching enough to make it worth the trip.

Then there are the bubu fishermen, working with compressors, taking anything of value off the bottom without much discrimination — shells included. Coremap, the Indonesian government body specifically tasked with protecting this stretch of marine environment, held meeting after meeting with the villages and put mooring buoys in place at real cost. Fishermen cut them loose at night. Funding dried up, partly to corruption, partly to the sheer difficulty of making any of it stick, and what's left now are signs posted around the area carrying no real information at all, mostly serving a handful of political careers on their way up. We've put our own mooring buoys out since. They tend to disappear too.

One idea worth taking seriously: pay the local community not to fish a given stretch, rather than trying to police it after the fact — agree on the value of the live fish stock with the village itself, and treat that stock, inside a defined zone, as something closer to protected property under local agreement. Even where that has worked, even where one village has been persuaded to give a reef a season's rest, fishermen from the town of Kijang show up anyway and set their traps in the same water. It is a pure first-come-first-served economy, run on the logic that if I don't take it, somebody else will before the week is out.

None of this happens in a vacuum. The provincial government actively subsidises the raw material for fishing traps, because fishermen are a voting bloc and elections are won or lost on exactly that kind of small, visible generosity. The real money sits elsewhere — mining permits, construction contracts, infrastructure funding, bauxite especially, with China's appetite for it seemingly bottomless and Linga's deposits still barely touched. Meanwhile the government promotes a specifically Malay cultural identity — Koran-reading contests, dance and music showcases — against a Chinese community that holds most of the supply businesses and a disproportionate share of the land. But underneath both of those, the actual contest is over mining and building permits and the government money that follows them. It is hard to tell a fisherman in a sampan he can't feed his family from the sea when everyone above him is getting their hands greased by exactly the same kind of money, just at a larger scale.

Enforcement, in the end, would have to come from the navy, and the navy has its own resource problems and, in all likelihood, its own version of the same corruption running through everything else here. We are fighting a war against the smallest players in this economy while the real damage to the biosphere happens several rungs further up the ladder, mostly uninvestigated, mostly unpunished. Bombing and cyanide fishing in particular should carry real consequences — the death of a reef system does more lasting damage than most of what actually gets prosecuted as serious crime, and it is treated, almost everywhere, as though it were nothing at all.

## Reef Healthy, With Many Spawning, But...

*May 2012*

I dived the north coast this month, a stretch we rarely visit during the northeast season because the conditions usually don't allow it, and found more active spawning sites there than I'd expected — a genuinely encouraging sign on a part of the reef that gets almost no monitoring attention. But the same dives kept turning up the same absence: no big fish. Plenty of smaller reef fish, plenty of spawning activity, and almost nothing at the top of the size range you'd expect on a healthy reef, which tells its own story about what's been taken out over the years.

The government's response captures the whole contradiction of working here in one move: Coremap, the coral reef management programme, was pushing for more enforcement at the same time the local provincial government was actively handing fishermen more gear, including sponsoring the very fish traps that do some of the worst damage. Two arms of the same system pulling in opposite directions, and the fishermen caught in the middle of it, not out of malice but out of the plain fact that everyone here is trying to make a living, in a community that has fished this water since before anyone can remember. What do you do with that? I don't have a clean answer. What we've settled on, in practice, is simpler than a policy: we stop net fishing whenever we see it happening, and we actively discourage spearfishing, especially recreational spearfishing by visitors who have far less claim to this resource than the people feeding their families from it.

The one genuinely hopeful thread running through all of this is the maritime university students, who keep coming back to survey reef, mangrove, and seagrass habitat together, coral coverage included, building exactly the kind of long-term dataset that might eventually make the case for real protection stick.

## **Building a Reef From Broken Things**

After a storm took out pylons along the jetty, we were left with a genuine pile of broken material — old wooden and concrete piling, tangled rebar — that could have simply gone to waste. Instead we built what the team started calling fish hotels: structures assembled from the broken pylons and salvaged rebar, filled out with whatever recyclable material we had on hand — bottles, glassware, cans — specifically to give small fish more shelter on a reef where fishing pressure had already thinned out a lot of the natural structure they'd normally use.

