

# ADVANCED DIVER MAGAZINE

ISSUE 23 / 2006

**Kavieng • Papua New Guinea**

**Evolution CCR**

**Rebreather Piracy • Dominican Republic**

**The Ghosts of Sunda Strait • Java Sea**

**Blue Holes of Abaco • Bahamas**

**Operation Hailstorm • Chuuk**

**Lingcod • Pacific Northwest**

**Selah Chamberlain • Lake Michigan**

**Diving Northern Sulawesi • Indonesia**

**Photography by Thaddius Bedford**

**UNEXSO • Grand Bahama**

**WWII WRECKS OF  
TRUK LAGOON  
CCR INVASION**

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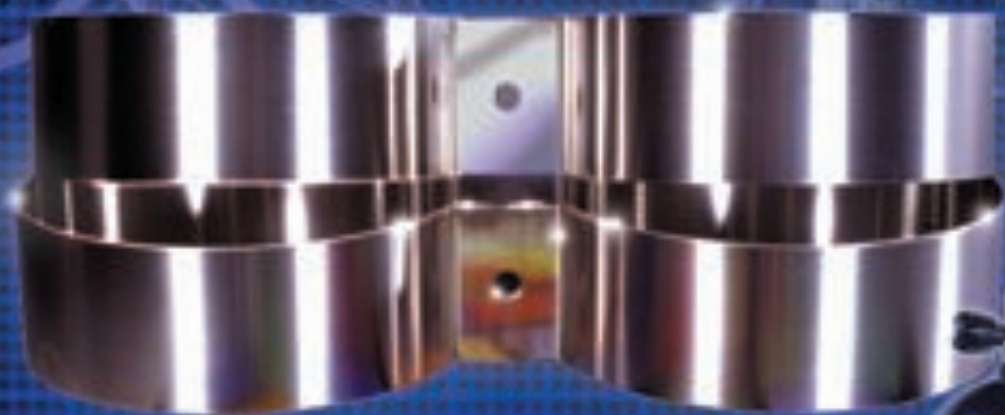
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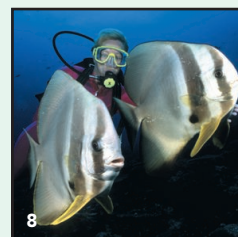


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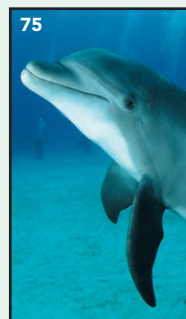
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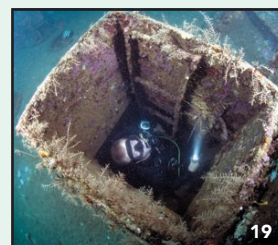
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## Cover:

Rebreather instructor diver Ron Benson examines the inside of a WWII Japanese Zero attack aircraft still in the cargo hold of the *Fugikawa Maru*, Truk Lagoon

Photo by Curt Bowen



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*You don't dive*  
DEEP WRECKS  
*or explore*  
VIRGIN CAVES  
*every day...*

*but your equipment should be BUILT LIKE YOU DO.*





## Publisher's Notes

**W**hile on the 26-hour flight to Truk Lagoon, I was deeply impressed by just how big this planet really is — and how much of it is underwater. Seven hours of flight time, at 500+ miles per hour, for just the Pacific Ocean! I could live a million life times but never come close to seeing even half of it. Kind of depressing, in a way, that I have only one lifetime to explore.

While I was cramped up in my seemingly ever-smaller airline seat, I also had ample time to ponder several new thoughts and ideas for ADM and ADM On-Line (besides wondering how they get so few pretzels in that little bag).

The first vision was WET, World Exploration Team, a section inside ADM On-Line that is designed for and dedicated to those unique individuals around the world who have dedicated their lives to diving.

The second was to incorporate a larger main editorial within the pages of ADM, such as the Truk Lagoon article within this issue, along with the standard ten editorial pieces.

I also had many ideas on ADM's photo contests, link pages to our supporters and advertisers, and last but not least, a thought occurred to me to add a personal photo portfolio on the site for myself. Never know what offers might come around in the future....

