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REPORTAGE

The butterfly effect

Stalking a giant in PNG

Jo Chandler

Does the flap of a butterfly's wings in Brazil set off a tornado in Texas?

Edward Lorenz, American Association for the
Advancement of Science, 1972

SOMETIME IN 1906, butterfly hunter Albert Stewart Meek disembarks from an old pearler named *Hekla* on the north-east coast of New Guinea. He unloads his provisions and tools of trade: killing bottles with cyanide of potassium for small insects, syringes with acetic acid for larger ones, non-rusting pins for setting his trophies, cork-lined collecting cases. He waves off the boat with instructions to the skipper to return for him in three months.

He has high hopes of claiming discoveries in a wilderness still largely unexplored by Europeans. But things are not going so well.

By his own account – *A Naturalist in Cannibal Land* – Meek is the swash-buckling, superior Edwardian opportunist from central casting. The son of a naturalist, but with no formal scientific training, he'd travelled from London to Queensland at seventeen to work as a jackaroo, with a sideline in collecting and trading Antipodean specimens. At eighteen he had his first commission from Lionel Walter Rothschild, 2nd Baron Rothschild, heir to the Rothschild fortune and a zoologist, to venture into Queensland's central ranges and bag three pairs of every kind of insect, bird or animal he could find.

Fifteen years later, Meek is being bankrolled by Rothschild to explore the Pacific, capturing exotic butterflies and moths to add to the baron's

natural history collection. It's the adventurous life he yearned for, and a handsomely profitable one, but it is not without its travails. The islanders he has recruited as labourers have bolted into the bush. He recovers them, punishing the ringleader to persuade them back into reluctant service. By the time they have hauled his kit inland, though, seven are down with disease. It's fair to say their welfare is not his paramount concern.

But amid this chaos, a glimpse of something beguiling.

Setting up camp in the ranges on the Mambare River – likely within sight of the village of Kokoda – he sees an enormous and unfamiliar butterfly. She's flying so high he brings her down with a shotgun armed with special ammunition. She's brown with pale yellow markings, her wingspan measuring almost eight inches.

Over the next month, Meek pushes about eighty miles inland and high into the formidable Owen Stanley Range – country where, thirty-six years later, the Japanese push down to Port Moresby would be defeated and the Australian legend of Kokoda born. The butterfly eludes him. Meek is 'unfortunate enough to lose a couple of boys' – his carriers attacked and murdered. 'The collecting was good, but the natives made it practically impossible for me to stay there any longer.' He retreats to Queensland for a spell.

A year later he returns, pulling up in Oro Bay, about twenty miles from where he shot the female butterfly. More misfortune: this time he's laid up himself by terrible sores and raging fever. Then, somewhere near Popondetta, the present-day capital of Oro Province, Meek stumbles into the butterfly's garden. He captures males splashed with iridescent turquoise and blue, and more females, some measuring eleven inches wingtip to wingtip. Aided by villagers he rewards with mirrors and knives, he finds velvety black caterpillars with ruby spines. He plucks pupae from vine leaves and witnesses – 'to my great joy' – a butterfly emerge. The species feeds on an 'entirely different vine to other butterflies', a hitherto unknown species of *Aristolochia*.

The butterfly specimens are dispatched to Rothschild, who names the subgenus Queen Alexandra's birdwing, *Ornithoptera alexandrae*, in honour of the wife of Edward VII.

Meek's faded trophies, complete with bullet holes, still reside under glass at Rothschild's estate in Hertfordshire, now part of the British Natural History Museum. In Oro, their elusive kind, the world's biggest butterfly, has largely vanished, along with much of its nourishing garden. *O alexandrae*'s

prospects for survival are now entwined with those of the 22,000 people who are the owners of its remnant habitat on the remote Managalas Plateau.

After thirty-three years of negotiations with and between 152 clans, the people of the plateau last year declared a conservation area over their 360,000 hectares of country, putting it out of reach of encroaching loggers, miners and oil palm plantations. It's only the second, and by far the largest, conservation area in the country. They have resolved to find other ways in which the land might support their livelihoods.

Because such wild places are the last strongholds for so much fast-vanishing biodiversity, and critical to buffering the effects of climate change, we all have a stake in how this crazy brave gamble turns out. And there are other intriguing dimensions to this story. In an era of seismic corruption and the fracturing of fragile services and infrastructure across Papua New Guinea, the preservation of the Managalas Plateau looks like something almost as elusive as *O alexandrae* – so the declaration is good news. As a grassroots initiative, might it signal a turn of the tide in the narrative of external plunder – so much of it unapologetically rapacious; some of it, lately, dressed in finer ambitions, but wearing the same old soiled colonial attitudes, blind and deaf to indigenous needs and desires?

