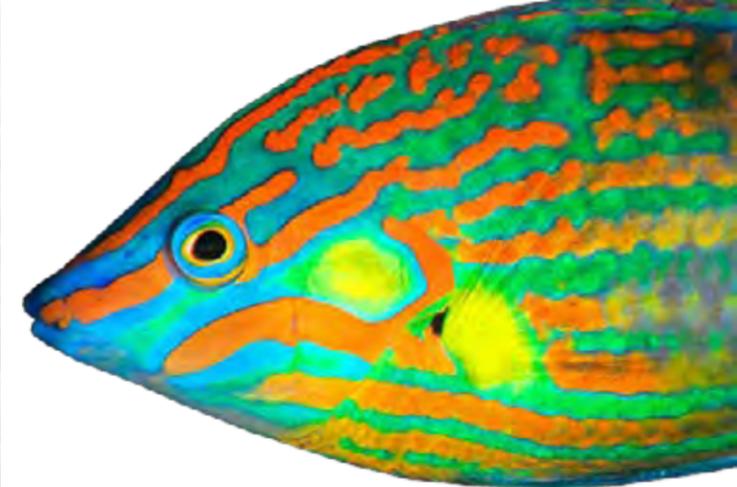


Reefs & Rainforests

Conservation Success Stories in Borneo's Sabah



Text and photos
by Andrea & Antonella Ferrari
www.reefwonders.net

Encompassing an area of roughly 460 square kilometers just off Northern Sabah's shores, right where Malaysian Borneo's landmass, small offshore islands and international waters intermingle with their Philippine counterparts in the Sulu Sea, lies the Sugud Islands Marine Conservation Area, or SIMCA, for friends. The island of Lankayan and its two neighbouring sisters Billean and Tegaipil have been declared since the year 2000 part and parcel of the protected area in what has since proven—beyond any doubt—to be an extraordinary landmark in the history of eco-tourism.





Bridled anemonefish;
Sunset on the pier at
Lankayan; Dive boat
racing to a dive site



Destructive practices such as cyanide fishing, reef bombing and deep-water trawling—which had been regularly employed in the area for several years by local and Philippine fishermen—are today no more allowed in the surrounding waters. Turtle eggs are regularly collected from nests dug in the sand and safely hatched under controlled conditions for reintroduction in the wild, and many other conservation programmes are now being—and will be in the future—vigorously implemented by Sugud Islands Marine Conservation Area’s (SIMCA) managing company Reef Guardian, a private venture working in strict accordance with the Sabah Wildlife Department.

The area within the borders of SIMCA consists of a beautiful environment encompassing small uninhabited coral sand islands, patches of mangroves, huge seagrass beds, shallow sandy flats and an immense number of submerged coral reefs that host an enormous number of marine species, many of which are still wai-

ting to be scientifically described.

SIMCA’s main topside landmarks are the uninhabited and sun-scorched islands of Billean and Tegaipil, and of course, the fabled Lankayan Island—the only one with a human presence. Lankayan boasts a world-famous, upper-class, and most of all, eco-friendly dive resort, sitting in splendid isolation on this tranquil little private island in the midst of the Sulu Sea.

Since our first visit to Lankayan more than twelve years ago, we immediately realized there was something special about the place. The island (or “Pulau” in Malay) is strategically situated between the coast of Sabah and the myriad of islands spreading from the Southern Philippines. Its very name means, in fact, “the last outpost”. This labyrinthine maze of shallow turquoise waters and jungle-clad sandy cays has hidden and protected for centuries the secret sea lanes used by pirates, poachers, smugglers, and even assassins.

Marine life

Fish life is unbelievably abundant, luring in fleets of trawlers from both countries and the occasional big game fisherman. It was two of these, Ricky Chin and Kenneth Chung—two friends from the nearby coastal town of Sandakan—who discovered it several years ago during one of their big game fishing forays, and who made friends with Haji Bambi, the only man who back then was living there, after a life rich in adventures in the sea between Sabah and the Philippines.

To make a long story short, their meeting was at the origin of Pulau Lankayan as we know it today—a small, pristine tropical island on which a quiet, elegant resort caters to the needs of discerning divers and vacationers from the world over. A perfect holiday destination, the place—a tiny dot in the Sulu Sea about one-and-a-half hours by speedboat from the coastal town of Sandakan in Malaysian Sabah, on the island of Borneo—is a gorgeous, picture-



Batfish in coral garden; Sundeck at Lankayan Resort; Diver with large anemone

perfect cay, boasting pure white sandy beaches and a lovely, garden-like jungle interior, offering the exhilarating diving one has come to expect from Sabah's dive sites (shallow coral reefs, unsurpassed macro life, undescribed new species waiting to be discovered, big fish action, enormous biodiversity, interesting wrecks).

Add to the mixture an exquisitely styled, upscale resort, elegant and comfortable twin-sharing seafront chalets with private and well-appointed bathrooms, an open-air restaurant offering great food and a spectacular sundeck with an endless expanse of turquoise water just a few feet below, and you'll see why we love the place.

Here's a private exotic island where even non-divers can enjoy the perfect holiday, relaxing on the beach or snorkelling in the crystal-clear shallow waters of the lagoon, while sea eagles fly over, their piercing screeches tearing the sky

in the distance, and the jungle-shrouded mountains of Sabah tower on the horizon, bathed in golden glorious sunsets.

An informal, friendly, casual atmosphere adds to the pleasant feeling of "away-from-it-all" relaxation. Everything is so well spaced out and cleverly planned you might sometimes think you're all alone by yourself on the island.

Diving

The diving is at shallow to medium depths, always enjoyable, never risky or fatiguing. The dive center is well equipped and ideally situated at the end of the long jetty. The island staff are, if possible, even more cheerful and willing to help than in the rest of Sabah, Malaysia—a country remarkable for its extraordinary tradition of hospitality.

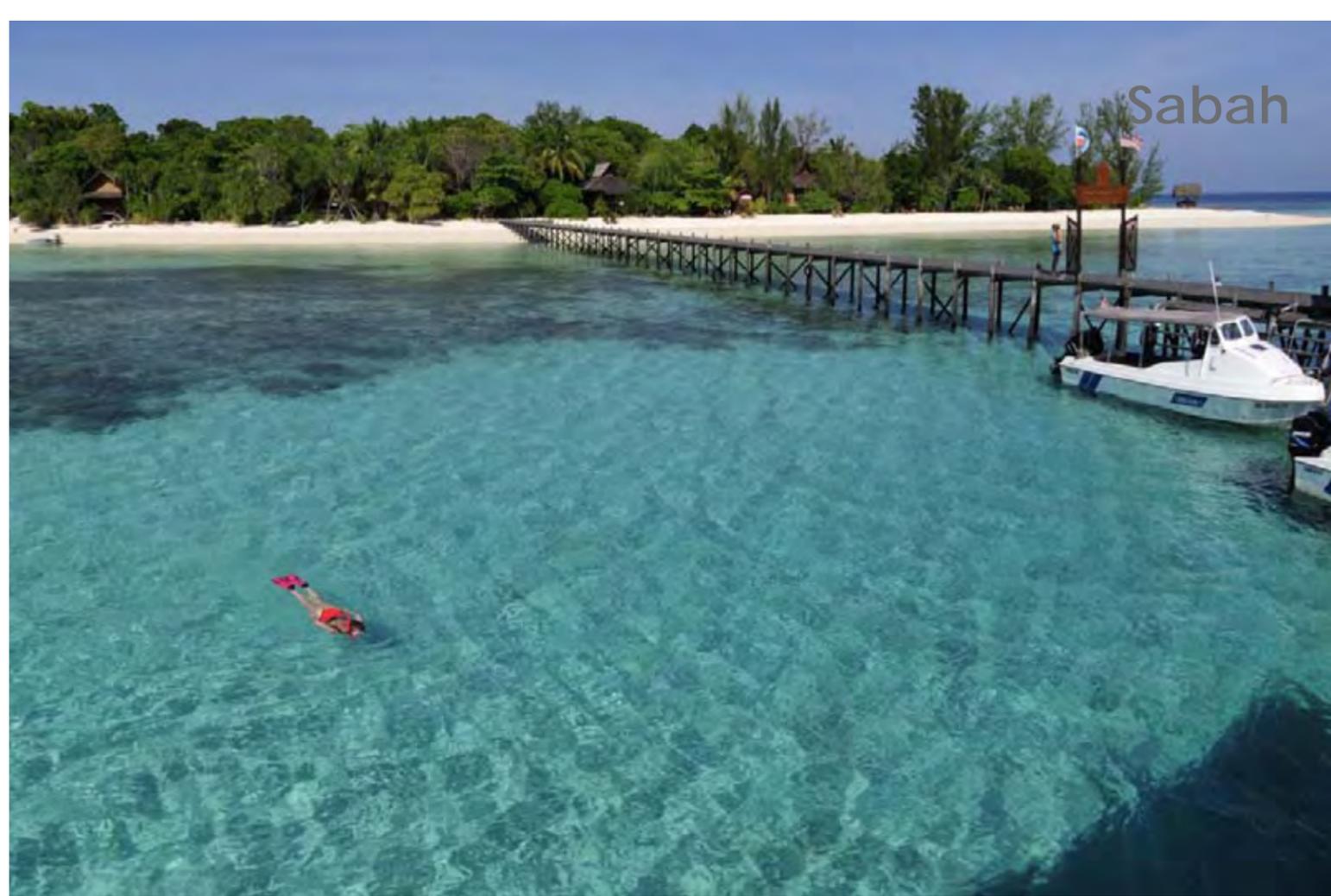
Small species here—many absolutely fascinating and quite a few still undescribed by science—reign supreme: resplendent gobies, unbelievably colourful nudi-

branches, dwarf cuttlefish, fluorescent fire urchins with attendant crabs and huge lobsters dot the sand and coral bottom of each and everyone of the thirty-plus dive spots Lankayan offers at the moment.

The list of rare species regularly observed here includes robust and ornate ghost pipefish, frogfish, mandarinfish, blue-ringed octopus, wonder octopus and giant jawfish. Larger sightings along the reef include lots of harmless bamboo and coral cat sharks, blue-spotted rays, yellowtail and chevron barracudas, huge shoals of scads and robust fusiliers, giant bumphead parrotfish, a large variety of scorpionfish and lots of leopard (or zebra, as they are sometimes called) sharks.

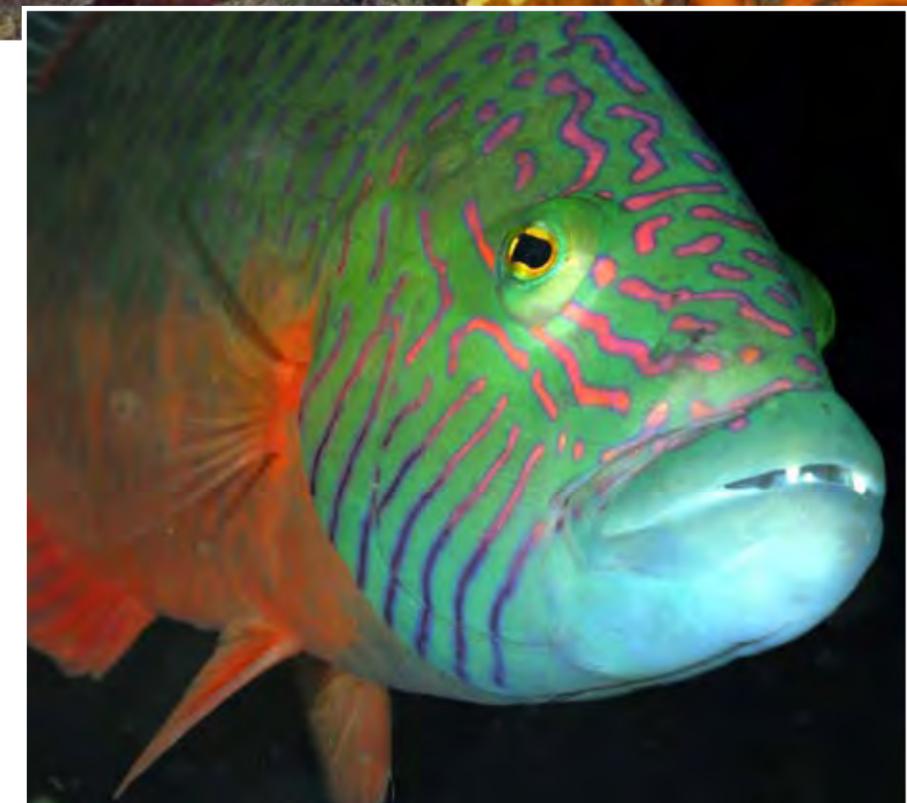
Chance encounters with bigger fish are not uncommon: very large adult blacktip sharks are commonly observed in several of Lankayan's outer dive sites, whale sharks patrol in season the open





Sabah

CLOCKWISE FROM BOTTOM LEFT: Linedcheeked wrasse; Lionfish; Snorkeler in bay at Lankayan; Mug shot of moray eel



water between the island and the mainland, while giant guitarfish—locally known as malumu—are a rarer sighting.

During our most recent trip there, we bumped into a three-meter long Galapagos shark leisurely cruising at a depth of five meters, and many of our Sabahan friends have told us about occasional tiger shark sightings.

A fascinating array of spectacular species is also encountered at the two wrecks in the vicinity of Lankayan: the imposing remains of a huge Chinese wooden fishing vessel sunk on purpose—now home to giant groupers, giant marbled stin-

grays, frogfish, scorpionfish, lionfish and huge shoals of pelagics—and what is left (very little, alas!) of an historically significant armed barge belonging to the “Mosquito Fleet”, which served the Japanese and sunk during World War II.

One word of advice: due to its close proximity to the coast of Sabah with its attendant run-off from big muddy rivers and oil palm plantations, underwater visibility at Lankayan is usually far from perfect, even if there are unpredictable exceptions.

While this is of no consequence at all for macro photographers and videographers, it may prove quite frustrating

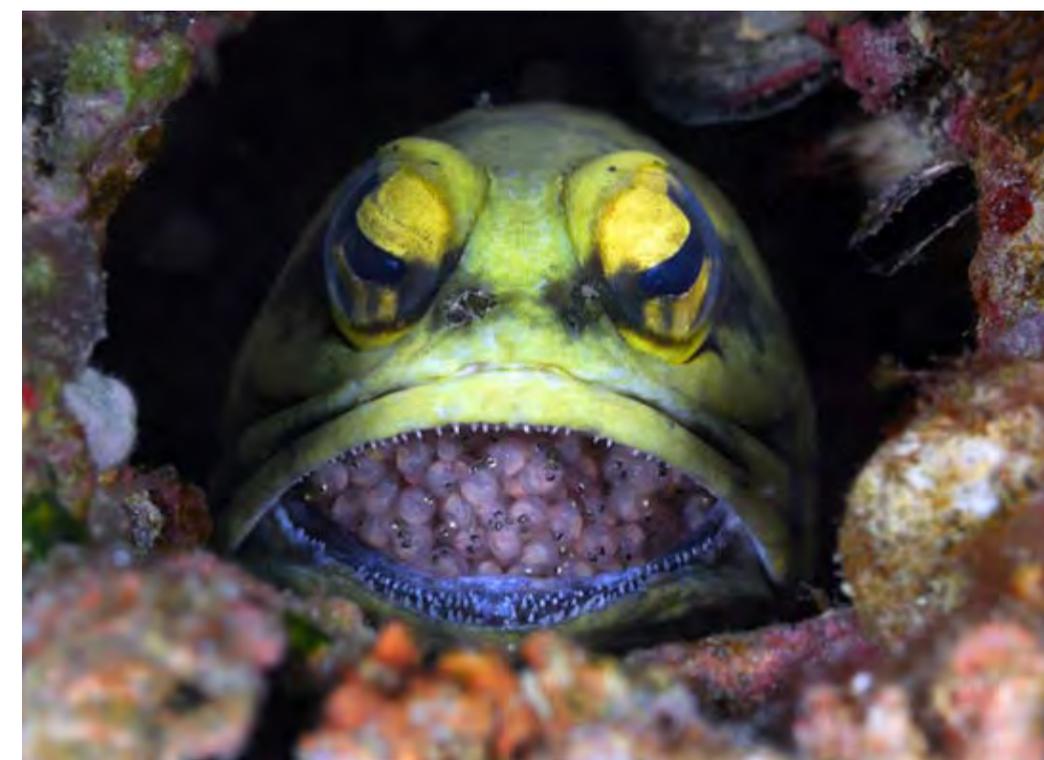
for wide angle lovers and big fish addicts, especially since it quite common encountering large animals during the course of a single dive (our record is five leopard sharks, one huge mangrove stingray, a whale shark and a roving pack of five adult blacktip sharks in one day!).