Again, Linda and I would like to thank those who support ADM by advertisement, subscriptions, and editorial submissions.

Curt and Linda Bowen



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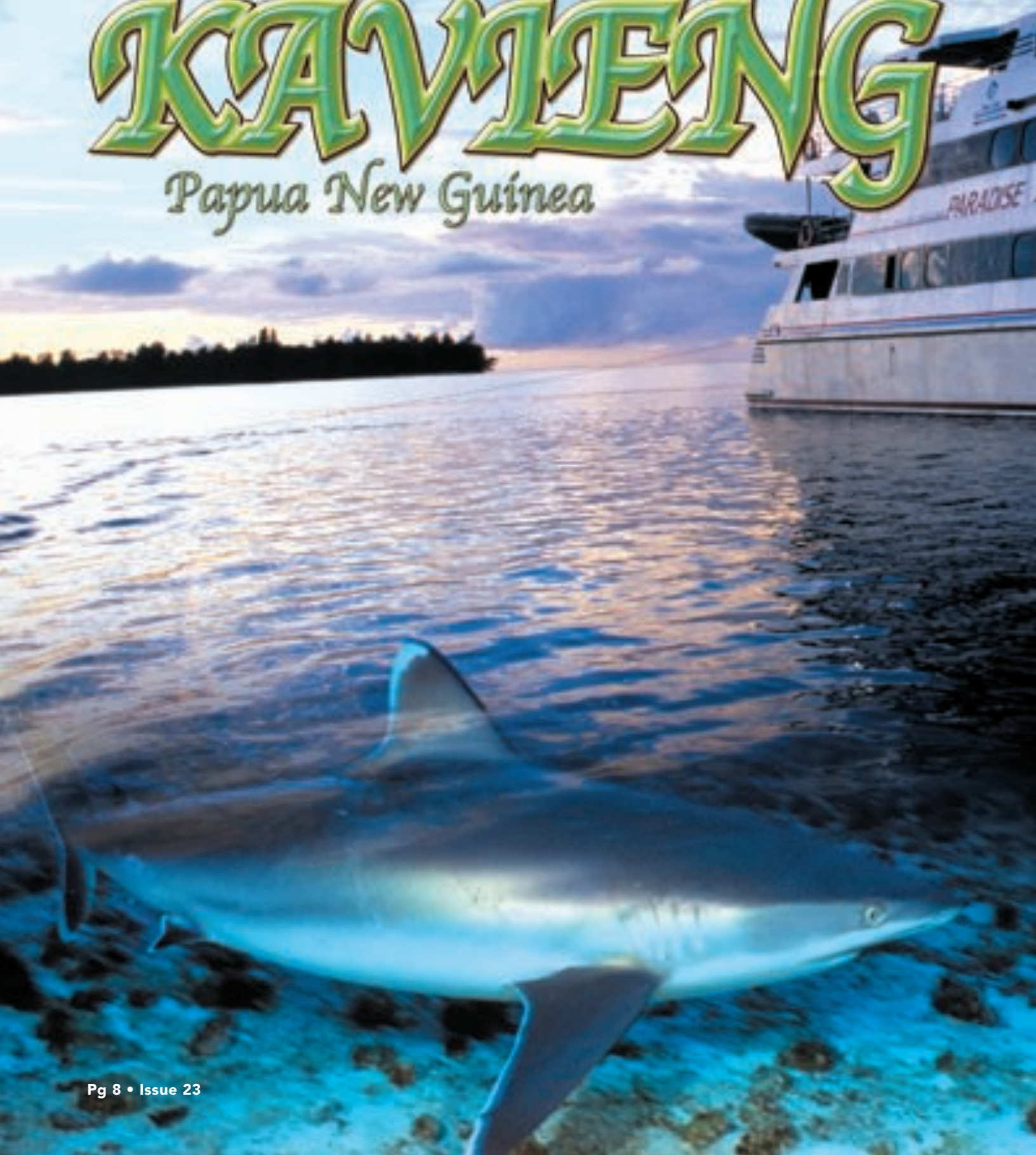
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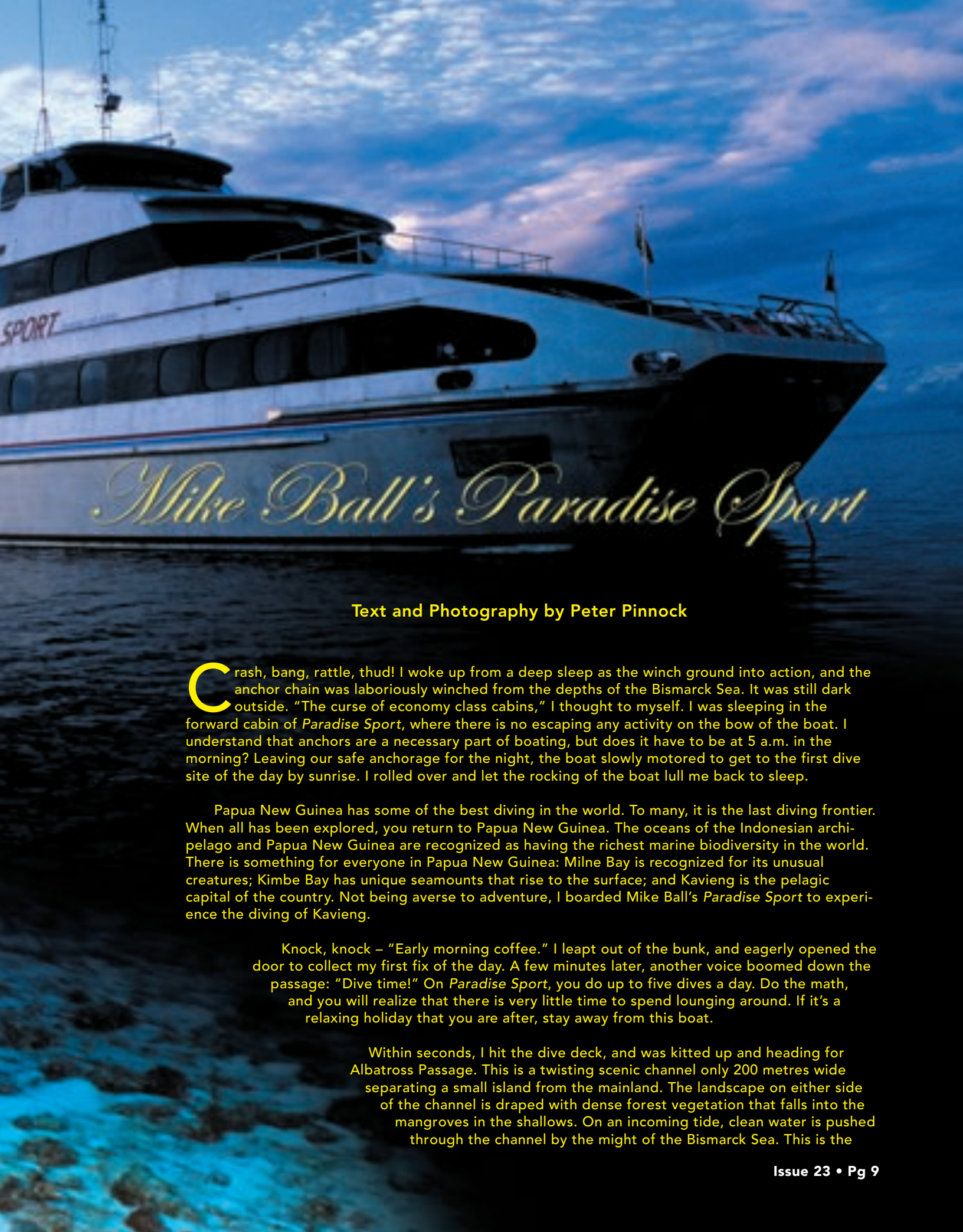
Where Currents Collide

