



way out in

The mazy karst islands of the Raja Ampat area of eastern Indonesia are ringed with impressive reefs and pocked with 'petri dish' pools still new to science

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As we crossed the equator heading north, a ragged cheer went up and a beer or two was chugged down. A couple of people were talked into looking over the ship's rail to see if the dotted line was visible and they received an extra salute. More worthy of celebration though was our imminent arrival at our goal.

Peeking just over the blue horizon were the Indonesian islands of Wayag, or 'God's Country', as our captain, David Pagliari, likes to call it. I was along to assist by guiding the assortment of dive vagabonds, would-be explorers and scientists on board to this area, part of the Raja Ampat, one of the richest marine destinations in all the West Pacific. I'm lucky enough to spend two-three months in the area each year so I know its attractions well. But, as I was to discover again this trip, there is always more out there.

The Journey

The voyage was not simply a pleasure cruise: we also aimed to explore a newly discovered marine lake that had looked somewhat accessible from scrounged aerial images. The images and observations we collected were to be passed on to the Coral Reef Research Foundation who have done groundbreaking work on the



OPENING SPREAD: A shadowy labyrinth of *Rhizophora* mangrove roots shelters juvenile reef fish and invertebrates. **LEFT:** At peace in 'God's Country'. **ABOVE:** Underwater, sponges, corals, anemones, gorgonians and tunicates fight for elbow room on busy reefs.

more well known marine lakes of Palau.

As with the lakes in Micronesia, those at Wayag are hidden among a photogenic maze of karst islands. The limestone shaping this dramatic rocky backbone was laid down by generation after generation

of corals, millions of years ago.

Today it lies about 96km northwest of Papua's Bird's Head Peninsula, just north of the equator. There, surrounded by jagged stone ramparts, our boat, the KLM *Shakti*, was able to rope off to several small

islands without dropping an anchor.

From our perspective, Wayag seemed the very soul of paradise. A solid wall of dark vegetation covered almost everything in sight, the waters sucking lazily at the rocks were a shimmering azure – and we

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had a boat full of dive gear and cold beer.

But appearances are deceptive: these islands are no easy place for terrestrial life to thrive. Freshwater only comes with the sporadic rainfall. The scenery may be magnificent but Wayag has an unforgiving, harsh side. It is an environment where only the most evolutionarily fit plants and fish survive.

The Reef

Immediately after turning off the ship's engines we watched as several mobula rays flapped out of the calm water to perform ungainly back flips. The unexpected show was sweet but short and then it was our turn to head underwater.

Having been to the area quite a few times before, I knew to expect the unexpected below the surface. The neighbourhood reefs of Wayag are potentially the most speciose on Earth, home to the tiniest of seahorses and some of the largest of sharks, with a whole gaggle of species in between.

Enveloping myself in the turbulent waters of Doggie Reef, I was immediately thrown backward by a current that had no respect for the fact that I was supposed to be the expert here. Kicking madly, I eventually made it to a cut in the reef, rejoining the other divers where it was at least somewhat calmer.

All around us corals formed a living pastel carpet of hungry polyps. Colonies of luxurious soft corals and gorgonians hung in the underwater wind clawing invisible plankton from the 'breeze' with their petite stinging tentacles. No wonder one of my professors had called these reefs 'a wall of mouths'.

Bright fish danced in the current, looking at least a million times more hydrodynamic than my ungainly form. The multitude of fish: damsels, redtooth triggerfish, fusiliers, and pyramid butterflyfish, competed with the nearby



Though a steep climb, Wayag's precipitous limestone islands offer vistas worth any amount of sweat.



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wall of polyps for the juicy organic tidbits drifting in the current. The reef bustled with the sporadic movement of a thousand creatures, lunging, twitching, waving, and hunting, creating a confusion of colour and form. Larger fish cruised further out, oblivious to the current that hounded us.

Within another sheltered cut, we found a tassled wobbegong lying motionless on top of a table coral. With complete confidence in its amazing camouflage the strange shark barely registered our presence.

Seconds later, a grouper, the size of a bear, appeared from the depths, interested by the live show of which I was a part. Then two sinister and brawny dogtooth tuna powered their way past, out in the featureless blue, scattering smaller fish.