Lankayan is a macro life paradise with few comparisons but no destination for wide angle photographers, and divers must think of it more in terms of a successful conservation story than as a gin-clear water destination. As a tropical island destination for honeymooners, snorkellers, diving families and macro rese-





CLOCKWISE FROM BOTTOM LEFT: Blenny; Eggs in the oven; Eye of blue spotted stingray; Goby on hard coral; Leopard shark resting; Scorpionfish; Map puffer fish



archers, it has however very few equals anywhere.

But to Ken Chung, managing director of PSR—the dive resort company which also owns and operates Kapalai resort, close to world-famous Sipadan Island, and the jungle resort in Sepilok—there is more to Lankayan than just tourism.

With the passing of time, Ken Chung realized the intricate environment of Pulau Lankayan and its surrounding coral reefs were going to be endangered soon. The very same marine life which attracted tourists and divers from all over the world was acting as a beacon for fishing boats, raiding these waters in always greater numbers.

Local fishermen and their counterparts from the Philippines would not hesitate to resort to highly destructive fishing methods, largely and for a long time in use on Sout East Asian coral reefs: fish bombing (in which home-made and quite dangerous bombs consisting of a bottle full of fertilizer are thrown in the water or on coral reefs), cyanide fishing (in which the noxious chemical is squirted using a spray bottle among the nooks and crannies of the reef to stun fish

later sold to Chinese restaurants) and trawling (with weighted nets which scrape the sea bottom floor, destroying everything in their path) would soon take their toll if left unchecked.

The first tentative conservation efforts soon paid off: feeding a resident population of baby and juvenile blacktip sharks encouraged the endangered predators to stick close to the island reefs, away from roving fishermen in the open sea; scores of hawksbill and green turtle eggs, laid in the sand by their mothers, would be dug out and hatched inside fences which protected them from predators, and hatchlings would be carefully released into the sea; the cutting of trees and shrubs on the island would be kept to a minimum, and all trash and refuse would be carefully disposed of.

We were there all the time, twice a year, to see and follow the growth of an eco-friendly mentality on the island. Year after year, we noticed how the steps taken in the right direction would not interfere with the functioning of the resort, the relaxed, laid-back atmosphere, which still unfailingly impresses first-





CLOCKWISE FROM RIGHT: Whale shark, the largest fish in the sea; Two baby sea turtles make their way to the open ocean; Copperband butterflyfish (inset); Two Coleman shrimp on fire urchin; Feather coral and sponges

sightings we missed but many others did not, and we were the first ever to capture on film the incubation of eggs in the oral cavity by the endemic Giant jawfish.

We swam with huge Whale sharks, we witnessed the violent courtship ritual and subsequent mating of Leopard sharks, and we found lovely Zebra crabs and Coleman's shrimps tucked among the venomous spines of fire urchins. Marine life was improving, the unmistakable signs were everywhere. The hard and sometimes dangerous job of resort manager, Ricky Chin—always ready to jump on a speedboat to chase away poaching fishermen—was giving welcome results.

But then it became clear a single private operation would not be enough to properly

time visitors.

The place was good—but it was getting better. Big fish

became the norm—the Giant guitarfish

patrol and manage such a huge area. More was needed.

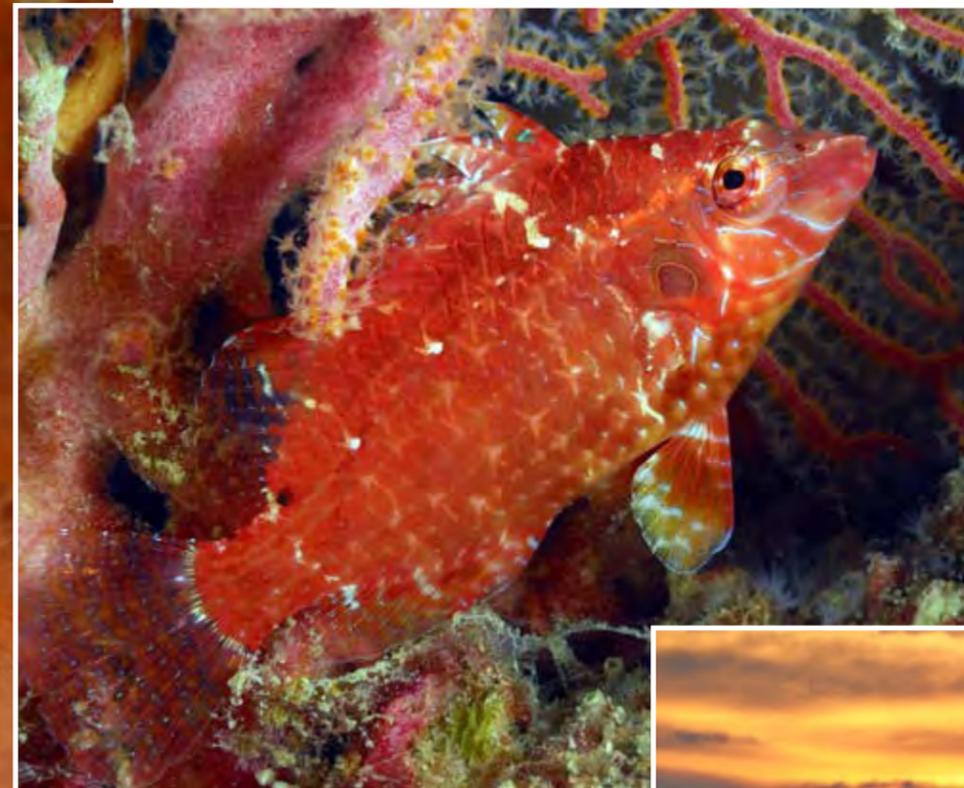
Reef Guardian

Enter Reef Guardian, the private company which now works side-by-side with the Malaysian Government and the Wildlife Department of Sabah to manage and conserve the area. A lot of hard work, tireless lobbying and clever political maneuvering succeeded at last in transforming the dream in reality. In 2003, the Marine Protected Area (MCA) of the Sugud Islands was finally officially declared. The playground of a lucky few had become a winning example of ecological conservation through the cooperation between private enterprise and the state.

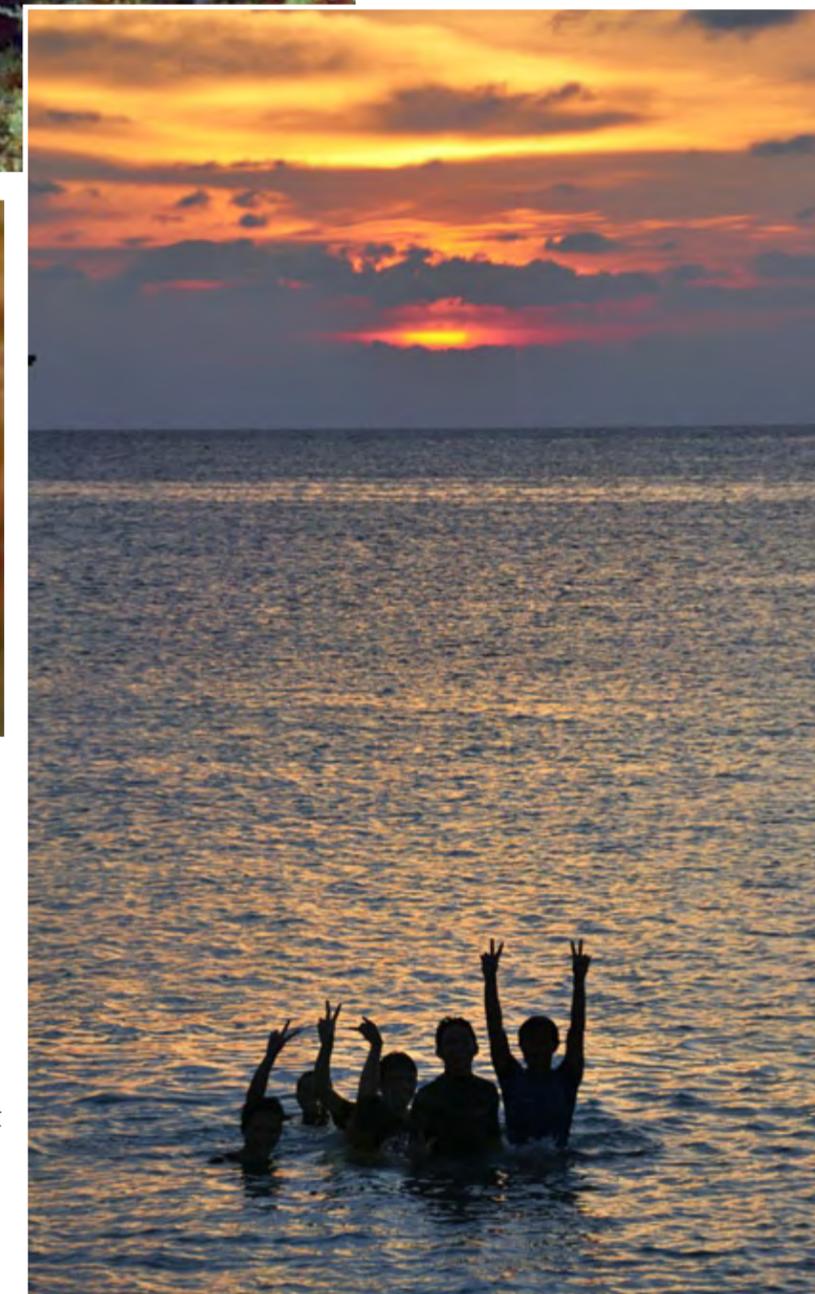
PSR, through its subsidiary, Reef Guardian, protects and conserves the natural resources of the area, reinvesting part of the profits into its management. Patrol boats have been bought and equipped staff members have been employed and well trained. Marine biologists have been invited to conduct surveys and a census of the marine life. New

methods of rubbish and non-solid waste disposal have been developed and researched, to first minimize and then completely





CLOCKWISE FROM FAR LEFT: Hairy squat lobster; Hawkfish and fan coral; Enjoying a sunset swim at Lankayan; Nudibranch *Chromodoris coi*; Aerial view of the island of Lankayan



gile marine ecosystem of Lankayan for us all to enjoy.

The story of Lankayan shows what can be done when an individual with a thinking brain, a clear vision (and admittedly a lot of capital) can do when he sets his mind on eco-tourism and marine environment protection. Its success has recently led to the creation of a second eco-friendly upscale dive resort, this time on the neighboring island of Billean. From what we have seen—it will probably open in 2010—it promises to be even better than the original one on Lankayan.

Concluding thoughts

We have travelled and dived the world far and wide, but the story of Pulau Lankayan and the Sugud Islands Marine Conservation Area is still quite unique in our experience.

avoid the seepage of nitrates (the bane of island resorts with no sewer systems) in the surrounding, pristine sea waters.

The huge problem of phosphates coming from oil plantations on the coast and being flooded out to sea —where they lead to plankton and algal blooming, putting the survival of coral colonies at risk—by rains and rivers is going to be tackled soon. And many more steps will surely be taken in the future to preserve, defend and re-habilitate the splendid, fra-

Most dive resort operators are not really willing to embark onto such a far-reaching voyage, being contented to mind their own business, failing to realize the extent of consequences when the local government (and people) are not actively involved.

How many private entrepreneurs have actually succeeded in having the government declare a protected area around their own island or stretch of land? How many tourist and dive operators have actually tried and fought to do so? Protection of



habitats as a whole is the first unavoidable step towards protection of single species, and habitat protection needs lots of money to be implemented correctly. The costs are high, but as the axiom says, “think globally, act locally”.

Patrols must be regularly mounted, staff must be properly trained in field procedures and regularly paid, expensive equipment must be acquired and maintained, research must be done and updated, data must be stored and analyzed.

Without money, there’s no protection, and without protection only destruction will follow. The proper management of a successful dive resort and operation such as Lankayan points the way in the right direction. The results are there for all to see. ■

Sepilok

In the forest realm of the Orang-utan



Text and photos by Andrea and Antonella Ferrari

The biggest mistake one could do while visiting the Sepilok lowland tropical forest would be watching the orang-utans, or rather, watching *only* the orang-utans. That is because this formidable stretch of wilderness—wisely preserved just a few miles from the modern bustle of Sandakan town—offers an unequalled opportunity to observe in comfort the utterly complex mechanisms of nature at work in the tropics.

big red-haired apes, their extraordinary prowess in tree-climbing and upside-down vine-dangling, and after having been dutifully moved to the depth of the heart by their soulful gaze (no other primate looks at you like an orang-utan does), the visitors should stay a little longer in the forest, to take a leisurely stroll along the well-marked trail in the company of a biologist and guide from the Rehabilitation Center.

It is then, and only then, that one will be able to hear the hypnotic, cycada-like song of the tree frogs, the booming, cackling call of the great hornbill, the soft rustle in the dead leaves on the forest floor at the passing of a bronze skink. Only then, the metallic shine of spider eyes will be apparent; only then, the dead brown little branch will start walking with the hesitant steps of the stick insect; and it is only then, that the bright green leaf buds on a low shrub will suddenly

take the coiled shape of the pit viper waiting in ambush. A little patience will repay the visitor with extraordinary gifts.

And after having experienced the tropical forest in its full complexity, even the orang-utans will appear in a new, full, more complex dimension, encompassing their role in the ecology of the forest and their extremely difficult situation at the present time, when their survival in the wild is severely endangered by logging, mining and general habitat encroachment by human beings. Their's is a complex problem, and one which touches us all: the preservation, not of a single species, but of full habitats is rapidly becoming one of the most important concerns of the new century.

Where to stay

So, to take the time needed to fully appreciate the ancient rhythms of

After having admired for as long as needed the delicate grace of the



Sepilok Calotes lizard

THIS PAGE: Orang-utans lounge in the trees of the forest at Sepilok's Rehabilitation Center; Green snake hides among the branches (above)





the forest, the best thing one could do is stay at least a few days at the Sepilok Nature Resort, a most beautiful compound bordering on the protected area (it is actually not uncommon to have orang-utans, macaques or

even pythons wandering around among the chalets) and perfectly integrated with the surrounding forest.

Set in a spectacularly landscaped private area of manicured lawns, orchid gardens and rolling hills, the fully airconditioned (and very comfortable) twin bed chalets feature beautiful lake or jungle view verandas and private bathrooms with hot water. The surrounding park, which would take half a day to explore, offers an amazing array of tropical plants

and grasses and a collection of more than 150 different Asian orchid species. The Orang-Utan Rehabilitation Center (where young captive or abandoned orang-utans are being helped by a highly trained and motivated staff to readjust to a life in the wild) and the actual Sepilok Forest Reserve are just a couple of minutes' walk away, and the Resort staff are happy to organize birding, trekking and river trips to the neighbouring areas (including the fauna-rich Sukau area along the Kinabatangan River).

Before venturing further away, however, one should first take advantage of the comforts offered by the Sepilok Nature Resort and fully explore the natural wonders of the Sepilok-Kabili Forest Reserve, which has enough to offer to keep one busy for months. Here, insects, amphibians, reptiles and birds abound; the trails are very well marked; and the local guides are friendly, reliable and extremely knowledgeable. Visits to Sepilok are also usually combined with dive trips to the beautiful island of Lankayan, which is owned and managed by the same company. ■

CLOCKWISE FROM TOP LEFT: Sepilok Resort restaurant overlooking a jungle lined lake; Orchids of the forest; Brilliant colored beetle found in the forest; Another splendid orchid on the grounds; Sepilok Resort bungalows; Pair of orchids (inset)



Kinabatangan

A trip to Borneo's hidden jewel



Text and photos by
Andrea and Antonella Ferrari

The lowland riverine forest, encompassing the extensive Kinabatangan river basin and its 26,000-hectare wildlife sanctuary, has few rivals in the world for remoteness, richness of animal species and just sheer natural beauty. At the same time, this spectacular and mostly untouched wilderness of Malaysian Borneo is very accessible and easily explored — usually by small boat during the day or walking by night or late evening.