We attached living coral fragments to these new structures wherever we could find them — pieces broken loose by fishermen building bubu traps, coral that would otherwise have simply tumbled around the rubble until it died, given a second chance instead by being wired or epoxied onto a stable new surface, with a layer of cement worked in to give it something to actually grow onto. Building it wasn't simple: cutting the salvaged pylons down to manageable sections, moving them by water using lift bags and pulleys since nothing this heavy moves easily by hand, pre-assembling as much as possible on the mainland in Bintan before the final underwater installation. We chose a sheltered, shallow spot near the mangroves, protected by an existing reef formation, calm enough to favour the fast-growing *Acropora* corals we were hoping would colonise it, and deliberately kept away from where boats tend to anchor.

I think of this project as a pilot more than a finished thing — proof that broken infrastructure doesn't have to just become waste, that it can become habitat instead, and that a project like this, done properly, could plausibly employ local people up and down the Bintan coast rather than existing purely as a resort curiosity. I don't yet have hard numbers on how well the coral is actually taking to it. I have watched clownfish move in already, which is not data, but it is the kind of sign that keeps me building the next one anyway.

## Setting the Moorings

Every boat that drops anchor on live coral does damage that takes years to grow back, if it grows back at all, so putting in proper moorings was never really optional once we understood the scale of the problem — it was simply a matter of when we'd get around to it. We put in four, clustered near Jetty One, fixed points that let visiting yachts and local fishermen alike tie up without ever having to drop an anchor into coral to do it.

Their coordinates are logged precisely — N01.03.022, E104.42.399; N01.03.013, E104.42.373; N01.02.989, E104.42.433; N01.03.010, E104.42.431 — because a mooring only does its job if the people who need it can actually find it in poor visibility, at the end of a long day on the water. It's not a dramatic project. There's no single dive where you point at a fish and say, that fish is alive because of these four moorings. But every year they're in the water is a year of anchor damage that simply didn't happen, compounding quietly in the same way the damage they prevent would have compounded if we'd left it alone.

## The Proposal

Everything in this book has been building, whether I meant it to or not, toward one document: the formal proposal for a No Take Zone at Nikoi Island, which I wrote and submitted as Marine Conservation Officer here, inside the boundaries of the marine protected area that technically already surrounds us on paper and in official zoning, and nowhere else.

Nikoi itself is a fifteen-hectare private island, eight kilometres off Bintan's east coast, employing more than a hundred people from the surrounding villages. The resort already runs, in most practical respects, like an informal marine park — non-destructive tourism, a standing beach and reef cleanup programme, and a genuine education and conservation effort through The Island Foundation, the community arm we built alongside it. What Nikoi cannot do on its own is enforce anything. We can set an example. We cannot write law, and without the backing of Indonesian agencies working alongside local leadership, none of what we've built here has any teeth beyond our own fence line.

That's the plain truth I had to start the proposal with: the Bintan MPA covers 1,815 square kilometres on a map, and almost none of it on the actual water. Enforcement is minimal to non-existent. Commercial-sized fish are scarce across most of it; sharks and giant grouper have effectively disappeared from water they used to hold; some populations here are functionally extinct locally, regardless of what their global conservation status says on paper. And still, across the habitat types this stretch of shelf holds, we've documented over two hundred and thirty fish species — genuine biodiversity, still hanging on, still worth fighting for.

I laid out the threats as plainly as I could, because vague threats don't move anyone to act: net fishing at every mesh size; bubu traps built specifically to target coral trout; pukat nets, illegal almost everywhere, that strip a reef of essentially everything living on it in a single pass; kelong platforms using bright lights to draw in small fish by the ton; hand harvesting that's quietly emptied out the local sea cucumber and

shellfish population; dynamite fishing, indiscriminate and permanent in its damage; oil and pollution washing in with every monsoon; and the slow grinding damage of anchors, dropped in the same handful of spots, year after year.