After a decade travelling in and out of PNG, collecting too many bleak stories of violence, disease and dysfunction (yes, I too am a plunderer), I'm a little reluctant to chase this apparition for fear it will vanish. Up close, things are sometimes not as they appear from a distance. Yet here I am, stumbling around with my butterfly net on other people's country.

AT ORO BAY, where the *Hekla* moored 111 years earlier, we pull off the coast road from Popondetta to pick up cold drinks and provisions at a cavernous tin-shed trade store before heading bush. To have any chance of seeing a Queen Alexandra birdwing butterfly (or QABB, as the locals shorthand it), I will have to travel deeper into the country than Meek likely did. Blessedly, not on foot, though at times that seems like it might be quicker.

The store sits on an inlet, a tide choked with garbage lapping at the shore. Stallholders do steady trade in *buai*, betel-nut, for chewing and there's a window offering liquor. Disconcertingly, one of the police escorts we collected back in town – pistol waving in his hand and thongs on his feet – makes a purchase. His young offsider, in a neat shirt and black lace-ups buffed

to a mirror finish, waits in the back of our Toyota 4WD ute. My guide – veteran environmental champion, lawyer and local son Damien Ase – works his phone before we drive beyond network coverage.

Wilting in hot, wet shade, I slip the sandwich I have no appetite for to an appreciative hound. Eventually we are on our way.

We pass towering tanks full of crude palm oil awaiting shipment to cakes and cosmetics around the world. They are fed by the harvest of red nuts from the squat, bristling oil palms that line the road. Palm oil production accounts for more than half of PNG's agricultural export earnings. The cost was clear to see out the window of my flight into Popondetta, over the ranges from Port Moresby: wild jungle canopy gobbled up by a meticulously machined green industrial landscape.

Before hitting the road to the plateau, I met Malchus, chairman of the Managalas Conservation Foundation, in Popondetta – from where *O alexandrae* has disappeared. 'Because of the oil palm, the feeding grounds have been destroyed,' he explained. 'We're fortunate to have it up there.'

Kaji, who is fifty-seven, has spent more than half his life campaigning to preserve his birthright. He was studying for the Anglican priesthood when he began to worry there was more harm than good coming from development in Oro – the logging, the mining, the explosion of oil palm. His reading of the Bible was 'that we have been entrusted to manage the forest. I started to take up the responsibility to speak and protect... The forest which is still virgin contains a lot of fauna, flora, a lot of species that have yet to be discovered.'

He had other concerns too. The fading of culture. Failing schools and health services. Diminishing income from crops like coffee and cocoa – not for lack of effort, but because without functional roads and communications, farmers could not market their produce. There's been coffee on the plateau for sixty years, but lately it hasn't been worth picking because of the obstacles getting it to market and the price – now less than \$1 a kilo in a fifty-kilogram bag. (Meanwhile, in Melbourne, I pay \$50 a kilo for PNG beans when I can find them.)

Such hardships underlie the willingness of many people – including some on the plateau – to sell rights to their country. Kaji was one who led the resistance. Urbanised landowners were particularly keen for the payoff, but then they wouldn't have to live with the consequences. 'We had a lot of conflicts, a lot of problems, especially with the elites – educated people who

have been to town and were lucky enough to come down and get employment,' he said of the decades wrangling the conservation push.

To understand the obstacles the project had to navigate requires a couple of insights. First, land in PNG is still largely held under customary ownership. Second, its population is a diverse patchwork, with over 850 languages, so negotiations over one region may involve a multitude of tongues. (There are five across the Managalas.) Third, land is beyond price in a nation where the state is still so absent that country is all that can be relied upon for survival.

These hurdles are such that any number of conservation efforts in PNG by marquee conservation outfits and other international non-government organisations – so-called BINGOs – have crashed and burned in the gulf between what distant donors expect and what local people need. Meanwhile, the country's wilderness is being devoured by logging, much of it illegal. PNG's exports of tropical timber have doubled over the past decade, making it the world's largest exporter of round logs.