Departing from Sandakan harbour, visitors can easily reach the Sanctuary's headquarters in Sukau—where most of the lodges are located—by a scenic

one-hour long boat trip that ends at one of the riverside resorts' pier. More and more guesthouses, jungle camps and fully-fledged forest lodges have been recently popping up along the river's banks, all offering excellent accommodations (of varying level and cost, but

all very clean and very well organized), good standards and very tasty Sabahan food, often using locally acquired, fresh organic products such as delicious vegetables or fruit and big river prawns grown and farmed by the local Orang Sungai (river people). The best way to visit the

Kinabatangan river basin with its enormous, eerily beautiful oxbow lagoons and many small, twisting tributaries is by booking a week-long stay via a specialized wildlife travel agency in Sandakan; service is usually excellent and specific needs of visitors are normally very well

cared for. Regularly subject to tides and periodical inundations during the rainy season, in a perennial state of flux and sparsely populated along its banks by small fishing and farming communities, the Kinabatangan river basin represents a very unique natural environment, pea-





Sabah

cefully shared by humans and wildlife.

The Importance of a Good Guide

The Kinabatangan river basin is a wildlife photographer's dream come true, as most Borneo wildlife is not only richly represented in the area but also often easily sighted and photographed around Sukau, provided one knows where and when to look. This is obviously a destination where the services of an experienced local wildlife guide are a must, especially for those taking their exploring seriously.

We had a stroke of luck and had the time of our lives with Dennis Ikon, a native, self-taught enthusiast who is not only a very experienced rainforest guide but also a passionate wildlife photographer to boost, always ready to recognize a photographer's special need or request without even being asked; he certainly made the difference for us. He has worked many times with big-time, exceedingly demanding pros such as Frans Lanting, so he knows his trade well!

Remember to take with you

a good telephoto (VR-equipped or with a sturdy tripod) for all the big and not so big species you'll observe during the day from the safety your boat, and a good flash, and your macro lens of choice for all the weird and wonderful little critters you'll see at night.

Being in Borneo, a sun hat and a lightweight rain poncho are nice to have around, especially if you plan to spend a lot of time exploring the river by boat. Night walks are safe and easy (leeches are harmless and nothing to worry about), but bring a pair of strong, comfortable jungle or trekking ankle boots and a small torch with you, and be prepared to get very wet and very muddy.

Where to go & what to do in Sukau

The average day in Sukau starts just before dawn, with the faraway hok-hok of some distant hornbill welcoming the first warm rays of the sun over the steaming jungle. After a lovely breakfast at the lodge, visitors hurry down the river side jetty to board a small, low aluminum

canoe powered by both petrol and electric engines to start the day's explorations. The boats are lightweight, flat-bottomed and very stable, making an excellent platform for a photographer's tripod – the local boatmen employed by the lodges take great pride and are very good at switching from petrol to electric just at the right time to allow as close an approach to wildlife as humanly possible.

Most exploration takes place at a leisurely pace along the Kinabatangan muddy banks and up its small, meandering tributary, the extraordinarily scenic Menanggol. It's a good idea to book one's accommodation as close as possible to its mouth, as the winding course of the forest-canopied Menanggol is a favourite destination for wildlife enthusiasts and birdwatchers visiting the Kinabatangan area. So, to enjoy it at its most evocative, unpopulated best, it's better



CLOCKWISE: Harlequin gliding frog; Crab-eating macaque; Mouse deer; Wagler's pit viper; Proboscis monkey male on tree trunk; Mangrove snake resting among branches

PREVIOUS PAGE: Pied Hornbill; Visitors exploring the Menanggol tributary, an oxbow lagoon of the Kinabatangan





Sabah

CLOCKWISE FROM INSET BELOW: A flower by the river; Buffy fishing owl at night; Stick insect; Water monitor; Rainforest katydid mimicking a leaf; Large Saltwater or Estuarine crocodile in the Menanggol

offering wonderful opportunities for safe, comfortable and very fruitful night walks.

Even closer to the coast and branching out to the Sulu Sea itself, the immense estuary of the Kinabatangan is clogged in thick, labyrinthine, impenetrable forest of mangroves and Nipa palms—primordially beautiful and rich in species but not easily



explored or, thankfully, exploited. You will have excellent opportunities to admire this unique environment on your way to and from Sukau.

Encroached on all sides by rapidly developing oil palm plantations—the scourge of Borneo's primeval forests—and endangered by logging plantations, which severely curtail the larger animals' migratory routes and forest corridors, the Kinabatangan Wildlife Sanctuary is never-

theless officially considered today to be one of the most important and pristine areas of wilderness in the whole world, and as such, it cannot be missed by wildlife enthusiasts. Floating down its murky, deep, slow-flowing waters is like taking a veritable trip back in time.

A treasure trove for wildlife lovers

But what about the animals one can hope to see? Well, we know very few areas outside of the African plains and the Venezuelan Llanos where one can hope to observe and photograph such spectacular amounts of tropical wildlife. Remember always, however...this is South-East Asia—not the Serengeti!

Commonly sighted reptile species here are estuarine or saltwater crocodiles (with some very big individuals occasionally sighted up close), reticulate pythons, mangrove and dog-toothed cat snakes, bright green temple pit vipers and very large water monitors, while among the 250 bird species found in the area one can sight, among others, several species of large hornbills (including the spectacular Rhinoceros hornbill), fish-eagles, buffy owls, kingfishers, cuckoos and darters. Among the large mammals, wild pigs, dwarf Bornean elephants, river otters, leaf monkeys, long-tailed

macaques, wild orangutans and proboscis monkeys are commonly observed, often up close and at length. In fact, the Kinabatangan Wildlife Sanctuary is the best spot anywhere to observe the rare elephant of Borneo, a smallish and friendlier cousin of the Indian one which has recently been awarded its own species status.

This is also the land of flying snakes and flying frogs, while those interested in insects and spiders—often quite large and very colorful—will keep their cameras clicking away, especially if going out

at night and with a warm tropical drizzle shrouding the thick forest. All in all, the Kinabatangan river basin is a treasure trove of rare, endangered and fascinating tropical species, all to be found and often easily observed in a landscape of unrivalled beauty and isolation. As a choice destination for the discerning wildlife photographer and nature enthusiast, it truly has few equals anywhere, and one can only hope its currently protected status will keep it healthy and untouched for many, many more years to come. ■



to get there before anybody else, immediately after sunrise. If you're staying at a lodge close to its mouth you'll also be able to linger around for a longer time in the evening before going back for dinner and your night walk. If you can afford it and are serious about your wildlife photography, go for your own personal guide and boat. It will surely make a difference.

On foot or by boat

The thickly forested area around Sukau itself—this is prime virgin lowland dipterocarp country—makes extended exploration on foot rather difficult, but that around the village of Abai—somewhat downriver and closer to the coast and the sea—allows excellent walks on well-maintained forest trails and boardwalks,





Danum

The valley where time stands still



Text and photos by
Andrea and Antonella Ferrari

—A pristine, virgin rainforest

The crown jewel of the untouched nature of Borneo, the legendary Danum Valley Conservation Area is the largest protected lowland dipterocarp primary forest in Sabah, Malaysia. This pristine, untouched area of extraordinary beauty holds an unique status among other protected areas. Before it became a conservation area, there were no human settlements within the area, meaning that hunting, logging and other human interference was non-existent.

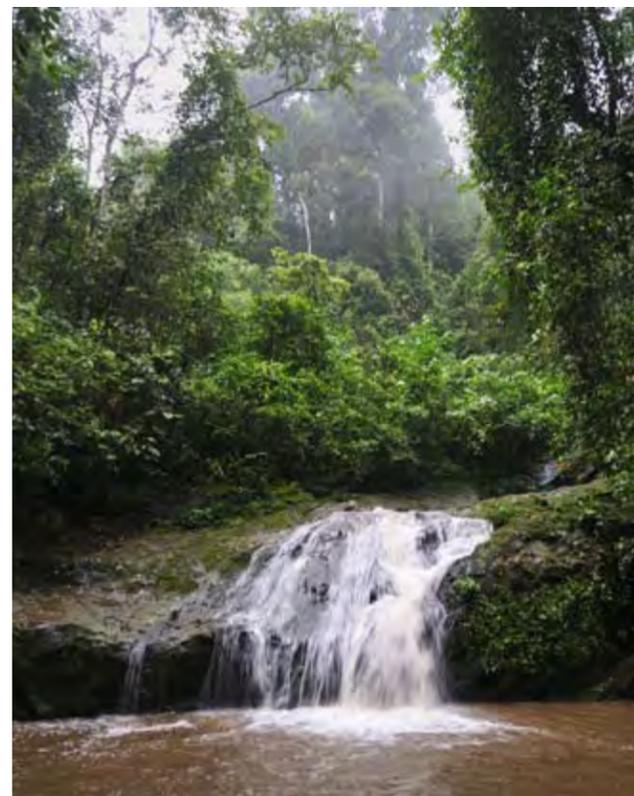
This makes the area one-of-a-kind among other protected areas in Sabah—evidenced at first glance by both the number of animal sightings and the sheer scope of its water-soaked, luxuriant rainforest. Danum Valley covers an area of 438 square kilometres and is currently managed by the Yayasan Sabah

Foundation, created in 1966 for conservation, research, education and physical training purposes. The nearest town, Lahad Datu—a quiet, smallish settlement at the crossroads between Sandakan and Tawau, which can be easily reached by car or twin-engine turboprop flight from both centers—is about 82km away (about a two-hour drive by four-wheel drive vehicles on mainly unpaved washboard logging roads in good weather, but be prepared for a much longer Camel Trophy-style slog if it has been raining!).

Given its formidable isolation and impenetrable rainforest cover, accommodation in the area is presently limited to two basic choices: the Danum Valley Field Centre, a research establishment reserved for scientists and education purposes only; while the other, rather splendid (and understandably rather expensive) Borneo Rainforest Lodge, has been created with conservation and low-environmental impact in mind for tourists to stay. From its beautiful, well-appointed chalets, visitors can take long, guided walks through lowland rainforest trails, while other activities include night walks (serious wildlife photographers should not miss these) and night drives (avoid these, which are crowded, noisy and not really suited to the local environment—rainforests are made for walking).

Visitors on the extensive rainforest canopy walk (above) and a view of the untouched primary Danum jungle (top right)





CLOCKWISE: Silver leaf monkey feeding at dawn; Perfectly camouflaged Borneo horned frog; A waterfall in the forest; Forest dragon lizard (male) on its perch; Jade tree frogs mating on a rainy night; A colorful Lantern bug (inset)

Fauna & flora with few equals

Danum Valley is a world-famous destination for passionate birdwatchers, but its undisturbed, virgin, thick lowland rainforest is home to many other animals including several large mammals, many beautiful reptiles and amphibians, and countless numbers of exceptionally attractive insects.

Mammals regularly sighted include wild Orangutans, gibbons, leaf monkeys, long-tailed and pig-tail macaques, wild bearded pigs, mouse deer and sambar deer. Lucky visitors may also occasionally encounter several species of wild cats (including the “dream date” of South-East Asian rainforests, the strikingly beautiful and incredibly elusive Clouded Leopard), the shy Bornean Pygmy elephant—which is much more easily observed, however, along the Kinabatangan river basin in the Sukau area—and even Malay Sun bears or Sumatran rhinos (but do not count on the latter!).

Birds commonly observed number several species of Hornbills (including Rhinoceros and Helmeted), bee-eaters, kingfishers, warblers, several species of forest raptors and many others too numerous to mention here, while among the many reptile and amphibian species encountered the impressive Reticulate python, at least two different species of Pit viper, the strikingly marked Paradise snake, the colorful Forest dragon lizard and the amazingly well-camouflaged Borneo horned frog all deserve to be mentioned.

A lot of first-time visitors to rainforests spend most of their time looking in the distance and hoping for the large animals, but the most interesting and fascinating denizens of this mysteriously beautiful environment are in fact the small, secretive, camouflaged inhabitants of the forest floor and canopy: diminutive reptiles,

amphibians and most often strange insects of all shapes and sizes, which are usually quite hard to spot and which are most easily observed during the guided night walks.

Rainforest Trekking

Long day and night walks are the best options to fully appreciate the Danum Valley rainforest environment. Despite the apparent drawbacks and discomforts—waking up at 5am, slogging in the mud for hours on end, being literally drenched in sweat and very often even rainfall,



dealing with the occasional but messy leech bite—this is really the only sensible way to enjoy the place and fully savour the wonders it offers. Get yourself a private guide



LEFT TO RIGHT: A Red-phase Silver monkey feeding in forest canopy. Giant stick insect; Giant Rhinoceros beetle on tree trunk; Harlequin gliding frog

Most important of all, take a pair of good hiking ankle boots along. This is where synthetic, breathable fabrics such as Cordura are strongly recommended, since they'll be constantly soaked, and boots in natural materials such as leather or canvas would rapidly rot or mould, often in a single night's time. A sun hat and a rainproof torch will be important

items to take along, too. Since we're on the subject, do not let the local all-pervasive obsession and paranoia with leeches scare you—these fascinating, small rubbery creatures (did you know they can survive with a single feeding a year if needed?) are completely harmless and do not transmit any diseases. If you get bitten by one you'll feel no pain—maybe a little itching later on—but you'll certainly bleed freely and massively for quite a few hours, as their saliva contains both an efficient anesthetic and a powerful anticoagulant. The blood staining and trickling can look scary to the uninitiated, but it's no big deal, really. After a day's trekking in the rainforest you'd have to thoroughly wash your soiled clothes anyway! On the good side, Danum Valley is almost completely mosquito-free, and that is really important since most serious tropical

diseases, such as malaria or dengue, are transmitted via the bite of these obnoxious little winged pests.

Impressive environment

Despite our lifelong experience in rainforests exploration and photography worldwide, we could not help being deeply impressed, and in fact, even awed by the beauty, richness and sheer isolation of Danum Valley. This is a virgin, primordial, occasionally demanding environment of steaming lush vegetation and glutinous ankle-deep mud, of steep ravines and gurgling clear forest brooks, of gigantic buttress trees and coiled, climbing lianas, perennially bathed in oppressive heat and humidity. Incredibly violent downpours are sudden and frequent, and even when bathed in searing sunshine the whole environment is perennially immersed in a prehistoric, Jurassic Park-like atmosphere.

Animal sightings are surprisingly frequent and near for a rainforest habitat, and photographic opportunities for professionals and serious amateurs are simply

enormous. We spent a whole week at the Borneo Rainforest Lodge, and we feel we have barely scratched the surface. Every few steps along the forest trails a new fascinating subject would be sighted, and it would not be uncommon for us to walk a few hundred meters only, in more than three hours, especially at night.

To the attentive, careful observer and thanks to its own specific nature, the Danum Valley environment offers an unique chance—the possibility not only to sight wild animals, but to pause at length and leisure and watch them actually behave i.e. feed, hunt, mate. This is a rare and precious gift, one which has to be treasured, and Danum offers it generously to those willing to listen to the sounds of the forests or put their eyesight to good use. Add to this the deeply moving, emotional impact of the untouched rainforest habitat and the creature comforts offered, at the end of a tiring day, by the beautiful Borneo Rainforest Lodge. Whoever thought up the open-air bathtubs on the wooden chalet balconies facing the rainforest and the river was a genius. You will understand why we have fallen in love with Danum Valley, and why we cannot wait to go back there—this time, for a longer stay! ■

from the Borneo Rainforest Lodge if at all possible—as everywhere else it will make the experience completely different—and bring cotton clothes only (no artificial fibers!), with long trousers, long thick socks to tuck them into, and long-sleeved shirts. Be aware that you'll be drenched most of time in your own sweat and/or rainfall—so it makes no sense trying to keep dry at all costs with nylon ponchos or raincoats, which also rapidly become unbearably suffocating in the heat.