What I proposed was deliberately modest in scale and, I hoped, correspondingly hard to argue against: a genuine no-take zone within half a mile of Nikoi, a buffer zone from there out to one mile where only line fishing would be allowed, and beyond that, the expectation of spillover — fish and larvae produced inside the protected zone naturally replenishing the fishing grounds just outside it, which is the entire economic argument for a no-take zone in one sentence. The total area involved is small: 2.4 square nautical miles, less than seven-tenths of one per cent of the wider Teluk Bakau area, a rounding error against the 1,815 square kilometres of the Bintan MPA as a whole. I made a point of putting that number in writing, because I wanted it on record just how little we were actually asking for, set against how much it could plausibly return.

None of it works without Desa Teluk Bakau, the fishing village whose waters this actually is, taking the lead in managing it — their knowledge of the water, their buy-in, their willingness to enforce it among their own community, is worth more than any government decree handed down from Jakarta or from the province. In the community conversations I had while drafting this, the answer I heard again and again was conditional support: yes, if there's a clear economic incentive attached, and yes, if the implementation is genuinely transparent rather than another promise that quietly evaporates. I proposed a modest conservation park fee — a hundred and fifty thousand rupiah, which across Nikoi's own guests alone could generate well over seventy thousand US dollars a year — specifically earmarked for enforcement, for staff salaries, for the restoration work this whole book has been describing, so that the zone could fund itself rather than depending indefinitely on a resort's goodwill or an NGO's grant cycle.

The habitat we'd be protecting is everything I've described in these pages: fringing reef, mangrove flat, seagrass bed, soft coral garden,

granite boulder field, each one surveyed in growing detail by the same university students who keep coming back season after season. There's real institutional money that could plausibly back something like this — COREMAP-CTI alone represents something like forty-seven million US dollars in World Bank commitment to Indonesian coral reef protection — if a proposal like this one can make the case clearly enough to be taken seriously among everything else competing for that funding.

I ended the proposal the way I'll end this chapter, because I still believe it: the window here is genuinely narrow. Wait long enough and there won't be a functioning reef left to protect, no matter how well-argued the eventual proposal turns out to be. I would rather submit an imperfect proposal now than a perfect one after the fact.

# EPILOGUE

## **Coral Cathedrals**

I wrote a poem years into this, and I want to close the book with it in full, exactly as I wrote it, because it says plainly what took me the rest of this book to say sideways.

### **Coral reefs**

Coral reefs  
Builders of underwater cathedrals,  
Coral reefs temples,  
Sacred space,  
I salute you.

You the little polyps and zooxanthellae,  
The master architects,  
Building over and over your predecessors,  
For millions of years,  
Not losing focus.

The kingdom of the reef came down four times,  
To extinction in its two-billion-year history,  
But always came back,  
With more vitality, more diversity, more shapes and forms,  
More vibrance than ever before.

Radiance,  
A look at you and one is transformed,  
Choked by beauty, aesthetic arrest,  
Gardens of sculptures,  
Deep valleys encrusted with a thousand coloured stars and coral flowers,  
Amethyst purple, turquoise blues, ruby reds, yellow sapphire,  
In perfect aesthetic harmony,  
Musical coloured symphonies,  
Masterpieces after masterpieces,  
An infinite treasure chest of wonder.

Entering this oceanic city,  
With rush hours, regular feeding times,  
The ones that munch all the time,

The night feeders, cleaners, street "sea cucumber" vacuum cleaners,  
Like shoe shiners, or hairdressers, cleaner wrasses take one customer  
after the next,  
Often entering the mouth of sharp teeth that could devour them,  
Two octopus dancing, transforming in front of your eyes in texture,  
form and colour,  
A herd of grazing parrotfish move by, sound of crunch,  
The cementing algae,  
Keeping the limestone together,  
Sponge-covered walls and crevasses, interior decoration,  
The citizens of the coral reef city,  
Often exuberant,  
Multicoloured, multi-designed appearances, parading, flashing their  
costumes to the world,  
The wildest fashion show on earth,  
One thinks one has landed in paradise,  
A world of perfect harmony.