# KAVIENG

Papua New Guinea







### Text and Photography by Peter Pinnock

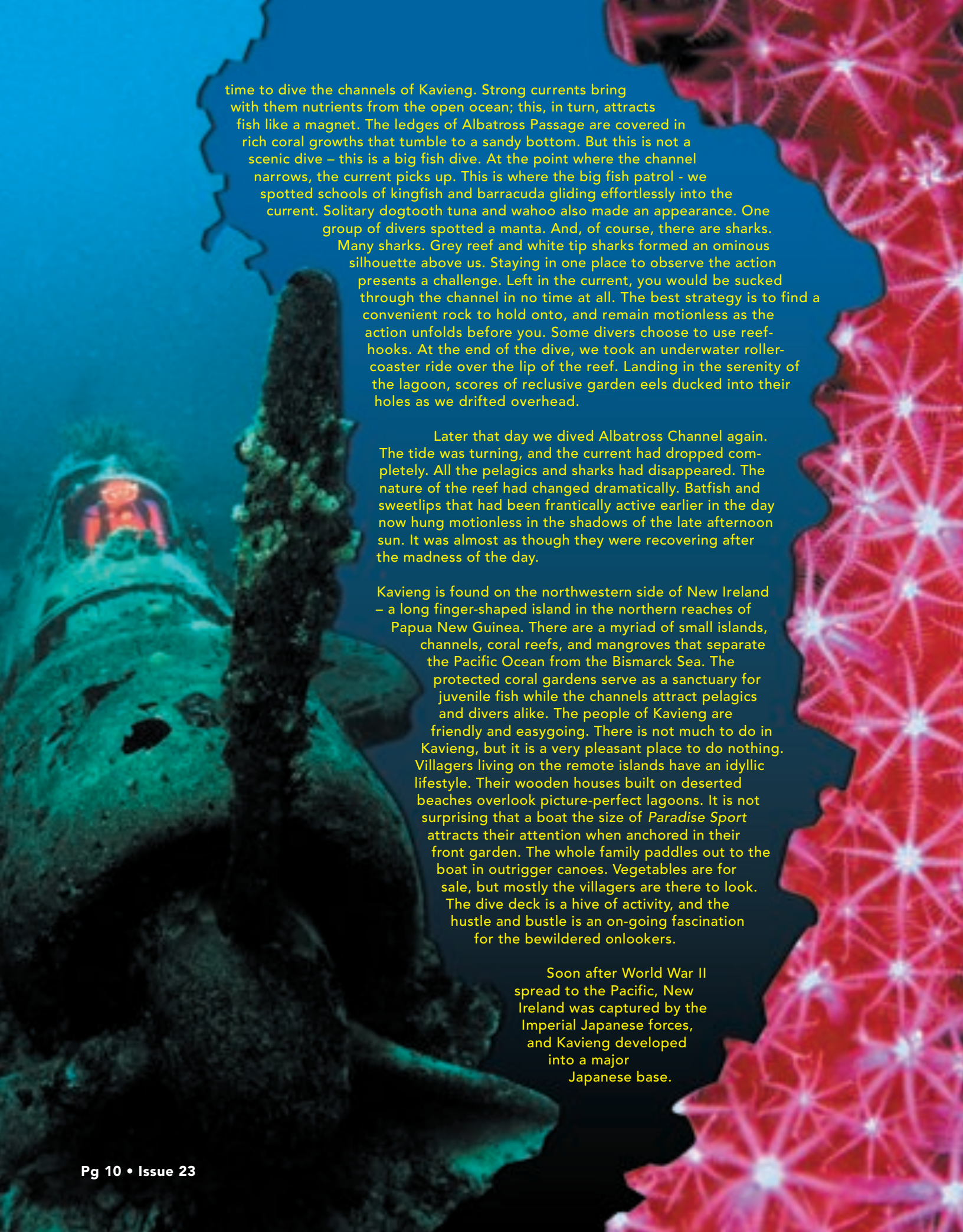
**C**rash, bang, rattle, thud! I woke up from a deep sleep as the winch ground into action, and the anchor chain was laboriously winched from the depths of the Bismarck Sea. It was still dark outside. "The curse of economy class cabins," I thought to myself. I was sleeping in the forward cabin of *Paradise Sport*, where there is no escaping any activity on the bow of the boat. I understand that anchors are a necessary part of boating, but does it have to be at 5 a.m. in the morning? Leaving our safe anchorage for the night, the boat slowly motored to get to the first dive site of the day by sunrise. I rolled over and let the rocking of the boat lull me back to sleep.