View from the bathtub-equipped balcony of the exclusive Borneo Rainforest Lodge overlooking the Danum River



silver



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Revisited
Sipadan



One of the ubiquitous green turtles taking a good snooze on the reef of Sipadan Island. PREVIOUS PAGE: Diver and cloud of trevally

Text and photos by Peter Symes and Tim Hochgrebe

I've always been both somewhat envious and intrigued by what Sabah, Malaysian's easternmost state have to offer the travelling visitor. Great diving of course, but the richness and diversity of the abundant top-side natural resources such as rainforest and mountain ranges, history and the cultural diversity is something that few regions can match.

The list of sightseeing attractions and activities seem inexhaustible. Aply named "the land below the wind" not only because it is bypassed by the devastating typhoons that occasionally ravage other tropical paradises, but also because, for modern fast-paced executives, it is a soothing escape from the big city hustle and bustle.

Upon arrival, the provincial tranquility and smaller scale of things in Sabah instills a sense of coming to a safe and calm place, which seems to go about matters in its own time and direction, unperturbed by unrest elsewhere on the globe. And Sabah has indeed come a long way in a short period of time, if the few glimpses these undersigned passers-

by get from a airport transfers, hotel stays and excursions is anything to go by.

This time, we arrived at a new airport in Tawau—arriving at the old airport did feel like touching down on a couple of tennis courts—and the roads here are now in a much better state. Modern suburban residential complexes are gradually replacing the ramshackle shantytown of many areas we passed by. Malaysia is only 52 years old as a nation, but the determination with which they build their society never ceases to impress me, and returning here after so many years made the many changes stand out... but were they all for the better?

We were greeted in Tawau airport by Clement Lee, CEO of Borneo Divers and

Divers and schooling barracuda at Sipadan Island

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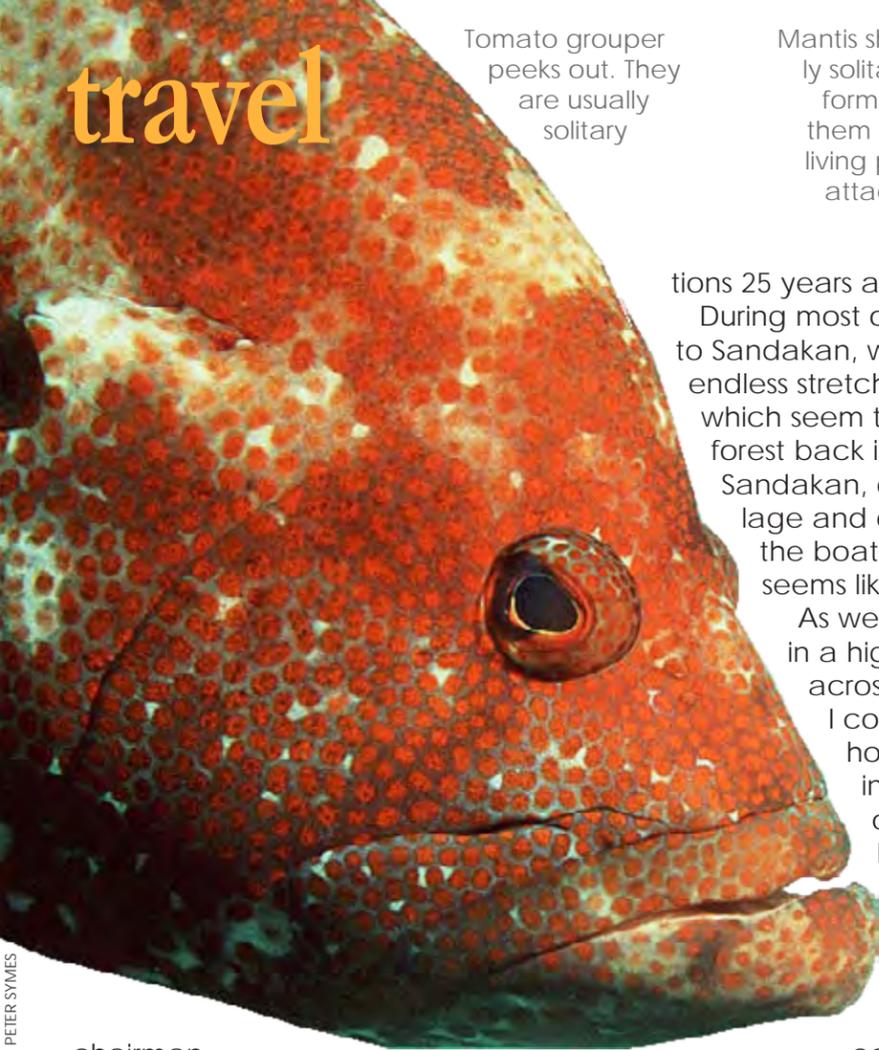
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Tomato grouper peeks out. They are usually solitary

Mantis shrimps, which aren't shrimps, are aggressive and typically solitary sea creatures, spend most of their time hiding in rock formations in which they either wait for prey to chance upon them or, unlike most crustaceans, actually hunt, chase and kill living prey. Mantis shrimp sport powerful claws that they use to attack and kill prey by spearing, stunning or dismemberment



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tions 25 years ago.

During most of our 50-minute transfer to Sandakan, we drove by seemingly endless stretches of oil palm plantations, which seem to have pushed the rain-forest back into the distant horizon. Sandakan, once a sleepy fishing village and our point of departure for the boat transfer to Mabul, now seems like a bustling town.

As we enjoyed a smooth ride in a high speed boat skimming across the surface of the sea, I couldn't help pondering how life must be like living in some of the rickety huts on stilts we passed—which have no fresh water or sanitation, let alone electricity—sitting way out there on the horizon in the middle of what seemed to be the open ocean, but must have been

built on extensive mud flats and sand-bars.

Diving

The range of options on offer within a short radius from Mabul Island is second

to none. Sipadan Island, considered by many to be the best dive site on the planet, is but a short boat transfer away to the south. Mabul itself is one of the birth-places of muck-diving, and with Kapalai nearby, there's also unparalleled macro-diving. Plus, close to the mainland, you can dive in the mangroves.

But even with this diversity, it is probably safe to say that Sipadan remains the coveted star attraction, which pulls visitors from far and wide.

As such, the island has been and remains the centre of much controversy. It was the center of a lengthy battle between Indonesia and Malaysia, who vied for sovereignty over the island at the international court in Hague, which only in 2002, ruled in favour of Malaysia.

As the island's ecosystem is fragile, the many concerns over the impact of tourism later led to clearing the island of the



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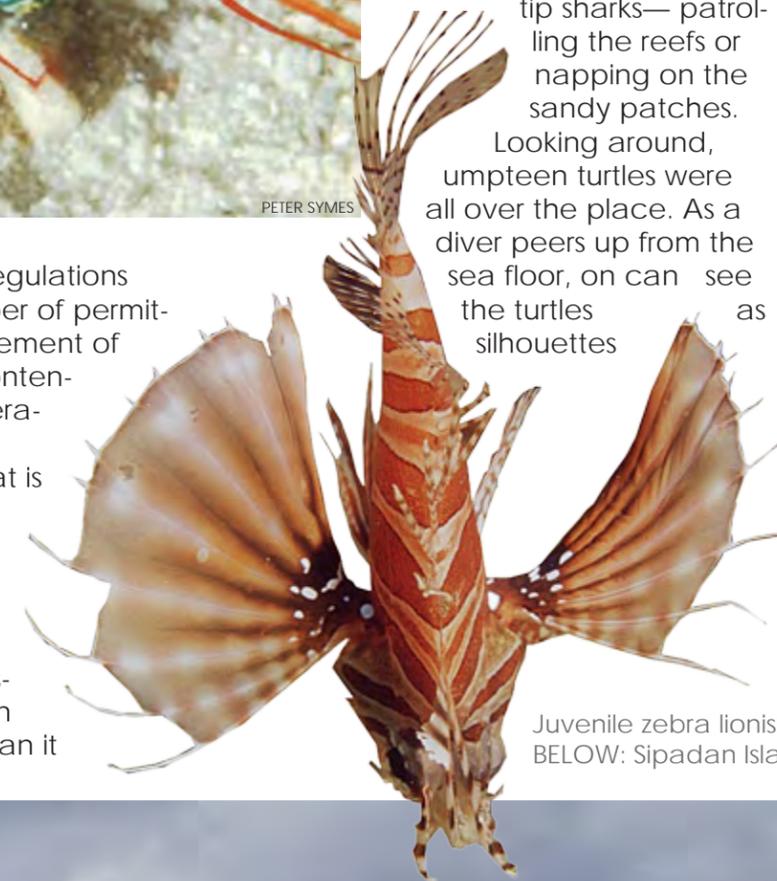
was in my previous visit.

Every day we saw massive schools of barracudas, trevalies and even humphead parrotfish. There were always many small sharks—predominantly the ubiquitous white tip sharks—patrolling the reefs or napping on the sandy patches.

Looking around, umpteen turtles were all over the place. As a diver peers up from the sea floor, one can see the turtles as silhouettes

resort facilities there. Tight regulations were imposed on the number of permitted day visitors, the management of which still remains a very contentious issue between the operators who are all vying for a number of guest permits that is woefully short of the growing demand.

What I have seen over the years there leaves no doubt in my mind that these measures were necessary. Sipadan seems to be in a much better state now than it



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Juvenile zebra lionfish
BELOW: Sipadan Island



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Butterflyfish were everywhere

against the water's surface gliding gracefully along the reefs like soaring birds in the sky eclipsing the sun, or plainly snoozing in some crevice on the reef like hung-over teenagers on Sunday morning, totally unaffected by all the wheezing, bubbling visitors closing in to take snapshots with their underwater cameras.

There are about 13 dive sites around Sipadan. When the ocean is calm, it takes about 20 minutes to get from Mabul to Sipadan. Most of the diving in Sipadan is a combination of wall and drift diving. The visibility was never really great during the week we spent there—partly due to a couple of days of choppy seas that stirred up particles—but because there was always so much to see, we never really noticed, or least, it never became a concern.

As the day guest permit system worked during our visit, the defining measure of the permit was 'a day' not the number of dives permitted. Consequently, the excursions to Sipadan were conducted as full day outings with four dives and a lunch break in the middle.

At times, I felt that this regime was a little too rigorous, as the fourth dive in a day often was of limited quality and use, among other things, since



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Plenty of grey sharks were patrolling the drop offs along Sipadan

one had been building up nitrogen over the day, and so, there were decompression issues to consider. But hey, it's a bit like complaining about being fed too much caviar and champagne. Sipadan is one of those blessed places where you seemingly can't have a bad time even if you try.

Here, disappointment is if you only see a small school of fish and a couple of sea turtles.

Because of its relatively small size and it having dive sites all the way around its perimeter, it is always possible to find a sheltered spot on the leeward side

on a windy day. One of my personal favourites remains Barracuda Point. I know, it has been covered ad nauseam in so many publications before—including this one—but it is not without merit. Here, you always seem to be able to find a huge school of circling barracudas



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Sabah
LEFT: Juvenile spotted sweetlips takes cover. FAR LEFT: The mangrove forests just off Semporna offers a completely different yet underappreciated habitat



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ABOVE: At the aptly named Barracuda Point, giant schools of barracudas never let us down
LEFT: A juvenile scorpionfish, perhaps Poss's Scorpionfish, blending into the sand
FAR LEFT: One of the species I never tire of seeing; the ornate Ghost Pipefish





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A tiny translucent coral shrimp of the Periclemens species

a snack at the gazebo, which is built on the island. It is also here we have lunch after the second dive. The authorities have also built a proper toilet facility on the island. Fresh water is supplied by boat every day and pumped ashore—a reassuring sign that the facilities aren't drawing on the small aquifer under the island.

Aside from the area around jetty, the gazebo and the toilet facilities, the rest of the island is now off limits for visitors, though there is a residing contingent of soldiers and park

or trevallies, which, if you move carefully, can end up completely encircling you. I get such of kick out of this—flying in formation inside a huge school of fish as if I am one of them. It always ends

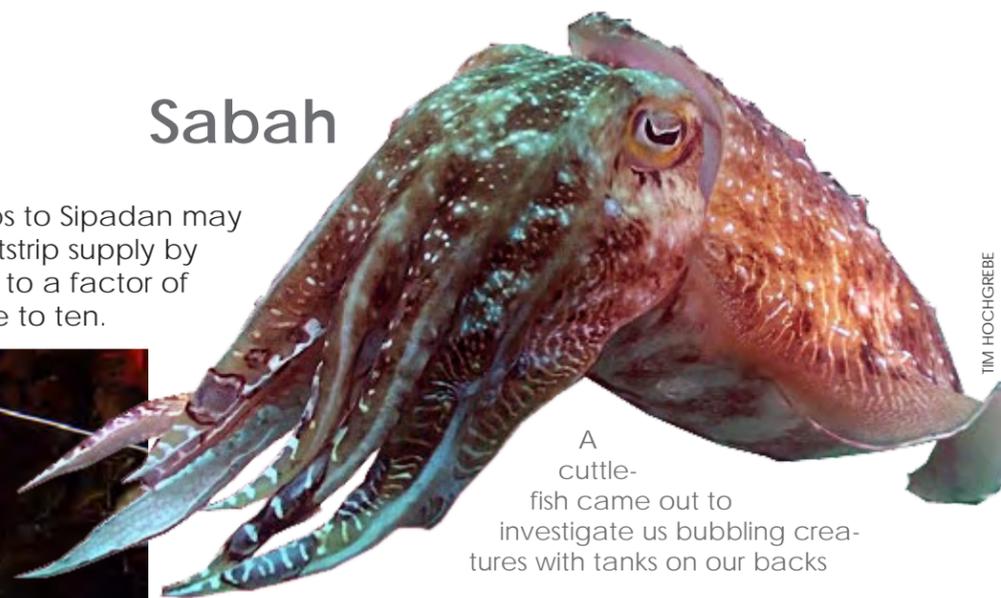
too soon, and like a five-year-old in an amusement park, I am always left wanting more when time is up.

Between dives, the boat goes back to the jetty, and we have

rangers overseeing and enforcing the protection measures, including keeping fishermen and poachers off the island.

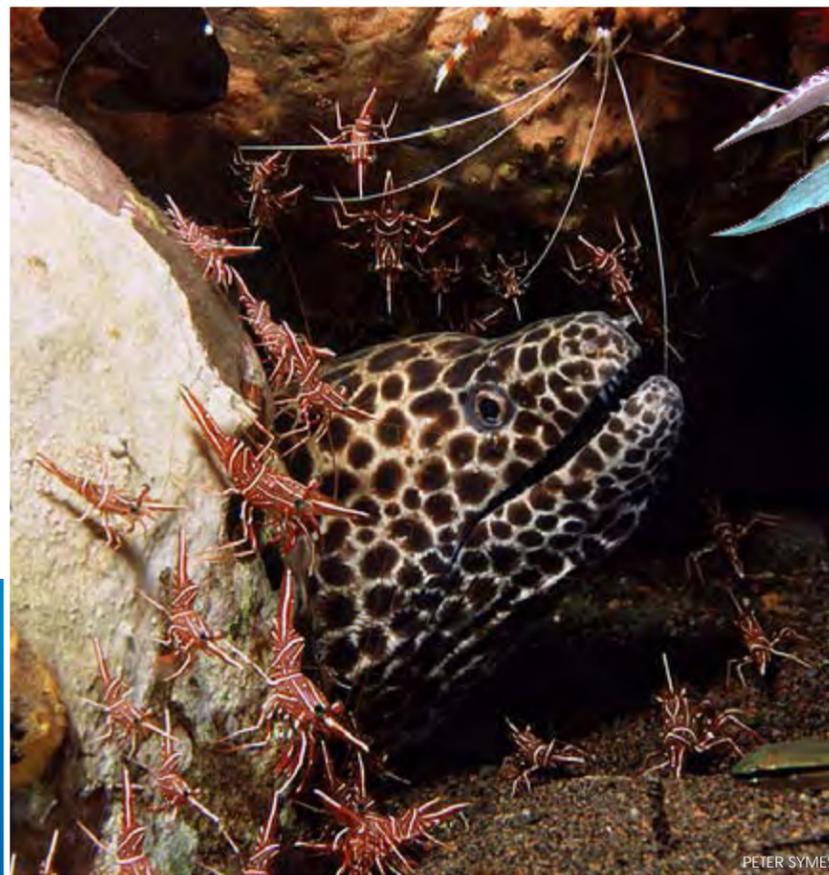
trips to Sipadan may outstrip supply by up to a factor of five to ten.