But life is fierce on the reef,  
Competitive, ruthless.  
Each little polyp's tentacles, armed with batteries of stinging cells,  
All carnivores, designed to seize animal prey,  
Feeding on everything passing over them,  
Some use chemical warfare to kill and destroy invaders,  
Some poisons to paralyse their prey before devouring them,  
The scorpionfish relies on camouflage,  
Motionless, most of the time,  
Suddenly, at the speed of light, strikes,  
Only to resume its posture like nothing ever happened.

Mass invasions threaten everyone,  
When armies of the coral's enemy number one, *Acanthaster planci*,  
alias crown-of-thorns, march on,  
Night and day sucking the live flesh of the coral colonies,  
Leaving fields of dead skeletons.  
Plagues of disease decimate entire species,  
Black band disease, viruses,  
Infections,  
Thermal changes, the coral bleaching, often dying.  
The reef relies on an eternal dance of life and death —  
As soon as it is created, forces try to destroy it,

Typhoons, ripping reefs apart,  
Then the little polyps and zooxanthellae  
Come in to rebuild.  
And soon the reef takes shape again,  
An endless circle that worked until...

The baddest of them all decided to mess with the biological rhythm,  
The cosmic tempo,  
Destroying faster than all typhoon and crown-of-thorns and plague  
combined,  
Chemical waste, dynamite, poisons like cyanide,  
Keeping a few reef fish in a tank for private entertainment,  
Scooping up everything alive for miles and miles,  
Genocide of life.

Nonetheless the little polyps and zooxanthellae  
Keep on building,  
Repairing,  
Erecting their cathedrals, temples and monuments,  
Never giving up.

In that spirit,  
They will probably outlast man,  
Keeping building and rebuilding long after the virus created the virus  
that exterminated them.

I go back and forth, every time I reread it, on whether that ending is  
bitter or hopeful, and I have finally decided it's both at once, which is  
probably the most honest place a poem about this reef could land.

In May and June of 2016, we went through a bleaching event I still  
have the photographs of — stretch after stretch of coral gone pale and  
washed-out, taken through water that offered no single explanation  
for what had caused it, only the evidence that it had happened. I  
documented it the only way I knew how, in a run of short posts that  
September and the months before it: *Before, During and After. Life  
Keeps Going and Adjusting. Bleaching Reef at Night*. By September,  
once the worst of the shock had passed, I was still finding enough  
intact to write two more — *Tales of Nudibranchs*, and *A Commented  
Ride Into the Shallows* — proof, I think, that I still needed to go

looking for the parts of the reef that were still working, the same instinct that opened this whole book. I haven't written the longer essay that 2016 deserves yet. Some things take longer to find words for than others, and I've learned not to force that.

What I can tell you, sitting here now, having gone back through all of this to put the book together, is that none of it — the cuttlefish, the storms, the turtles, the races, the proposal that may or may not ever get formally approved — ever stopped being worth doing, even on the days it felt hopeless. You only protect what you love. I have spent a very long time trying to make this shallow, murky, difficult stretch of reef lovable to anyone willing to look closely enough, on the theory that love, more than any single policy or enforcement budget, is the thing that actually outlasts a single conservation officer's career.

I am not there anymore, not the way I used to be. I live across the water now, on the mainland, and most days that's exactly what she is to me — a shape on the horizon I already know by heart. But the reef is still there, in whatever condition years of storms and nets and slow recovery have left it in, and every so often a friend asks me to dive with him and I go back out, mask and tank and all of it, and for an afternoon we are exactly what we always were to each other. That, on the days I need reminding, still counts as a win.

— *Michel Lippitsch*