

The reefs of Kimbe Bay are an underwater classroom for students of the Marine Environment Education Program. Photo: Juergen Freund

# Coral

## CRUCIBLE

### Part Two

Don Silcock

It's a long journey from Papua New Guinea to the Red Sea, but the way Max Benjamin tells the story, it took a trip to diving's Mecca for him to fully appreciate what was beneath the surface of his own backyard.

That was 1978 and Sharm El Sheik, at the northern end of the Red Sea, was generally considered to offer some of the very best diving in the world, but Max and his wife Cecilie were left rather underwhelmed by it all...

Back then they were the new owners of the 325 hectare Walindi palm oil plantation, on the shores of Kimbe Bay

in New Britain, and had learned to dive a few years earlier, assuming what they saw underwater in Kimbe Bay was quite normal.

It was only after they experienced what the Red Sea had to offer did they realise just how special Kimbe Bay was!

The rest, as they say, is history and in 1983 they started Walindi Plantation Dive Resort, which has grown over the years to become one of PNG's premier dive locations with its own liveaboard, the *MV Febrina*, capable of exploring the most remote parts of New Britain.

Less well known though is what Max

and Cecilie have done to preserve the unique biodiversity of Kimbe Bay as a result of that epiphany on the shores of the faraway Sinai Peninsula.





Pristine Restorf Island in Kimbe Bay



Traditional society in PNG is based on a strong allegiance to clan and tribe, and even now almost 85% of people live a village-based subsistence lifestyle.

Very little land is privately owned and, rather than individual ownership, the vast majority falls under the communal control of the many tribes that are the fabric of the country. Which means that, quite uniquely, the stewardship of the land, and in coastal regions the associated areas of the sea, is a shared responsibility led by tribal elders.

The land and the sea provide what the villages need to live and therefore it is

in the tribe's interests to manage those resources in what we in the "developed world" would call a sustainable manner.

But to the villagers this is simply common sense, as fouling one's own nest would surely be a profoundly stupid thing to do – a lesson Westerners are slowly but surely coming to terms with!

The PNG stewardship system evolved simply because it had to, and it worked extremely well for a very long time, but in the late 1980s things began to change as large-scale palm oil development and increased population density dialled new factors into the complex biodiversity

equation that is Kimbe Bay.

The cultivation of high-yielding oil palms in large plantations is a very critical export-focused business in a province deprived of virtually any other major industry, and its labor-intensive methods provide many jobs for the locals.

But there is also a downside, and in countries such as Indonesia and Malaysia the palm oil industry has received a lot of bad press because of the common practices of draining and burning peat

*"...to the villagers this is simply common sense, as fouling one's own nest would surely be a profoundly stupid thing to do..."*

land and clearing primary rainforest to establish new plantations.

In New Britain these practices have largely been avoided as the main producer, New Britain Palm Oil, has a very proactive approach to sustainable development.

However, the advent of a large palm oil industry impact in the Kimbe Bay area was much more subtle, which only became apparent over time as economic migration into the area, along with high natural rates of population growth, resulted in a steadily rising population density in the urbanised areas.

The increasing population placed far greater pressure on the local terrestrial and coastal ecosystems because of the rising demand for food, firewood and building materials, plus a significant increase in pollution.

Further compounding the situation,



Marine environment students in the "field". Photo: Juergen Freund



The classroom at Mahonia Na Dari. Photo: Juergen Freund

as new people and new ways flooded into the area, was the move away from the traditional cultural practices which had evolved over the centuries to sustain the subsistence lifestyle of Kimbe Bay.

Both Max and Cecilie Benjamin are trained agronomists and by the early 1990s it was becoming obvious to them that, if left unchecked, the changes occurring in the area could only degrade the pristine environment. In 1993 they joined forces with the local government and The Nature Conservancy to develop an overall long-term conservation

strategy for Kimbe Bay, which would also support sensitive and sustainable tourism development in the area.

The conservancy is a respected not-for-profit organisation that came on board knowing that while Kimbe Bay faced environmental challenges going forward, it had largely escaped the ravages of cyanide and dynamite fishing associated with the live reef fish trade, which had wreaked so much damage to coral reefs across southeast Asia.

The following year the organisation, supported logistically by Walindi, carried

out the first ever evaluation of the marine environment of Kimbe Bay to try to quantify its biodiversity.

A Rapid Ecological Assessment was conducted with a specific focus on the coral reefs which, although considered to be little more than a lifeless and indestructible rock formation by the native people of Kimbe Bay, play a vital role in local culture and mythology.

The assessment uncovered the magnitude of the bay's marine diversity, with a staggering total of 860 species of fish and 345 species of stony corals identified on the 78 sites visited.

It was also realised that the key to safeguarding this diversity was education, for if the local people did not appreciate what was under the water in Kimbe Bay, how could they be expected to preserve it? A two-pronged strategy was developed consisting of the establishment of Mahonia Na Dari and Locally Managed Marine Areas.

Unusually for PNG, the people of New Britain have a limited connection with the rich waters surrounding the island - with few children learning to swim and many residents of inland villages never having even seen the ocean....

Working with The Nature Conservancy, and the European Union-funded South Pacific Islands Regional Environmental Program, Max and Cecilie established Mahonia Na Dari ("guardians of the sea"

Primary school students learning about the sea. Photos: Juergen Freund



in the local Bakovi language) in 1997 on land they owned next to the resort.

The goal of Mahonia is to develop an awareness of Kimbe Bay's unique environment so its protection and conservation can become self-fulfilling, and it does this by educating the young people of the area through its Marine Environment Education Program.