Sabah



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A cuttlefish came out to investigate us bubbling creatures with tanks on our backs



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Wax and polish, Sir? Honeycomb Moray Eel at a cleaning station enjoys the services of attending hinge-beak shrimp, giving it the royal treatment while bar-gill cardinalfish seem to be looking on with envy



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Permit controversy

As this issue goes to press, the current system of day permits allows for 120 day visitors—no overnight stays are allowed anymore. With about 15 resorts each accommodating some 30-100 guests, many of which have come here to dive Sipadan in particular, it doesn't take a rocket scientist to figure out that demand for day

further improvement. What springs to mind is whether each granted visitor really needs or want to go there for the full day and have four dives each, as the

fourth consecutive dive often ends up being so and so, if you are not the type who's itching for having yet another dive logged in the book. Why not make it 2 x 240 half day permits, so twice as many may have a chance of going? The load on the island will be the same, or even less, as half day visitors will probably not have their lunch there.

In any case, when booking a trip to the area, pay close attention to the regulations and advice given on the various home pages and ask how many dives to Sipadan can be pre-booked or guaranteed.

There is also an interesting but almost perverse twist to the arrangement as well: many of the resorts are allotted the same number of day permits, just 14. So if you go for the big upscale resort accommodating up to 100 guests, which may be well booked, you could end up having far worse odds of going to

Sipadan than if you stay with



Giant Trevally

TIM HOCHGREBE

Our good friend and colleague Tim Hochgrebe from Underwater.com.au lives out his inner paparazzi



Sabah

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COUNTERCLOCKWISE FROM ABOVE: Humphead parrotfish are best encountered in the mornings; Scorpionfish are masters of camouflage; Batfish are found everywhere; A couple of yellow shrimp gobies peek out of the burrow in the coral gravel. They usually share their burrow with one or more alpheid shrimp; Sipadan Island park ranger feeds the neighborhood lizard

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crocodile fish and plenty of groupers. That was quite a parade.

Around these parts there is rarely a need to move far and most likely you will find yourself covering an area no bigger than the size of a tennis court during a typical dive. Most of your time will probably be spent kneeling on a patch of sand in front of a coral block observing the myriad of small

tion all day long and dive at your leisure. Once upon a time, while staying at Sipadan Water Village, I spotted my very first ghost pipefish right under their jetty.

Diving right off Borneo Diver's jetty also produced one great encounter after another. On our first dive, we came across schools of small barracudas, trumpetfish, several snoozing turtles, shrimp gobies, a couple of harlequin shrimp, different nudibranchs, a paper frogfish, an octopus, a

and big sea life going about their daily business.

The reef slopes down at about 45 degrees just off the jetty before it levels off into the sandy plateau surrounding the island at around 18m. The southern side of Mabul is fringed by a large sandy plateau, and the dive sites here are only reached by a short boat ride.

Diving Kapalai

It is not really an island but a sandbar. If not for the resort balancing on its stilts on top of the shoal, one wouldn't know it was there except during low tide. Like Mabul, this location is full of small critters: nudibranchs, gobies, crabs and what not. A once resident biologist explained that these islands, which offers sheltered shallow bays, act as nurseries for a wide range of species.

There's mostly sandy bottom, or coarse coral gravel, with only few coral heads. At first sight, it comes across very unassuming—that is, until you catch a glimpse of your first blue ringed octopus, frogfish or ghost pipefish.

Kapalai is a little bit further

away from Sipadan than Mabul, but still within easy reach and the muck dive sites around the resort are excellent. A number of artificial reefs have been established around the sand banks of Kapalai including a few ship-



Perhaps it is no wonder this fellah on Sipadan has gotten so potbellied



PETER SYMES

the small economy-range resort, which can accommodate only 25 guests.

Diving Mabul

There are about 17 dive sites off Mabul and about 13 dive sites off Kapalai. Most of the dive sites can be reached from any of the resorts in less than 15 minutes by

dive boat. Most of the diving off Mabul and Kapalai is quite shallow with depths usually ranging from 5 to 20 meters (15 to 60 feet).

These places are macro heaven on earth. In fact, most of the house reefs are excellent, so you can often pretty much just base yourself at the resort's dive sta-



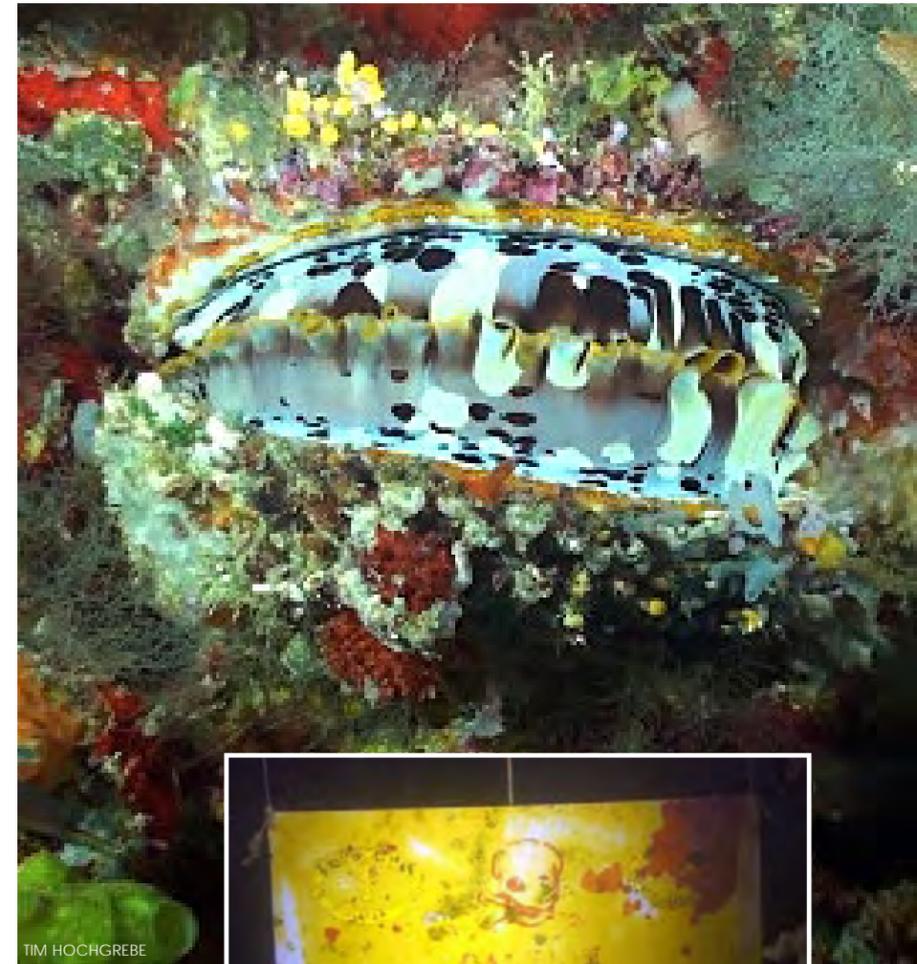


TIM HOCHGREBE



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Another pretty nudi below the resort of Kapalai (far left); Cuttlefish scooting around on the housereef (left); Decorated scallop shows its eyes (below)



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Spearing Mantis Shrimp (above) ready to attack; Chromodoris nudibranch (left)



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A turtle skeleton (above) lays inside the turtle cavern; The remains of a dolphin rests on a ledge inside the cavern (top) Warning at the entrance of turtle cavern (inset)



TIM HOCHGREBE

towards the end of the day, mandarinfish can be seen performing their mating dances just below the water's surface. Unfortunately, the Flamboyant Cuttlefish did not want to show itself to me, which just means there has to be a revisit of this area in the not too distant future.

Development of Mabul

Revisiting the island, it was clear that the place has undergone a marked development with the resorts now having a bigger presence. They now dominate the outline of the island. As in so many other places, progress can be both good and bad.

From a tourist's viewpoint, we felt that the

addition of several other resorts, which protrude out from the island, has caused the place to lose a bit of its magic and its sense of luxurious remoteness, which was part of the island's ambience before. And in this regard, whomever is the responsible authority overseeing the local development should fare very cautiously in regards to permitting further construction on the island. The island is still a paradise to visit but with more visitors it would become too busy—who wants to travel half way around the world to have a view of other tourists? This was a sentiment that was also reflected by several of the operators and staff we spoke to during our stay.

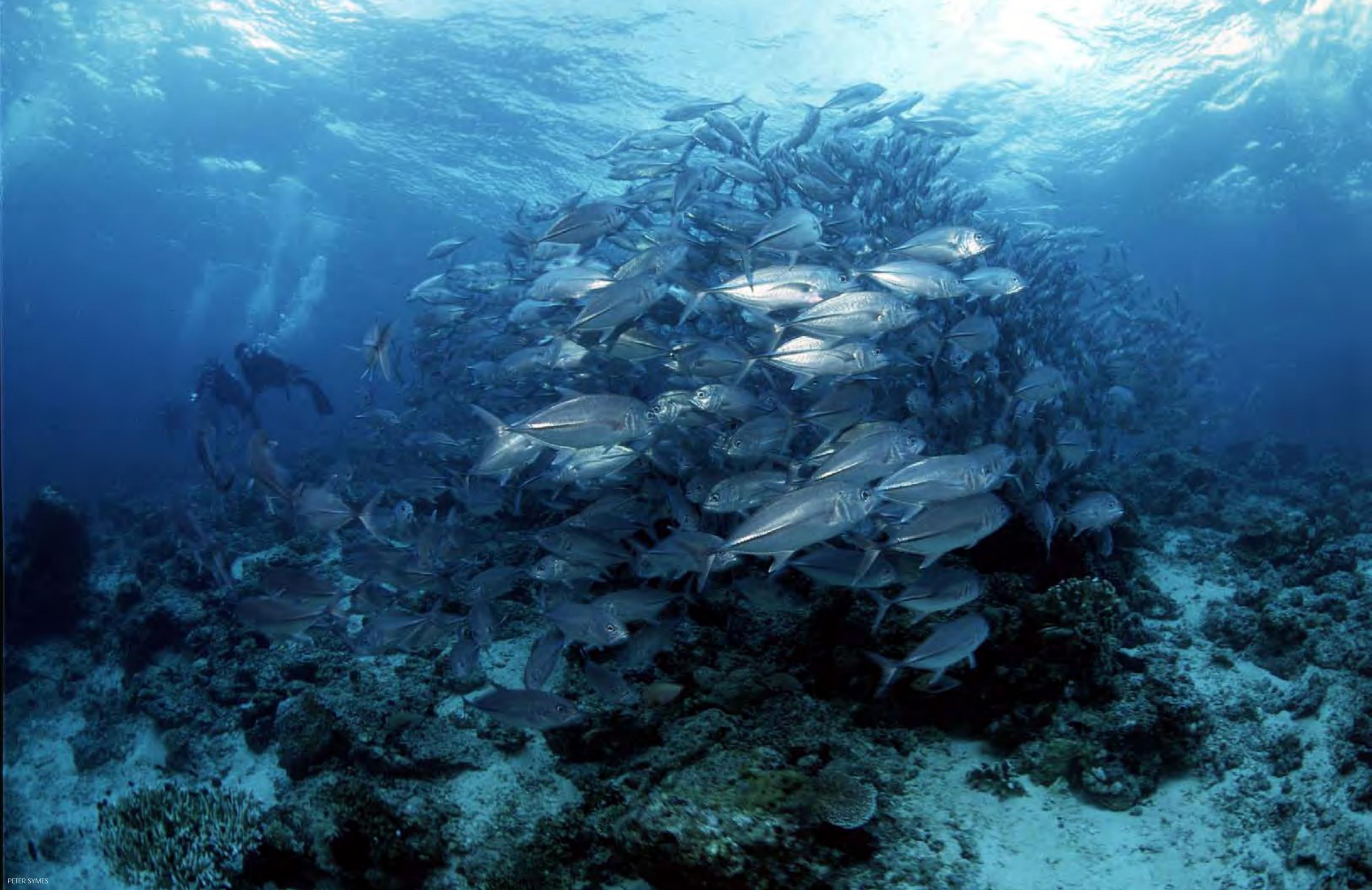
Being the investigative journalists that we are, we also wanted to know what effect



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wrecks and what seems to be an old communications tower. The reefs around Kapalai are generally very shallow, but there is some excellent diving, especially if you are into hunting for the more elusive critters; Yawfish with eggs in their mouths, spearing mantis shrimps, big cuttlefish and some excellent nudibranch action. At Mandarin Valley







Sipadan Water Village has also expanded over the years. CENTER: Borneo Divers Bunglaw

Sabah

reef table, so you can look right down at fish and what not. It has a special feeling. As some of the chalets face towards the island, ask if any of the oceanside bungalows are available. That is, if you're the type who likes day-dreaming while gazing out oot the open ocean.

The resort has now grown to 45 chalets built in the local style.

with lockers, showers, toilet and a common area for resting between dives with complimentary snacks, hot coffee and tea. And from this year onwards, you can also go kayaking in transparent rental kayaks.

Kapalai

Kapalai is probably the most luxurious of the available accommodation options we have visited around Sipadan. Once a vegetated tropical island, Kapalai is now no more than a sand bar with a resort built on top. So, if you



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tourism had on the local community and how the villagers took the presence of the resorts and all the guests on the island. Many stated that the number of new jobs in the hospitality and construction sectors provided them with good livelihoods. As it turned out, many of the resort staff were recruited from the island. Walking around on the island, the locals seemed very friendly and welcoming, with a lot of goofy kids happily posing for photographs.

Accommodation

Here are descriptions of six of the 11 resorts found on Mabul Island.

Borneo Divers

The resort sits on the island itself in contrast to some of the other nearby resorts that are constructed as water villages with bungalows on stilts over the water. With 30 bungalows, which are now all *deluxe* and arranged around a garden with a pool, the resort is very comfortable and luxurious in a low-profile manner, much like

a discrete limousine. It is an all-inclusive resort, which means that all meals and diving is included. Alcohol and indulgences, such as the awesome massages we got addicted to, are extras. Meals are served buffet style with cuisine including both Eastern and Western fare, so each meal satisfies most pallets.

The diving station sits at the end of the jetty, and from here, there is direct access to a splendid house reef. There is also a little coffee bar, so one can easily spend all day just hanging out on the pier. There is also a room for photographers with tables and recharging stations. For boat dives, you sign up on the planning board, after which the staff will bring your kit to the boat and mount your kit on a tank.

Sipadan Water Village (SWV)

SWV was the first water village resort on the island. Guests reside in comfortable chalets with patios that not only overlook the open ocean, but also sit right on the



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The chalets have large slide doors that open onto a spacious outside deck. Meals served in buffet style featuring a mixture of local and continental cuisine are served thee times a day in an open air restaurant with a seating capacity of 150 people at one time.

The dive centre opens from 7:00 am onwards and is equipped

like to feel the sand beneath your feet when staying on a remote tropical island, this might not be for you. However, the resort features luxurious rooms with fantastic views over clean blue water, and for most people, staying in a water resort is a very special and exciting experience. Of course, one of the additional advantages of a resort in the middle of the



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Traditional dancers perform a wedding dance unique to Mabul village; Entrance to Borneo Divers lounge and restaurant

ocean is that it is safe from mosquitos, and you can leave your doors and windows wide open.