This was truly a staggering collection of organisms, all taking what advantage they could of the ripping current and available food. We would thrill to this ever-changing circus of life again and again while diving around Wayag.

The Night

Several nights later David moved the *Shakti* a few miles out of Wayag into another modest group of limestone islands. From here we would explore the marine lake we had come to see.

We had first learned of Raja Ampat's



TOP: Iris lapettes on this crocodilefish camouflage the eye and possibly protect it from ultraviolet rays. **FAR LEFT:** Seventh heaven for all. **LEFT:** A banded sea krait, deadly poisonous but docile. **FACING:** A young manta feeds on nocturnal plankton.

marine lakes from a set of aerial photographs. The photos showed several candidates though there was little topographical information available. We then used Google Earth to find other possible lakes, but without high resolution imagery, it was impossible to discern if the lakes were truly isolated or were connected to the surrounding sea.

As twilight quickly cloaked our anchorage, we sat to plan the upcoming first swim in the lake. Our planning was interrupted though by someone shouting on deck. Not able to pick out what was being said, we rushed up to find eight people leaning over the rail, rapt.

Down into the ink-black water, the graceful lines of two juvenile mantas became apparent, rising then looping and fading into the depths. These two shadowy figures were feeding on plankton attracted by the ship's deck lights. The mantas uncurled their distinctive cephalic fins in front of their wide-set eyes, using them to scoop a myriad of minute creatures into their gaping mouths.

Everyone on deck was awestruck. Being in proximity to such magnificent and charismatic wildlife was mesmerizing. The dark duo flew back and forth, performing fluid circus tricks in the narrow cone of light pooling on the surface of the water.

We happily watched this scene for an hour, until we could hold ourselves back no longer and edged into the water to get even closer.

Besides our spotlight, the water was lit by the barest of soft glows from a sliver of moon overhead. No flashlight was necessary as the mantas continued to weave in and out of the spotlight, gulping untold amounts of plankton. David and I stayed in the water for hours and as the mantas grew more used to our presence we began freediving with them, playing bit parts to their starring roles. One





CLOCKWISE FROM ABOVE: Clambering over the karst walls then diving an algae-infested marine lake are not for the faint of heart; even mangrove roots serve as footholds for soft corals looking for a perch from which to dangle their polyps in the current; lying upside down in anaerobic mud, *Cassiopea* jellyfish act like solar panels, collecting sunlight for the symbiotic algae living within their tissues.

of the rays was especially friendly and performed somersaults with us, while the other concentrated on feeding below our frolicking. Eventually our energy waned and we bid them farewell, ecstatic at our experience of freediving under a crescent moon with these angels of the night sea.

The Lake

The equatorial sun broke over the limestone ridge, splashing its early rays upon *Shakti*. Today we would visit a marine lake, with the first challenge being to get into it, over the intervening rock wall.

Most marine lakes, if not all, form among soft, biogenic (originating from the processes of living things – in this case coral reefs) limestone. Depressions are created in uplifted rock through millions of years of erosion, deepening through the action of rain and carbonic acid. Rising sea levels then allowed pools of seawater, seeping through cracks and fissures in the limestone, to fill those depressions.

Probably formed in the Holocene, these marine lakes are more significant than they may sound. The seawater percolating in and out through fissures

in the rock is largely isolated from the power of tidal action. They therefore act as giant undisturbed petri dishes, growing their own brands of fauna that are cut off too from some of the selective pressures of the more chaotic oceanic environment outside them. Most lakes' marine flora and fauna are poorly documented, but they are expected to harbour rapidly evolving populations of new and endemic species.

To get into the lake we had scoped out from remote imagery, we first had to find a possible route. Having experience of climbing this sort of limestone in Palau,

A layer of gin-clear water lay over a lower layer clouded with nuclear-bright algae



I knew what we were in for. To put it mildly, it would be hazardous. Not only was the rock we had to climb steep, it was also sharp and unstable, a scramble for the sure-footed only.

With a slip or fall potentially resulting in a serious injury in an extremely remote place, I had decided against taking clients in: it would be David and I alone. Besides the danger, there was the fact that marine lake habitats are small and undisturbed places. Not knowing what you're doing could result in the destruction of previously unknown organisms.