The program takes students, many of whom have no experience whatsoever of the marine environment, out on the water where they can see things first-hand and better understand the need to protect Kimbe Bay.

The program's success has led to three student-focused versions being developed; for pre-schoolers, primary and high schoolers plus one for teachers so they can conduct classes in their schools.

In the 15 years since being established, Mahonia Na Dari's programs are estimated to have directly or indirectly benefited more than 200,000 people.

As the old Chinese saying goes - "If you are planning for a year, plant rice; if you are planning for 10 years, plant trees; if you are planning for 100 years, plant education."

Locally Managed Marine Areas are a well-established strategy throughout the Pacific Islands and are considered the best way to help local communities self-manage their marine resources sustainably and with a high degree of protection for the environment.

However, in an area such as Kimbe Bay, where the sea is considered an unlimited resource and reefs are thought of as lifeless

rocks, the strategy in isolation would have little chance of success.

The entire community has to embrace the concept for it to work and, without the marine education programs run by Mahonia, this simply would not happen – hence the two-pronged approach...

Much has been learned since the first marine area was established at Kilu, next door to Walindi, in 1998 and a key to their success are the village elders as they intuitively understand the basic need for conservation and sustainability, and help to cascade the message down through the village ranks in the local dialect (Tok Ples). A major obstacle to overcome, as extra marine areas were established, was the culturally-intricate nature of the Kimbe Bay area which has more than 100 socially diverse communities, each holding complex and often overlapping traditional rights to sea resources.

Clear boundaries had to be set up, the environment within them quantified by evaluating coral growth, sea grass coverage and species count, then no-take zones and open areas established to show where fishing was allowed and recovery of the damaged reef needed to take place.

Halting and eventually eliminating the spread of "poison rope" fishing and preventing the encroachment of dynamite fishing was a crucial component of the programs.

Poison rope fishing uses the naturally-occurring derriss root plant, the roots of which are mashed with a rock into a white pulp which is then jammed into the coral by fishermen swimming down to the

reef top.

The pulp contains the poison Rotenon, which kills small fish and coral polyps but forces larger fish to the surface where they are easily caught.

With no real awareness of the destructive impact of the Rotenon, poison rope fishing can appear to be an effective way to catch fish but in reality it is potentially as destructive as cyanide fishing!

Dynamite fishing in PNG is not the scourge it is in other SE Asian countries but does occur in Kimbe Bay from time to time on an opportunistic basis using dynamite "harvested" from WWII ammunition found in the rainforest and then shoved into SP beer bottles...

Besides the obvious personal dangers,





Walindi dive boats prepare for another day on Kimbe Bay



dynamite fishing utterly destroys the area of a reef that its shock wave touches.

Funding for boats and engines by the provincial government enables the villagers to monitor their no-take and open area zones, and keep poachers at bay, while Mahonia provides periodic audits to keep the system honest and encourage sustainable fishing practices such as hand lines and spears.

There are now eight Locally Managed Marine Areas established in the Kimbe Bay area, with more planned going forward, and they have proved to be the single most effective way to manage the environment.

Papua New Guinea is an incredibly rich country which is home to almost 5% of the world's marine biodiversity, with just under half of that fish fauna, and virtually all of the coral species, found in Kimbe Bay.

Its location and unique topography have created the conditions to allow this biodiversity to thrive and in many ways Kimbe Bay can be considered as a kind of fully stocked marine biological storehouse – it is that special.

The perseverance of Max and Cecilie Benjamin to open up the wonders they found underwater in their backyard is admirable, but their sheer determination to protect and conserve it deserves a standing ovation! ▲

*Don Silcock*

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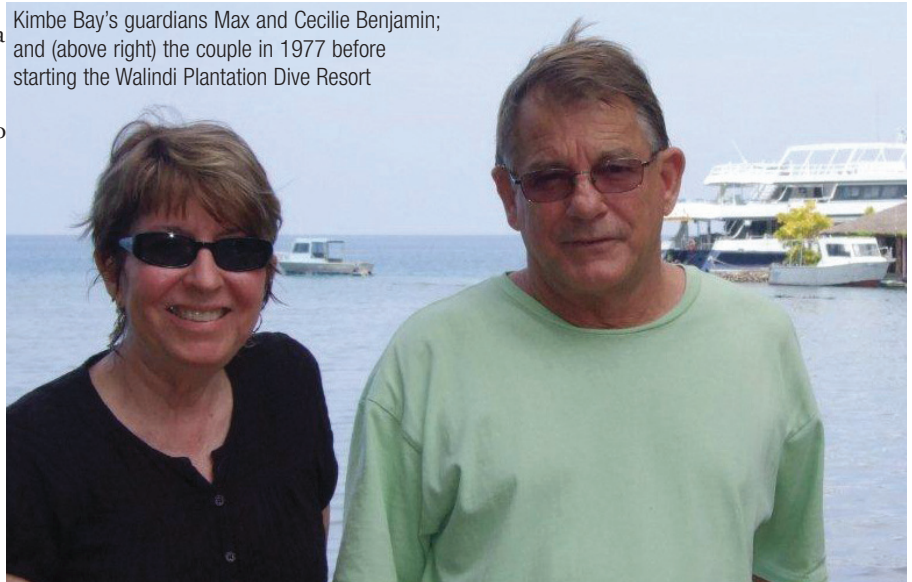
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Kimbe Bay's guardians Max and Cecilie Benjamin; and (above right) the couple in 1977 before starting the Walindi Plantation Dive Resort



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