Seaventures

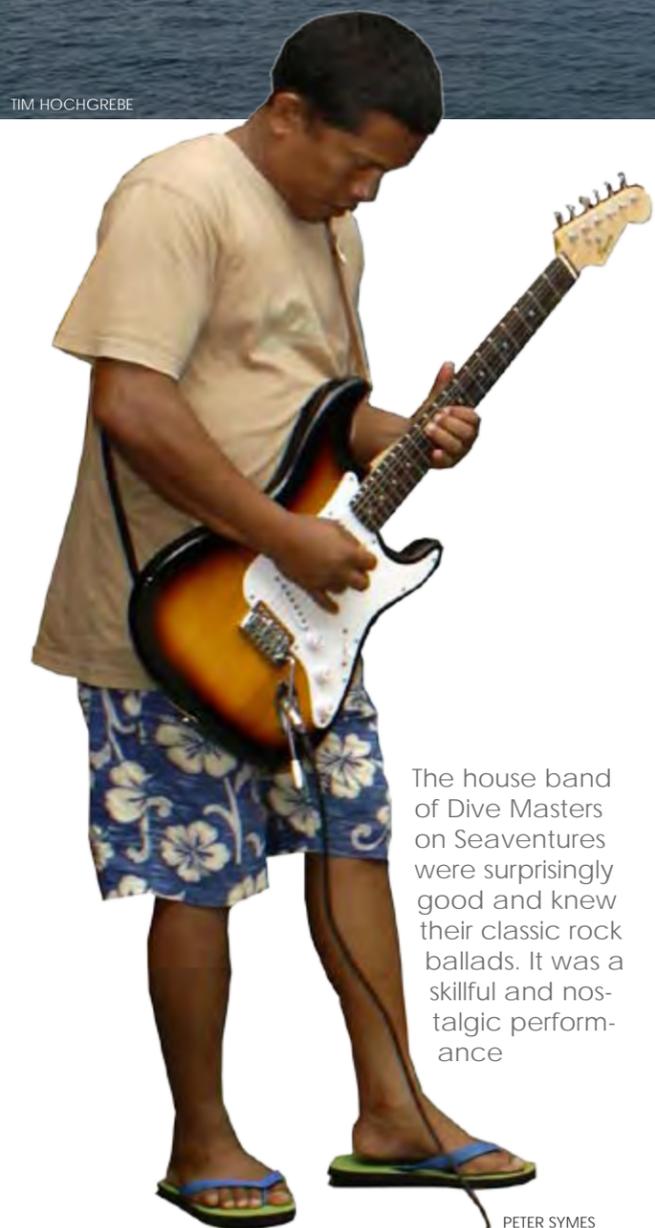
If money is tight, you might consider Seaventures—a small former drilling platform that now sits on

stilts off the northern coastline of Mabul. The industrial construction is a bit of an eyesore, which one tries not to notice when enjoying the otherwise pristine view from Mabul over Borneo.

Going over there was an intriguing experience through. For one,



TIM HOCHGREBE



The house band of Dive Masters on Seaventures were surprisingly good and knew their classic rock ballads. It was a skillful and nostalgic performance

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Seaventures is the most economical of the resorts visited

the elevator that takes one up to the main platform is also used to lower divers all the way down until they are chest-high in the water. We were having drinks on the platform when two divers went for a night dive under the platform and just took the lift down into pitch darkness and disappeared.

The platform is spacious and has plenty of rooms for various activities. The cabins are... well, cabins, and not really hotel rooms, which makes you feel like you are overnighing on a moored vessel—a feeling enhanced by the fuel smells, one usually finds on ships and ferries, wafting through the corridors.

It definitely came across as a place predominantly for the younger (and probably less affluent) crowd who prefer to pay less for a fun and festive, unconventional time, rather than spend lots of money on upscale décor. There was a party and lots of laughter going on the deck. Then, as a surprise, the house rock band of dive masters set up their gear to play.

Admittedly, my first and spontaneous thought was, "Uh oh, this is going to be



The strangest thing.... divers going down with the elevator straight into the water for a night dive under Seaventures platform

Seaventures 's platform sits a couple of hundred meters off Mabul

Sabah

painful," but I was soon forced to eat my own words. They were really good, and I thoroughly enjoyed their performance of skillfully improvised classic rock ballads and lyrical classics. The various vocalists had good voices, the drummer was an artist with his sticks, and the guitarist could jam like there was no tomorrow. In fact, I wasn't

ready to go, when our boat came to take us back to our residence on Mabul. I had a great evening, but the accommodation was not really to my liking.

Under the platform is an artificial reef, which is now one of listed dive sites around Mabul. Part of it is really just some old junk upon which a lot of marine life has taken up residence,

but various other constructed structures have been added to create a little park under and around the platform.

Sipadan-Mabul Resort (SMART) & The Mabul Water Bungalows

These resorts are really two complexes under the same management. There is the *old* complex, SMART, which sits under the shady palms on the southern side of the island overlooking a wide sandy beach, and the new and upscale Mabul Water Bungalows complex, which sits out on the reef opposite and adjacent to SWV. The two complexes are interconnected by a winding pathway upon which an electrical vehicle (like a golf cart) offers transports for stroll-weary Westerners.

The interiors of the 14 bungalows of The Mabul Water Bungalows—each of



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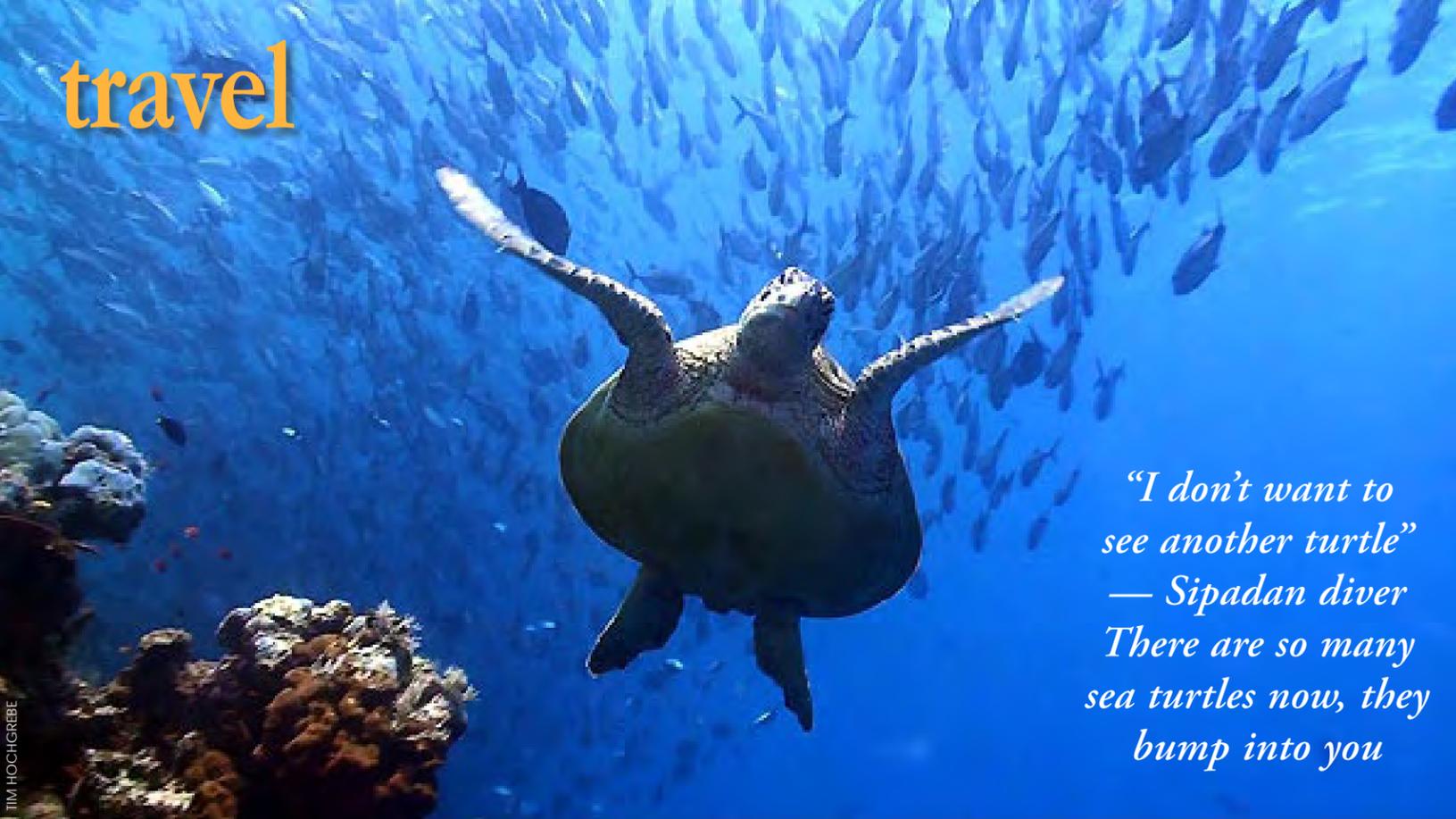


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Mabul Water Bungalow is a new floating dive resort wholly owned by Sipadan-Mabul Resort, Sabah (SMART)

which comes with private bathroom—hot/cold shower and toilet, spacious private balcony offering panoramic vistas of blue sea, colour TV with satellite channels, and mini bar—are luxuri-

ous and opulent. The resort also has an elegant upscale spa. There is an inhouse photo facility, and the large and airy restaurant for dining looks directly out over the reef ledge. As with the other



*“I don’t want to see another turtle” — Sipadan diver
There are so many sea turtles now, they bump into you*

CLOCKWISE FROM ABOVE: The seas and reefs around Sipadan and Mabul islands are a paradise for sea turtles; Local support is enthusiastic as Sipadan Island is recognized as a contestant in the competition to become one of the seven underwater wonders of the world; Fresh water is now being brought to Sipadan by boat thus protecting its fragile aquifer from overuse



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resorts of Mabul, there is an excellent house reef right in front of the complex.

The SMART resort consists of 45 wooden duplex chalets with each room featuring two oversized single beds, a couch, shelves, ceiling fan and air-conditioning,

a private en-suite offering free-flowing hot and cold fresh water and a front patio. The SMART resort is clearly more economical than The Mabul Water Bungalows—which is reflected in their respective rates. SMART is more middle of the road. It doesn’t provide quite the same level of luxury, but it is cool and comfortable. In addition, SMART also offers technical diving with basic nitrox mixes up to 40 percent, as well as advanced decompression and rebreather mixes up to 100 percent oxygen.

The future

Essential steps have been taken to pro-

tect Sipadan—which clearly looks a bit better since our last visit—though the present permit quota system has its drawbacks and probably could be improved. Mabul is still a romantic get-away, but we were also left a bit sentimental, missing the former aura of remote exclusivity it once had. Any further addition to the number of resorts on the island would be one too many and topple the island’s native flavor. It would become something of a Riviera with a village added—which would be an absolute shame. Fortunately, the locals are aware of it.

Verdict and recommendations

Sabah has got something for everyone. Over the years, it seems to have developed from something of a frontier where you only went with an avid dive buddy to a place where you can also bring your family—or just have a romantic get-away for two. There are not really facilities for smaller children on Mabul, but as

long as they are content with playing in the pool, or on the beach, and enjoy a relaxed holiday, they will be fine. The diving ranges from snorkelling to technical diving, though it would be a stretch to call it a technical dive destination per se. It seems fair to say that there are a couple of opportunities to do technical diving through the SMART resort.

The main feature is definitely the underwater realm in the form of the amazing congregations of life around Sipadan as well as the seemingly inexhaustible amounts of macro-life virtually at the doorstep of your bungalow. The resorts hold high standards, and the food is good. Diving aside, it would be a shame not to underline the rich variety of topside features from the jungle to the mountains as

well as the diverse cultural attractions. And don’t forget, the cities and towns of Malaysia offer great shopping opportunities, especially if your visit coincides with their annual grand sale. Consider packing your suitcases only half full to save room for goodies. ■



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Why do barracudas form schools?

A mean looking giant barracuda has a cleaner wrasse under its chin

Text and photos by Peter Symes

Barracudas occur both singly and in schools around reefs, but also appear in open seas. Adults of most barracuda species are more or less solitary in their habits, while young and half-grown fish frequently congregate in schools.

Large schools of barracudas are associated with offshore seamounts, deep canyons and small islets and dominated by big individuals when a feeding opportunity appears. The reasons for such aggregations are probably resting aggregations, pre-spawning aggregations, anti-predatory advantage and foraging advantage. In fact, group foraging has an obvious advantage since predators acting together can more easily restrict the movements of a school of prey fish than when they are alone.

Barracuda prey primarily on fish, sometimes as large as they are themselves by shearing off



access to a more favourable hunting position and/or are in a more protected position against potential predators. Schooling in fish may be determined by sex differences in size and morphology. It is possible that females form the core of the school and males aggregate to them for obvious mating advantages.

Although aggregations of barracuda were always associated to areas subjected to strong currents, its speed is unlikely to cause aggregating behaviour. Although typically associated with particular sites and current flow, group formation may also be influenced by factors such as social facilitation, prey availability, and behavioural tradition.

Large summer schools appear to be strongly size and sex segregated, because the large females tend to aggregate at the bottom of the school. This maybe due to the fact that females, being larger, have

While barracudas sometimes follow snorkelers and scuba divers across the reef, there exist no substantiated reports of unprovoked attacks. Known incidents generally involve spearfishing or hand feeding, and these incidents are extremely rare, especially considering the number of times that barracudas and humans encounter one another. ■

SOURCE: BARREIROS, SANTOS & BORBA, CYBIUM 2002, 26(2): 83-88

fact file



Malaysia



SOURCES: US CIA WORLD FACT BOOK, SCUBADOC.COM

History Great Britain established colonies and protectorates in the area of current Malaysia during the late 18th and 19th centuries. Japan occupied these areas from 1942 to 1945. The British-ruled territories on the Malay Peninsula formed the Federation of Malaya in 1948. In 1957, it became independent. When the former British colonies of Singapore and the East Malaysian states of Sabah and Sarawak on the northern coast of Borneo joined the Federation in 1963, Malaysia was formed. The new nation faced challenges in its first several years including a Communist insurgency, Singapore's secession from the Federation in 1965, Indonesian confrontation, and Philippine claims to Sabah. However, Malaysia was successful in diversifying its economy from dependence on exports of raw materials to expansion in manufacturing, services, and tourism during the 22-year term of Prime Minister Mahathir bin Mohamad (1981-2003). Government: constitutional monarchy. Capital: Kuala Lumpur

Geography Malaysia is located in southeastern Asia. It includes the peninsula that borders Thailand and the northern one-third of the island of Borneo, which borders Indonesia, Brunei, and the South China Sea, south of Vietnam. Coastline: 4,675 km. Terrain: coastal plains that rise to hills and mountains. Lowest point: Indian Ocean 0 m. Highest point: Gunung Kinabalu 4,100 m. Note: Malaysia lies in a strategic location along the Strait of Malacca and the southern end of the South China Sea.

Economy Malaysia is a middle-income country. Since the 1970's, it has transformed itself from a producer of raw materials to an emerging multi-sector economy. By attracting investments in high technology industries, medical technology, and pharmaceuticals, former Prime Minister Abdullah, who came into office in 2003, attempted to move the economy toward a higher level in the value-added production chain. The government continues to help boost domestic demand and wean the economy off of its dependence on exports. Despite these efforts, exports, especially electronics, are still a significant force in the economy. The country exports oil and gas and has profited from higher world energy prices. However, the rising cost

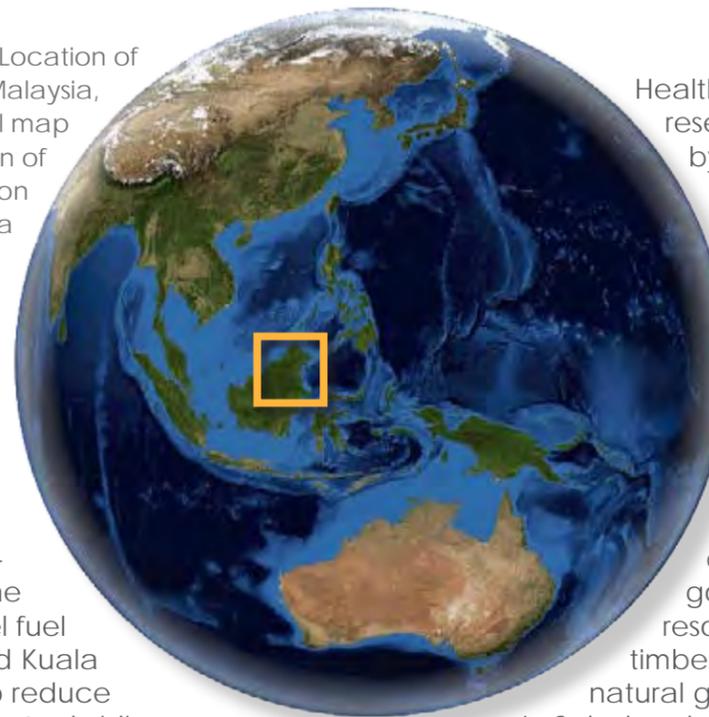
of domestic gasoline and diesel fuel has forced Kuala Lumpur to reduce government subsidies. In 2005, the country released the ringgit from the US dollar which led to its currency appreciating 6% per year against the dollar during 2006-08. It helped hold down import prices but inflationary pressures increased 2007. Inflation stood at nearly 6%, year-over-year by 2008. A five-year national development agenda was presented by the government in April 2006 at which time Abdullah unveiled a series of far-reaching development plans for several regions needing help in attracting business investment.