The profits from this trade have failed to improve life for most people on the ground, said Kafi. He's the father of eight grown children. 'The system has failed them... The system has failed us. But we have land. Land will not fail you. It is only when you are not creative that you'll fail yourself.'

THERE'S BITUMEN CARPETING the routes of the oil palm trucks, but it disappears after the turnoff to Afore village on the Managalas Plateau. Afore is only sixty kilometres away, but it will take around four hours to get there because the road is so bad. There are a dozen people piled in the back of our ute. Most are locals who pay K50 (\$21) for the ride – around half the annual income earned by many households on the plateau.

I'm sitting up front with driver Colin Fred, who lives in Afore with his schoolteacher wife and three children. Grinding two sets of gears, playing the pedals like a 4WD virtuoso across the range from full throttle to light staccato, he somehow extricates the over-burdened ute out of dry ruts and muddy bogs. We plough through a wide river where the bridge was taken out by Cyclone Guba a decade ago. The road is ruin, but then so are pretty much all the routes relied upon by the 80 per cent of PNG's eight-million-plus people who live in rural and remote areas. For them, this reality defines all else. Without a functional road you can't bring teachers and medicines in or send crops and emergency cases out.

We  up onto the plateau, a shallow basin that sits between 650 and 850 metres above sea level, encircled by mountain ranges pushing up to over 2,000 metres. A breeze flushes out the vehicle's stifling cabin.

The road winds through stands of rainforest and wild banana trees, rows of coffee and cocoa, swathes of grassland, huts planted on stilts in scrupulously kept gardens of flowers and vegetables. The lushness is fed by rich volcanic soils. A scientist working here twenty years ago on an AusAid-funded research program theorised that the QABB likely gained its monumental size from the vigorous health of the single rare species of *Aristolochia* vine on which it lays its eggs, and the nectar of the hibiscus and ixora flowers it cruises. Dozens of eruptions had scattered layers of phosphate-rich ash across the plateau, providing 'ample nutrients to sustain the caterpillars of such a large butterfly'. And it's not the only extraordinary creature nurtured by these conditions: a billboard celebrating the conservation project lists half a dozen other flagship species, among them the Raggiana bird of paradise and Doria's tree kangaroo.

The crucible for the project was a Tok Pisin literacy program back in 1984, enlisting academics and students from the University of PNG – among them aspiring lawyer Damian Ase. A central figure in the PNG conservation movement nationally and locally, Ase hails from a village on the other side of the plateau. 'I saw all the destruction that was going on in those places where cash crops like palm oil and cocoa were taking over the forest,' he recalls. 'I didn't want my people to go through that...so I played my part.'

The literacy program evolved into an NGO called Partners With Melanesians, which, over the next decade, shifted into conservation and development, securing funding from the Rainforest Foundation of Norway, which has supported the project from concept to realisation last year.

The Managalas declaration does not entirely lock up the forests. Rather, it lays out a program of sustainable use of the landscape. Every part of the plateau has been mapped and zoned for one of five purposes: village life, subsistence gardening, larger-scale cropping, hunting grounds and no-go conservation areas. The hope is that this portfolio will generate a mix of activities and attract a variety of players to support local livelihoods, including researchers, tourists and produce buyers. In i's vision of the future, farmers will find markets for their organic coffee and spices, village houses will have electric light, schools will plug into the internet, and students will

become teachers and tour guides, scientists and health workers who find jobs on the plateau, raising their own families, sowing ongoing connection to land and culture.

This model is what American anthropologist and PNG specialist Paige West describes as ‘conservation-as-development’. Such projects assume that environmental conservation can provide a flow of cash income, ‘that development needs, wants and desires, on the part of rural peoples, could be met by the protection of biodiversity on their lands’. West has spent years closely observing the dynamics of such projects, which turn on contracts between villagers and outsiders – maybe a big NGO, maybe research scientists. She has seen how much gets lost in translation: rural people do not always understand the outsider notion of ‘conservation’, and outsiders do not understand what villagers think of when they imagine ‘development’.

These days, West collaborates with John Aini, a PNG conservationist, to spotlight these failures among specialists, scholars and practitioners, to challenge them to find strategies for ‘decolonising conservation’. They describe how, time and again, they have seen outsiders come into communities with their own well-formed ambitions, but little capacity to understand the links between local livelihoods and healthy biodiversity. Donor-driven projects almost inevitably fail, often leaving behind a volatile mess of failed expectations.