Papua New Guinea has some of the best diving in the world. To many, it is the last diving frontier. When all has been explored, you return to Papua New Guinea. The oceans of the Indonesian archipelago and Papua New Guinea are recognized as having the richest marine biodiversity in the world. There is something for everyone in Papua New Guinea: Milne Bay is recognized for its unusual creatures; Kimbe Bay has unique seamounts that rise to the surface; and Kavieng is the pelagic capital of the country. Not being averse to adventure, I boarded Mike Ball's *Paradise Sport* to experience the diving of Kavieng.

Knock, knock – "Early morning coffee." I leapt out of the bunk, and eagerly opened the door to collect my first fix of the day. A few minutes later, another voice boomed down the passage: "Dive time!" On *Paradise Sport*, you do up to five dives a day. Do the math, and you will realize that there is very little time to spend lounging around. If it's a relaxing holiday that you are after, stay away from this boat.

Within seconds, I hit the dive deck, and was kitted up and heading for Albatross Passage. This is a twisting scenic channel only 200 metres wide separating a small island from the mainland. The landscape on either side of the channel is draped with dense forest vegetation that falls into the mangroves in the shallows. On an incoming tide, clean water is pushed through the channel by the might of the Bismarck Sea. This is the






time to dive the channels of Kavieng. Strong currents bring with them nutrients from the open ocean; this, in turn, attracts fish like a magnet. The ledges of Albatross Passage are covered in rich coral growths that tumble to a sandy bottom. But this is not a scenic dive – this is a big fish dive. At the point where the channel narrows, the current picks up. This is where the big fish patrol - we spotted schools of kingfish and barracuda gliding effortlessly into the current. Solitary dogtooth tuna and wahoo also made an appearance. One group of divers spotted a manta. And, of course, there are sharks. Many sharks. Grey reef and white tip sharks formed an ominous silhouette above us. Staying in one place to observe the action presents a challenge. Left in the current, you would be sucked through the channel in no time at all. The best strategy is to find a convenient rock to hold onto, and remain motionless as the action unfolds before you. Some divers choose to use reef-hooks. At the end of the dive, we took an underwater roller-coaster ride over the lip of the reef. Landing in the serenity of the lagoon, scores of reclusive garden eels ducked into their holes as we drifted overhead.

Later that day we dived Albatross Channel again. The tide was turning, and the current had dropped completely. All the pelagics and sharks had disappeared. The nature of the reef had changed dramatically. Batfish and sweetlips that had been frantically active earlier in the day now hung motionless in the shadows of the late afternoon sun. It was almost as though they were recovering after the madness of the day.

Kavieng is found on the northwestern side of New Ireland – a long finger-shaped island in the northern reaches of Papua New Guinea. There are a myriad of small islands, channels, coral reefs, and mangroves that separate the Pacific Ocean from the Bismarck Sea. The protected coral gardens serve as a sanctuary for juvenile fish while the channels attract pelagics and divers alike. The people of Kavieng are friendly and easygoing. There is not much to do in Kavieng, but it is a very pleasant place to do nothing. Villagers living on the remote islands have an idyllic lifestyle. Their wooden houses built on deserted beaches overlook picture-perfect lagoons. It is not surprising that a boat the size of *Paradise Sport* attracts their attention when anchored in their front garden. The whole family paddles out to the boat in outrigger canoes. Vegetables are for sale, but mostly the villagers are there to look. The dive deck is a hive of activity, and the hustle and bustle is an on-going fascination for the bewildered onlookers.

Soon after World War II spread to the Pacific, New Ireland was captured by the Imperial Japanese forces, and Kavieng developed into a major Japanese base.





The Japanese held the island until the final surrender. Although no attempt was made by the Allied forces to recapture Kavieng, it was the scene of fierce bombing attacks. Today, the remnants of war remain – both above and below the water.