RIGHT: Location of Sabah, Malaysia, on global map

BELOW: Location of Sipadan Island on map of Malaysia

TOP RIGHT: The trevally's muscular appearance and alert movements reminds one of an athlete in top shape



Healthy foreign exchange reserves are maintained by the central bank. A regulatory regime has helped Malaysia avoid exposure to riskier financial instruments as well as the global financial crisis. Although the economic downturn in 2009 is expected to hurt economic growth with the decrease in demand for consumer goods worldwide. Natural resources: tin, petroleum, timber, copper, iron ore, natural gas, bauxite. Agriculture in Sabah: subsistence crops, rubber, timber, coconuts, rice, logging, petroleum production

Climate Tropical. Monsoons are annual in the southwest (April to October) and the northeast (October to February). Natural hazards include flooding, landslides and forest fires.

Environmental issues Air pollution from vehicular and industrial emissions; smoke/haze from Indonesian forest fires; water pollution from raw sewage; deforestation.

Currency Ringgits (MYR)
Exchange rates:
1EUR=5.13MYR;
1USD=3.50MYR;
1GBP=5.77;
1AUD= 3.02MYR;
1SGD=2.46MYR

Population 25,715,819 (July 2009 est.) Ethnic groups: Malay 50.4%, Chinese 23.7%, indigenous 11%, Indian 7.1%, others 7.8% (2004 est.). Religions: Muslim 60.4%,

Buddhist 19.2%, Christian 9.1%, Hindu 6.3%, Confucianism, Taoism, other traditional Chinese religions 2.6% (2000 census). Internet users: 15.868 million (2007)

Travel advisory Take care and be cautious when boating. The International Maritime Bureau reports there is a high risk for piracy and armed robbery against ships in the territorial and offshore waters in the Strait of Malacca and South China Sea. Make sure your transfers are managed by the dive resort.

Language Bahasa Malaysia (official), English, Chinese (Cantonese, Mandarin, Hokkien, Hakka, Hainan, Foochow), Tamil, Telugu, Malayalam, Panjabi, Thai. There are several indigenous languages in East Malaysia; Iban and Kadazan are most widely spoken

Health There is a high degree of risk for food or waterborne diseases, such as bacterial diarrhea, and vectorborne diseases, such as dengue fever and malaria. There is a negligible risk of contracting the highly pathogenic H5N1 avian influenza, which has been identified in Malaysia, although there are extremely rare cases among US citizens who are in close contact with birds (2009)

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Clement Lee

Text and photos by Peter Symes

Clement Lee is the embodiment of the entrepreneurial dive industry pioneer. A quarter of a century ago, he seeded what was later to become a flourishing recreational dive industry in the Malaysian state of Sabah. In this interview, we take a reminiscent look back at the challenges overcome and the awards won.

PS: When was the first time you saw and dived on Sipadan? Can you recall your first impressions and sentiments? Did you think that this could become one of the finest dive destinations on the planet?

CL: We started Borneo Divers in 1983, but it was in 1984 we went to do a survey of a freighter in Ligitan reef, and after the survey, we went straight to Sipadan to check it out, because we could tell from the depth charts that it had to be significantly different from the other islands that we knew.

And already from the first

time we hit the water there, we saw that it was something special and that this was our future. What I saw was beyond description. It was like a living aquarium. We thought it was an adventure area, but at the same time, we also asked ourselves how to protect this pristine environment and the marine life.

PS: What was there then? Was there any sort of tourist infrastructure in the area at all?

CL: Semporna (the bustling town which is a point of disembarkation for the resorts on Mabul, Kapalai and others –ed.) was just a fishing village at the time, with no infrastructure and only very basic facilities. When we started off on Sipadan, we had to buy, hire and bring in everything from Semporna and Tawau (bigger towns some distance away –ed.) using chartered boats to bring it to the island. In a way, there was none at all. We had to start from zero.

PS: What made you decide to go into recreational diving and build a dive operation?

CL: There was no professional recreational dive industry at all

at the time. So, we needed to start it, but at the same time, we also needed to start dive tourism in the area. We brought in the first guests in 1984 and never looked back.

PS: What obstacles did you have to overcome?

CL: Oh dear... There were just too many. Since we are talking about Sipadan, it was everything from permissions to logistical issues and setting up infrastructure. Because we were the pioneers, nobody knew about recreational scuba diving or what the dive industry was all about, so there was no help to get. We had to organise everything ourselves. And at that time, things like the airport were not as good as they are today, and transfers from the airport took 3-4 hours in contrast to the hour it takes today. It was a quite a challenge, but I am glad to say that over the years, things have smoothed out and better infrastructure has been built.

PS: What do you consider your biggest victories or achievements?

CL: When we started, we knew where we going. The ques-

Clement Lee in his Kota Kinabalu office





tion was how we were going to achieve it? So, seeing Sipadan now being hailed as one of the best dive sites in the world and bringing it to the public, I consider that our biggest achievement in terms of the hard work that was put into it. Another is being able to sit down and work out how to protect the island

be improved, because the crucial number is not the number for visitors, but the number of dives. But we do feel that Sipadan is now protected for the future, and that we have already seen results in the form of improvements in the marine life.

guest permits (120) for Sipadan obviously fall far short of popular demand. With all the resorts now in the area, how is it possible to distribute these permits fairly? Who has the final say?

CL: This is quite a difficult question. There will never be enough, which means that some or even

a lot of guests will be disappointed if they don't get to Sipadan, but as I often tell my staff or fellow resort operators, "In order to see the rainbow we have to put up with the rain." It is a necessary sacrifice we had to make. So, in my explanations to my divers and colleagues, I always urge them to protect the underwater environment, and I ask them to think if they do one dive less, they are actually contributing to the protection of the environment.

In regards to the number of permitted visitors, it is still controlled by our National Security Council, which is an independent body that has the final say on the matter.

PS: The number of resorts

PS: The limited number of day

PS: Sipadan seems to be better protected now, but do you think the latest protection measures and restrictions are the right ones? What can be improved?

CL: Sipadan now has a limited quota of 120 guests per day, which in many ways, is a role model, although the system can



THIS PAGE: Images from Borneo Divers resort on Mabul Island
TOP LEFT: Clement Lee enjoying breakfast with guests in the canteen





is no point in just transferring the problems of Sipadan to another island. That being said, there are quite a lot of islands in the area that are uninhabited, undeveloped and where the underwater life is of equal quality—in terms of macro life—to Mabul. The only problem is that this area once had some issues with dynamite fishing, but tourism will put a definite end to it, and thus improve the environment. So indirectly, tourism will improve the marine life. Meanwhile, curbing over-development in some areas will come down to the authorities.

PS: A while back, there were rumours about shark finning taking place on Mabul? Was there any truth to it?

CL: We need to get the perspective right. There wasn't shark finning as such where you cut off the fins and throw the rest of the fish back to the sea, and I can assure that that isn't the case. There are only three families on the island that have been involved with shark fishing, and they have been doing so for centuries, but they go far away from the island and into international waters to do their catches, and they sell the whole fish, and

they don't go out very often anyway. I've been living on Mabul since 2004, and now I actually see more sharks today than few years ago. Probably not because there are more sharks, but that they are less shy of people than before. I've checked with the fisheries departments, and while there are no formal catch limits in place here, there don't seem to be any concerns about the local shark populations either.

PS: There were also some writings in the press about an aquarium to be built on Mabul? What was that about?

CL: I know very little about this project. But it was actually about an 'Oceanarium' that was more like a museum. But if someone has the significant kind of money needed—which I doubt—the money is better spent elsewhere, such as Ligitan Island, which I said to the consultant on the project. But I have not heard anything about any developments.

THIS PAGE: Scenes from Borneo Divers resort. RIGHT: On the pier, Clement Lee prepares an underwater camera



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Clement Lee



PS: You are also the chairman of Sabah Tourism Association. How do you see Sabah's development economically in an ecologically sustainable way? Coming to the region as a tourist, one gets the impression that a lot of rain-forests have been and still are being cleared to give way for oil palm plantations. Are the conservation laws and measures strong enough to stand up against big economic interests?

CL: In Sabah, we are helping to develop a nation, and we have to do what we need to develop the country, but as a member of the Sabah tourism board, I know that whatever we do, it's going in the right direction, because we are continuously working in an ecologically sustainable manner and promoting our region in terms of adventure and ecotourism. We adopt the principle of less is more, in not going after the mass tourism, which we can't accommodate. We don't want to have to build a big theme park when we've got great nature.

In regards to the felling of the trees, it is to make room for oil palm plantations, which is the main source of our income. But I must also highlight that in those areas where forests are being cleared to make room for plantations, special reforestation programs are implemented under which new trees have to be replanted, so that the same acreage of forest is maintained and managed in a sustainable way. Also the conservation laws now regulating the oil palm indus-

try require the establishment of wildlife corridors and compulsory wildlife zones. I do believe that while we have made mistakes in this area in the past, we are now going in the right direction.

PS: What is the key to successfully balancing being an entrepreneur and having a family?

CL: (Laughter) This is a tricky one and a balancing act. I suppose that wife and husband must share the same ideology, principles and commitment at the same time but—believe me—it also calls for a lot of sacrifice. But if you share a vision, you also know where the sacrifices will take you.

PS: What diving experience has had the biggest impact on you?

CL: Diving has had a tremendous effect on me and has changed my entire life. It has made me more conscious about my surroundings and the environment. Before I took up diving, I did not know what was important and what effected me. I didn't care. Now, I am much more aware of the surrounding life. It has opened my eyes and made me much more alert. It changed my mind. I started noticing things, seeing the colours, and I started wondering about things I saw in nature. I now know where I am going and feel like I have to share my experiences with world. I can't imagine what I would be without diving. I never looked back after taking up diving.

PS: What is your next ambition or dream?

CL: Well...umm, to retire as a Malaysian diving ambassador. No, I am just kidding. I would like to see the local dive industry, which we have been nurturing since our beginnings in 1984, to continue to develop and serve as a role model for the many upcoming countries that are just about to develop their own dive industries, and (I hope) that Sipadan can be a good example of how a government can balance money and the environment and be prepared to make long-term and investments in the future and in a sustainable way. That is something I think we can be proud of.

PS: Any other thoughts you want to share with us?

CL: People who see me dive at the resort—and I regularly dive four dives a day just like many of them—often ask me if I ever tire of diving. No! I still get a lot of fun out of diving. And I still get a lot of joy out of seeing happy customers enjoying the underwater environment. This is very important to me, to continue to have this kind of fun. At the same time, I also let my staff dive, now that we do make money, but we make it from happy customers and not somebody unhappy, and we continue to do so. I have to show them how beautiful the underwater world is. ■



Clement Lee in front of the numerous international resort and dive industry awards he and his operations have garnered over the years. TOP LEFT: Sipadan Island

Finding the early humans

Discovery of prehistoric remains in the Yukatan





Yucatán

Text by Paul Jeffrey
Photos by Kurt Amsler

Mexico's Yucatán Peninsula is a relatively flat landscape where no rivers flow for the rain sinks quickly into the limestone and runs unseen to the sea. The ground is pocked by vine-draped sinkholes—*cenotes*, as they are called locally—where the roofs of underground caverns have collapsed. For centuries these openings have provided inhabitants with access to fresh water, and the inaccessibility of the deep caves beneath the openings has long beckoned the adventurous, though physical challenges limited how far they could go.

In recent years, however, technological developments in underwater

Many prehistoric remains in the submerged caves of Yucatan have been discovered by González's project, such as these bones of extinct horse and camel species





THIS PAGE: Arturo González and colleague Carmen Rojas investigate the caverns in the Dos Ojos cenote for archaeological remains. At 60km long, it is one of the longest underwater cave systems of the Yucatan peninsula

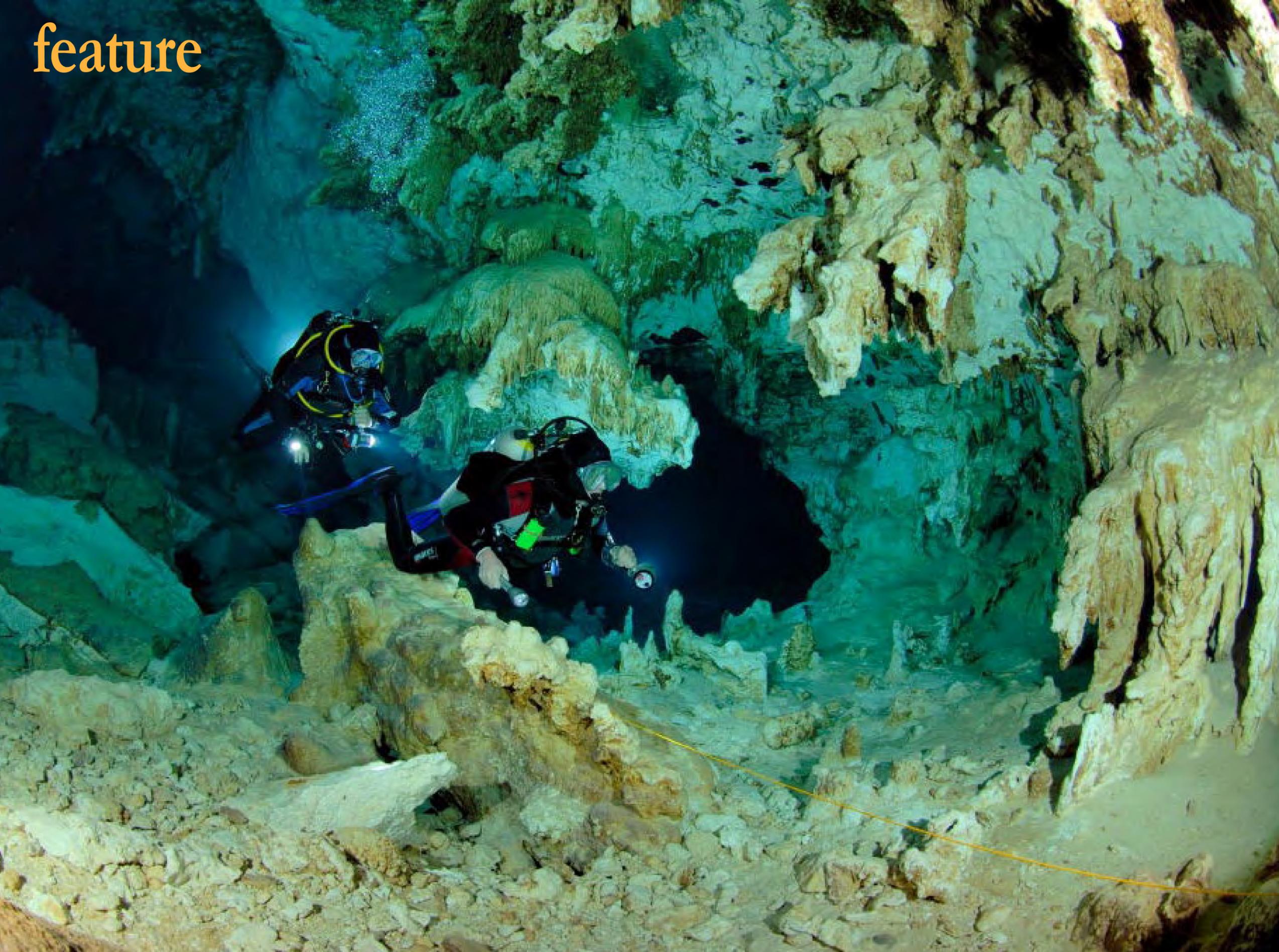
equipment have made it easier for divers to go farther into the networks of dark tunnels branching out from the submerged caves, and reports began to emerge about this dark underworld and its store of human and animal remains.