A big part the problem, according to Vojtech Novotny, a Czech ecologist who has been working in PNG for decades – including running a modest sustainable livelihoods program in the villages around his field sites – is that many people who donate money and effort to saving faraway forests are afflicted by a crippling romanticism. He explored this in a provocatively titled 2010 paper, ‘Rain Forest Conservation in a Tribal World: Why Forest Dwellers Prefer Loggers to Conservationists’, arguing that ‘the global machinery of nature conservation remains, regrettably, remarkably inept at presenting indigenous owners of tropical forests with a decent offer in exchange for their continued management and conversation of a substantial amount of the world’s biodiversity’.

Forest people need income and services, and he’s seen little sign of improvement from the BINGOs on delivering on these. ‘They need a stream of new projects to excite donors, and that doesn’t really work here.’

But he’s ‘cautiously optimistic’ about the prospects for the Managalas Plateau. He and others credit the realisation of the project last year to its

organic roots, the engagement of local actors throughout, and the long endurance of both the homegrown NGO, Partners With Melanesians, and its Norwegian benefactors. None of this guarantees it will deliver what is hoped, but ‘the advantage is that after thirty years, they have already been through the cycle of hope and disappointment,’ says Novotny. They are perhaps well placed to ride it out a bit longer yet.

Malchus  is banking on it. ‘It’s almost a year now, and people are asking us, “When is the service going to be delivered? When are we going to have a coffee mill? When are we going to secure a market for our coffee and our vanilla? When are we going to have better roads?”’ People are anxious, he says. ‘I’m anxious.’

WE ARRIVE IN Afore on nightfall, pulling up at a pair of spartan shacks that serve as headquarters of the conservation project. We settle in by torchlight, talking late by the cooking fire, eating rice and tinned fish beneath undiluted stars. We sleep under mosquito nets, serenaded by the chorus of forest creatures and a choir of mothers just returned from a church retreat.

I’m up at 5 am, slip-sliding down a dark, muddy path to a pit toilet, praying our crew will soon be en route to a stand of forest where – they promise – I will find *O alexandrae*. It’s my only shot. I’m booked on a flight out of Popondetta that afternoon, so I’m desperate to get this show on the road. But by the time the fire’s awakened, and pots of tea and rice brewed for breakfast, it’s gone 7 am.

In the rear-vision mirror, Afore is otherworldly, an island encircled by rivers of ethereal morning mist. The track into the forest is barely discernible. I feel myself breathing in to help Colin Fred squeeze the ute between close trees and across too-narrow improvised bridges. Households sprinkled through the bush are surprised by the rare traffic, children chasing and laughing. We pass women hauling up pots of water from streams. The bone-weary gaze of one of them, as I wave, wipes the smile off my face.

Raynold Pasip leans in from the back of the ute to tap my shoulder. ‘This is my land!’ he shouts over the revving engine as we pass through some invisible jungle boundary. Pasip is a wiry elder and a member of the Managalas Conservation Foundation board. We spoke at length the night before about the land, his history with the project, his hopes.

‘When I walk to my own bush, I see the bird of paradise. I see a cassowary. I see a wallaby. I see all these things, I feel proud,’ he said. ‘If I want to

kill them for my meat for the dinner, it doesn't cost me money. I can kill some them, and then come and cook. The feathers for my dancing  fur for my bilum (bag), and with the bones I make a needle, or different things.

'Our young children are taught, when they go they have a certain time for hunting, and a reason to kill birds and a reason to catch animals. They are not careless in killing birds or cutting trees.'

Pasip talked about the destruction he had witnessed elsewhere in PNG, how that persuaded him to join forces with the elders of 151 other clans, deciding 'this plateau should be declared for conservation...so our young generation, the children, will have benefit from their own resource'. They should not be mere labourers on their own land. But without a good road, without airstrips, 'people struggle. They carry their own food, cargo, from their shoulders...they walk down to town and they do their marketing.' He also talked about the peacefulness of the plateau, in the bush and even in the villages, where people were not disturbed by the fighting that has become part of life in so many communities. He spoke of places where you could find birds of paradise or great waterfalls or tiny frogs. The secret sites where, in old times, his people would take their dead. 'They didn't bury them in the ground. They have to go and wrap them around with a mat, and they make a little house on the tree, and they leave them there.'

We pull up at the tiny village of Dareki. The phone network on the plateau hasn't worked in over a month, so Damian Ase couldn't send word ahead of our coming. We surprise the man we have come to see –  Nukara, the butterfly whisperer – at home with his small children under a verandah of palm leaves, drying off after a bath in the  ngani River. Briefed on our hurried mission, he leads the way, on foot, deeper into the forest.