We proceeded gingerly, testing our footing, discovering early that every other plant in the thick forest seemed to harbour a colony of biting red ants, all to ready to scurry up the shorts of a passing human. And that all the plants in-between seemed to have blades like bandsaws.

After an hour of scrambling, sweating



We could only speculate on what we had discovered – and how much still lay out there to find another day

and cursing, over, under and through the dense foliage and jagged rock, we made it to the edge of a tranquil lake.

Spread before us was a 100-metre wide pool of reflected sky. Towards the opposite end, the lake narrowed to a bottleneck and opened again, making it appear as a large, green hourglass from above. This was perfect, sheltered territory for the largest reptiles on earth and David whispered across to me: "Maybe we should check it out for crocs

before jumping in . . ." But we were too impatient to get to the cooling water, and quickly sought out depth enough to lie down in. At this point, David realised that he had forgotten his mask, of all things. Not wanting to be the only croc bait in the water, I convinced him to stay in so we could explore the far end of the lake.

Lying in a half metre of water, I looked down at the bottom which was covered with a glowing green algae. The lake was an emerald dream-world, as deceptive to

the casual eye as is a terrestrial desert. A layer of gin-clear water lay over a lower layer clouded with nuclear-bright algae. The true bottom lay some way below that. For a moment I felt a pang of guilt, intruding on this eerie scene. Throughout the fibrous stands of algae were a tangled mass of whitish bristle worms, each over 30cm long! These carnivorous beasts defend themselves with stiff, hollow, toxin-filled bristles arranged on their segmented bodies. Having suffered from these

Wind of change? Will the arrival of man on this timeless scene expose the islands and their reefs to more severe pressures?



toxins in the past, David and I were extra careful not to disturb them. Omnivorous cephalaspideans, related to nudibranchs, also slimed their way through the greenish algae, searching for whatever meal they could find. Thoughts of what the lake's inhabitants fed on led me back to my earlier concerns and I quickly scanned the waterline for any swimming 'logs'.

We circumnavigated the lake, crawling between mangrove prop roots. Sponges, tiny, translucent tunicates and hydroids covered the tangled roots while tiny, silver baitfish nervously flitted in and out of the shadows. Within this remarkable natural amphitheatre there were almost sure to be marine species new to science.

Finding a low point in the limestone walls that rose around us, we decided to follow it out, figuring it couldn't be more difficult than what we had previously come through. Along the way, we edged by a mucky area sparsely populated by mangroves. Peering into the shallow water we found a horde of tiny floating rubies! Thousands of brilliant red shrimp, obviously not used to predators, stared up at us with faceted eyes. David and I were delighted with this find, possibly a new or endemic species, but we had to get a move on before night fell so we bade them farewell, promising we'd be back.

The homeward leg

Sailing away from Wayag was like departing from an improbably beautiful new love. We wondered whether this virgin beauty would remain intact, her secrets safe until our hoped-for return.

Our adventure into the alien world of Petri Dish Lake, as we had christened it, had yielded rudimentary data and sightings that we would pass on to more capable scientists. In the meantime, we could only speculate on what we had discovered – and how much still lay out there to be found another day. ▲▲

PRACTICALITIES

When to go

There are calm seas for most of the year, with only slightly rougher conditions from July to September. More rain is possible at this time too, but as it rains all-year-round and anyway mostly at the end of the day, the impact on your plans will not be huge.

How to get there

Fly through either Jakarta or Manado on Sulawesi and then on to Sorong, Papua on Merpati (www.merpati.co.id), Lion Air (www.lionair.co.id) or Wings (owned by Lion). From Sorong, board your liveaboard and set sail northwest into the Raja Ampat region.

Prices have see-sawed with the price of oil over the last year. In November 2008, it cost around US\$500 to fly Jakarta-Sorong return. The Manado roundtrip is less expensive so consider using Singapore as your gateway to Indonesia.

What to take

Though the water is warm (~28-29°C), the strong currents can make it seem a fair bit cooler and a 3mm wetsuit, either full or

shorty, is recommended.

Bringing your own dive or snorkel gear is best though most liveaboards have gear to rent – check with your operator beforehand regarding what is available.

If you are doing the scramble over and into one of the lakes, bring training shoes or perhaps booties with a solid sole.

Everyone will want to take precautions against the strong equatorial sun.

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