Arturo González, a Mexican biologist and underwater archaeologist working with the Instituto Nacional de Antropología e Historia, decided to launch a systematic examination of the flooded caverns in 1999. He worked together with a team of specialists including cave divers, archaeologists, palaeontologists and photographers, who would face technically difficult and

physically challenging dives of up to six hours. The multidisciplinary team excavated three human skeletons from the depths, then carefully studied and analysed them. What they found startled the scientific community.

The skeletons are possibly older than any other human remains in the Americas. One in particular has been estimated by three foreign laboratories to be more than 11,600 years old. Furthermore, the skeletons bear no resemblance to the Maya who came to dominate the region thousands of years later, and whose remains and artefacts are found near the openings of the cenotes. If anything, accord-



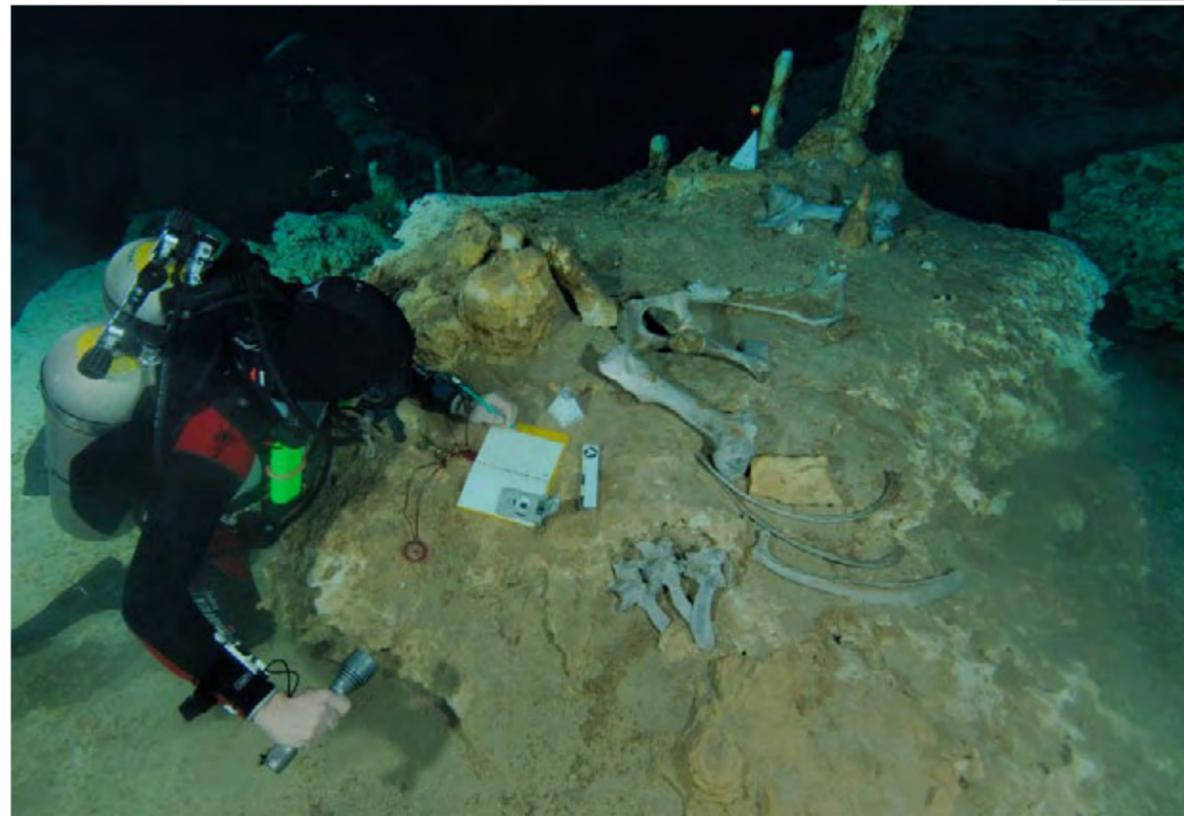
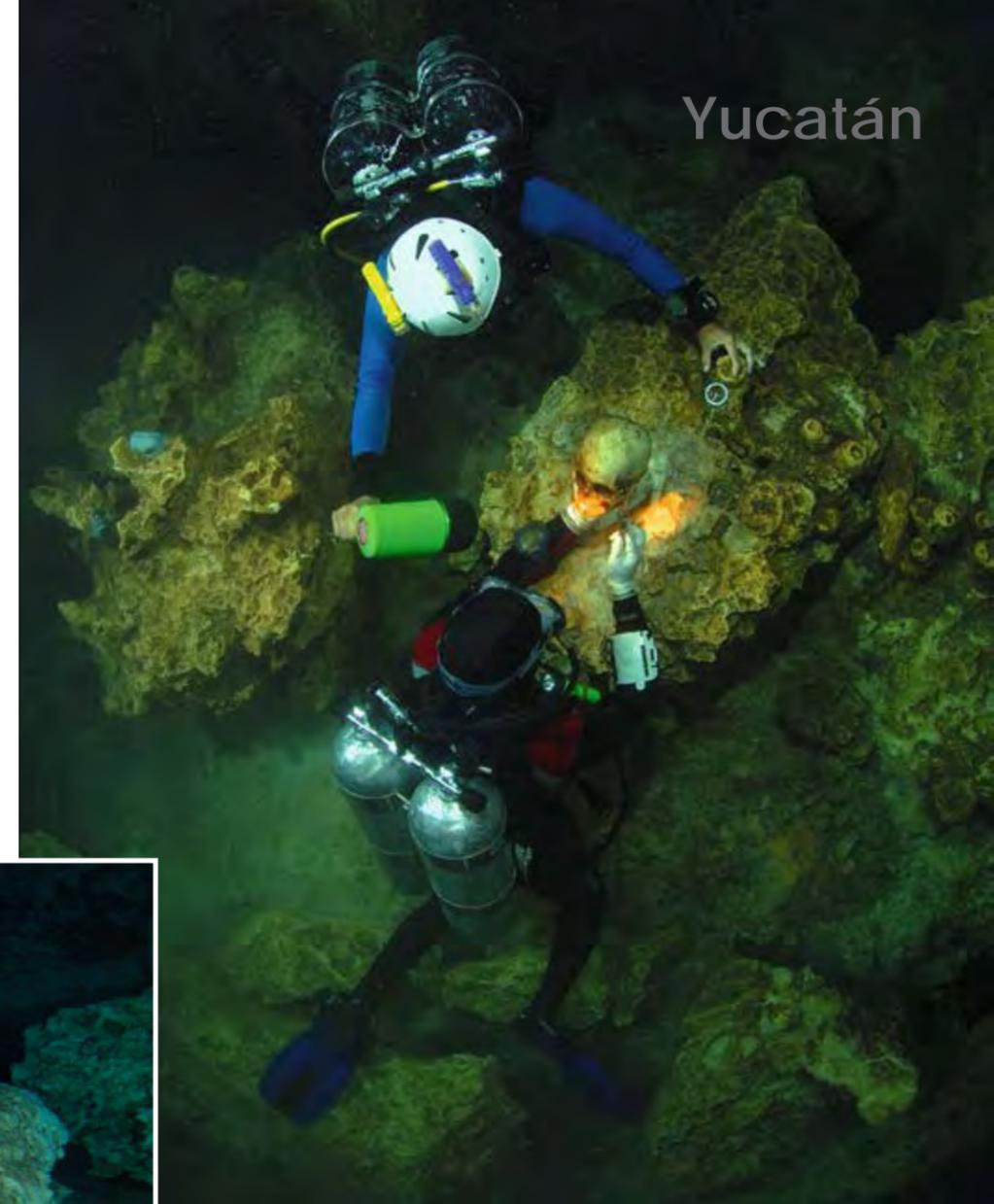
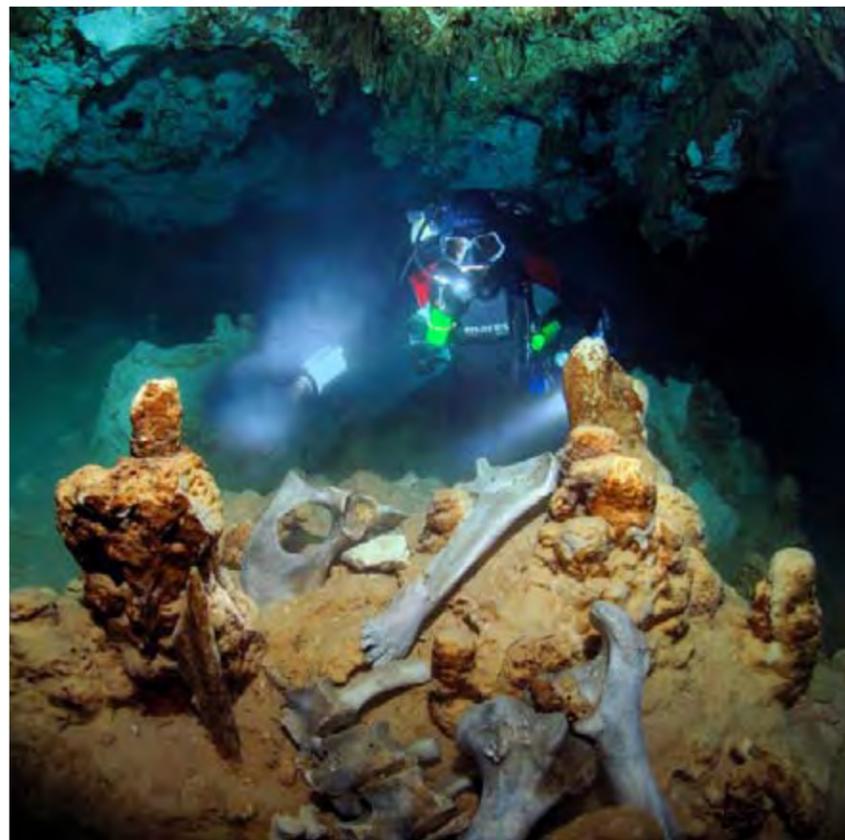


ing to González, the newly discovered skeletons have a cranial morphology resembling that of people in eastern Asia. The findings are forcing the scientific community to reassess its theories about when and how early humans travelled to the Americas.

"What we've discovered is a piece in the puzzle of human evolution," says 44-year-old González, who has been director of the Museum of the Desert in the northern Mexican city of Saltillo since 2002. "But there are a lot of other pieces missing from the puzzle. We have one important piece, but it doesn't match any other existing part in a way that would help us understand how early humans colonized the Americas."

González first learned scuba diving as part of his university studies on biology, but it was a National Geographic documentary about the discovery, by underwater explorer James Coke, of an ancient fireplace 30 metres below the surface that inspired him. "For me this was unbelievable," says González. "Caves have always interested me, this space below the ground that for many indigenous groups signifies the mother's womb. When I saw this documentary about fire pits under the water, I began to travel to these areas to explore them. We got to know James Coke, a pioneer in the exploration of these spaces, and he alerted us to other discoveries he'd made. Thanks to him we began to form a project that since 1999 has been making important discoveries about the ancient history of the Americas."

Arturo González and colleague Carmen Rojas explore the vast caverns of the 60km-long Dos Ojos cenote



Cave exploration

Cave divers and speleologists have been exploring Yucatán's submerged cave systems since the 1980s, collecting geological, archaeological and palaeontological evidence that is now crucial to González. Deep in the caverns, González and his colleagues retrieved fossils that are between 10,000 and 60,000 years old, including those of extinct camelids, giant armadillos and horses. All are from the Pleistocene Epoch, when the Yucatán was covered not with low forests but with dry grasslands. In at least one submerged cave north of Tulum, near the Caribbean coast, the divers found another ancient fireplace, whose carbon traces of partially burned camelid bones suggest that the prehistoric humans there survived in part on the meat of an animal whose species disappeared at the end of the Pleistocene.

When prehistoric people were cooking camelid meat, the sea

level was more than 100 metres below where it is today. González believes these people may have used the caves not only as rudimentary kitchens, but also as pathways to water sources. There is also strong evidence that dead bodies were placed in special caves far below the ground, perhaps to protect them from natural predators. But then a massive shift in global climate produced rapid rises in the sea level, as well as the intricately linked water table inland, and the burial sites and kitchens were all flooded – to remain unseen until cave divers discovered them millennia later.

Rolex funds research

Funds from the Rolex Award will allow González to field a team for at least another year of research; the group intends to focus on the Chan Hol cave, where a fourth skeleton has been discovered, but not yet removed or analysed. The more skeletons examined, González says, the

ABOVE: Using an underwater compass, González records the exact position of camel and horse fossils in a cenote. Their study will broaden the knowledge about ancient fauna, environment and climate. TOP RIGHT: Several dives and meticulous archaeological work were needed to properly excavate the bones found in cenotes, such as this skull dating from the Maya period. RIGHT: A skull from a cenote is recovered by González. Several hundred metres from the cave's entrance, human skeletons were found. The finding suggests that they were intentionally deposited at a time when the caves were dry, about 10,000 years ago



more comparisons can be made to similar human remains in other parts of the world—perhaps even putting more pieces into the puzzle of human history. Beyond that, González says he and his colleagues will focus on trying to understand the lives of these ancient people, especially how they used different caves for different purposes—clues that will lead researchers to move beyond the bones and toward a better

understanding of prehistoric life. These findings have greatly increased interest in the cenotes, leading González and his colleagues to work with residents of local villages to protect the rare treasures from damage and looting. They have also encouraged the villagers to speak out against the contamination of the underground waters by unrestrained tourist development along the so-called

Mayan Riviera. Cenotes hold vital freshwater reserves, yet millions of litres of water are pumped from these aquifers every day, far exceeding their natural regeneration rate in some parts of the peninsula. In remote areas, cenotes are sometimes used as waste dumps that spread organic and chemical pollution.

As knowledge of the past increases, the challenge of getting in and out of the twist-

González and his team made several exhausting dives in Yucatan's cenotes in order to bring submerged archaeological remains to the surface to be studied and preserved



González and his team found human remains in Yucatan's cenotes that provide new insights into early human settlement of the Americas

ing labyrinths remains a dangerous pursuit in the name of science and discovery. With complicated logistics and multiple equipment combinations to minimize the risks, the long and disorienting trips underwater remain physically and emotionally gruelling. A typical underwater expedition can take six hours, including the first hour to reach the cave of interest, an hour to carry out research, and then, given the need for decompression stops along the way, a four-hour return trip to the surface. Fortunately, the scientists are assisted with this aspect of their work by a small cadre of highly trained, professional divers whose knowledge of the systems is a precious resource.

Many years of work still lies ahead for González in what, according to Prof. Wolfgang Stinnesbeck, specialist of Mexican geology and palaeontology at the University of Heidelberg, "is certainly one of the most fas-

inating and outstanding research projects in modern geosciences and has already delivered an impressive number of outstanding results". And it's a race against time given the Yucatán's burgeoning tourist development. Yet for González, the risks the divers take as they plunge into the watery windows on the past are worth the challenge.

"As an inhabitant of the Americas, I'm interested in knowing who these people were, where they came from, and when their first steps in the Americas occurred," he explains. "In these sites, we can find the archaeological contexts just about as they were left by the people of the Ice Age. It's a great treasure and it's my passion to get there and discover them, and be able to interpret them in order to share a new understanding of the history of humanity." ■



González and colleague Flor de Maria Curiel, in a field laboratory he established in the jungle, carry out a preliminary study of two human skulls brought out of a nearby cenote

BELOW: Alejandro Terrazas Mata (left) and Guillermo Acosta of Mexico's National Autonomous University (UNAM), and González (centre) discuss three skulls found in Yucatan's cenotes



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