We climb over logs and under a tangle of trailing vines including, Nukara points out, the *Aristolochia* favoured by *O Alexandrae*. To us it's poisonous, he warns. We wade through cloying air and a cool, shallow creek. Pasip and June  eba, the women's representative on the conservation board, walk with me. She points out cultivated plots mixed in with the wild growth of the forest: plantings of corn, peanuts, chillies. One of her objectives under the project is to bring in teaching programs for the women. They are such accomplished gardeners, but they struggle to turn this into profitable business, and their children are malnourished because they don't have the knowledge or resources to feed them a sustaining diet.

Fixing the road is also, for her and other women, truly a matter of life and death. Many mothers die delivering babies because when their labours go wrong they can't get to hospital in Popondetta. Toleba is still mourning the recent death of her own daughter, Imelda, after an asthma attack.

My gaze is on the ground, picking through the labyrinth of tree roots, when Toleba cries out. A flash of movement, a disturbance in the ether. A butterfly the size of a small bird, swooping and dancing around us. Toleba declares that 'it's a Queen Alexandra...a QABB!', and I'm swivelling about with excitement, or perhaps delirium. It circles close, but juggling camera, recorder and notebook I fail to get a fix, and then it's vanished. Butterfly whisperer Nukara, when we catch him up, says that we were almost certainly mistaken, tricked by a similar but smaller birdwing.

Finally, we arrive in a clearing where a sign declares: WELCOME TO MISU – QUEEN ALEXANDRAE BIRDWING BUTTERFLY FARM: A COMMUNITY INITIATIVE. Nearby is a green shade house, about half the size of a tennis court, which Nukara built last July. Inside are rows of saplings sprouting broad leaves.

He gently turns one over. Stapled underneath is a portion of another leaf he has plucked from the surrounding forest. Stuck to this is the brown and yellow pupae of *O alexandrae*. Nukara turns another leaf, revealing another pupae. The one cocooning a female is as long as his index finger but plumper, the male specimen a little smaller.

Nukara learnt the science of butterfly farming as a youth from long-gone researchers on the AusAID project. Every morning he roams the forest looking for pupae. When he finds them he brings them into the shade house, where they stay up to eight weeks, safe from birds and spiders. A day after they hatch, he opens the door and releases them. So far, he's waved out twenty-five: fifteen females, ten males. He's delighted to see the population growing; it's a win-win.

'This is the largest butterfly we have in the world,' he says, 'so that is our pride... It is also endangered, and in the future, this will bring people from outside, tourists and other people who are interested, so we can make a small income from that.'

Nukara is wearing a T-shirt with the emblem of New Britain Oil Palm, one of the biggest producers in the country. The company has given some support to his project as part of its sustainability push, and he's deeply grateful.

I bite my tongue. He needs their interest, and mine. He wants the story of his butterflies to fly out of this forest and into the world.

He's teaching his children how to catch and care for butterflies. If the project fails to support them, they will likely join the flow of population into urban areas, seeking services and income.

Nukara keeps a close watch on his growing flock of *O alexandrae*. He checks in on the pupae and patrols the glade every morning. Butterfly poachers, modern-day Meeks, remain a real threat. Prized QABBs sell on the black market for \$US10,000, says Ase. Keeping watch will be one of the tasks of the corps of local forest rangers that the conservation project plans to train.

What happens, I ask Nukara, when you release these butterflies into the wild? Do they flap away? 'They hang around for a while,' Nukara says. 'They even come back to me...then they fly up.' He saw half a dozen here just this morning. 'You should have come early,' he admonishes. 'Every morning, I am always filled with joy.'

To my great joy. That's what AS Meek wrote on witnessing his prize emerge from its cocoon. At which point he pulled out his kit and killed it, securing the trophy inside one of his japanned airtight containers.

I scan the enveloping green one last time. Nothing. I shut my eyes. Birdsong, the chirp of lizards, the cacophony of unseen tiny creatures, the fall of fruit on the forest floor. The pulse of fecund energy. The silence of the ancestors perched in their trees. The more disturbing ghost of my own kind, Meek.

I've read somewhere that *O alexandrae* flaps through the high canopy with the power and thrust of a bat. It's not registering on my poorly tuned radar. Which is not to say it isn't there.

For references, see griffithreview.com

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