The *Taisho Maru* was an armed Japanese freighter that was bombed while anchored outside Three Islands Harbour. The force of the explosion must have been devastating – the ship was torn apart as if it were paper. Lying in 20 metres of nutrient rich water, it makes for a superb dive. The wreck is smothered with fans, sponges, whips, and soft corals of any imaginable colour. This is the best selection of soft corals you will find in one place anywhere in the Bismarck Sea. The most interesting feature of the wreck is a mini submarine that is resting upright in the sand 50 metres from the wreck. It is still fully intact. Schools of glassies have colonized the twin counter-rotating propellers; and on the bow, the twin torpedo tubes are easily identifiable. The hatch on the conning tower is open, offering a view into the bowels of the submarine. A small Japanese sailor could just fit through the hatch, but certainly not a diver with scuba gear. Later, as the sun set, we slipped into the water for a night dive on the wreck. Pipefish moved lazily between coral growths; juvenile damsels nestled in the plumes of soft corals, and a giant sponge crab lumbered into the depths of the wreck to escape the light from our torch. After the dive, I sipped on single malt whisky. I drank a toast to life. I was grateful that I was not on the freighter when it was bombed. No one could have survived that terrible blast.

On the tip of Kavieng Island, the Bismarck Sea collides with the Pacific Ocean. The two oceanic titans meet and flex their muscles. Host to the feud is Chapman's Reef – a small offshore pinnacle. Bait balls of fish bubble on the surface, giving a hint of the fish life below. The current storms over the reef. It rips. The water boils on the surface. At Chapman's, the current powers over the reef like a Cape southwesterly – if you look into it with your mouth open, your fillings will rattle and bounce to the back of your head. The local villagers who venture out to *Paradise Sport* have their work cut out for them paddling against the current. The big fish action is always found on





the current-facing side of the reef.

Getting there can be a challenge: A dinghy drops you up current of the reef. Descending quickly, you drift through clouds of fish before the dark shape of the reef appears. The current is virtually impossible to swim against. If you miss the reef, you miss the dive. If this happens, you surface and get loaded into the dingy, and try again.

Schools of barracuda slip gracefully through the current. Dogtooth tuna and sharks patrol the deeper water. Snappers, bigeye kingfish, fusiliers, and batfish assemble at the drop-off. Occasionally, a Spanish mackerel or dogtooth tuna would flash into the schools of fish. With a "whoosh" all the fish dive for the shelter of the reef.

Attracted by the commotion, sharks instinctively appear out of nowhere looking for an easy meal. Slowly, the reef returns to normality. Goldies emerge cautiously from crevices. Fusiliers regroup to flit in the current. The reef blooms again. In the tense atmosphere of Chapman's Reef, it seems possible to see just about anything. At dusk, we dived Chapman's Reef for the last time. On this dive I heard one of the most intimidating sounds I have ever heard underwater: five giant dogtooth tuna streaked past us in feeding formation. Like rolling African thunder, they stormed over the reef. The accompanying noise was akin to being charged by a herd of bull elephants on a corrugated steel roof. In a flash, they disappear. I shuddered and blinked in disbelief. The coral reef is a beautiful place, but sometimes it can resemble a battlefield.

Seven days and twenty-eight dives later, it was time to leave Kavieng. Our last dive was on a three-man Japanese bomber that crashed in a shallow lagoon – a final memory of a distant war. Anemones and false clownfish have colonised the starboard wing. Nonchalantly, a poisonous banded sea snake sniffed for crustaceans in the surrounding rubble. A trip to Papua New Guinea is an adventure. It is a country of beauty and enchantment – with the bonus of having superb diving. If it's adventurous diving that you are after, head north to Kavieng.

**Getting there:** Quantas flies to Port Moresby, the capital of Papua New Guinea, from Sydney and Brisbane. From there, fly to Kavieng with Air Niugini.

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# EVOLUTION CCR

## Silent Diving Systems

By Cass Lawson

The Evolution, one of only two CE-approved closed circuit rebreathers in production, is the second generation of rebreathers from Ambient Pressure Diving Ltd. in the United Kingdom, and is distributed in North America by Silent Diving Systems LLC.

The new Evolution may look like merely the smaller brother of the Inspiration, but that is far from the case. For years, Ambient Pressure Diving's Inspiration has been the best selling CCR available for the recreational and technical diver market. Wreck and cave divers like them because there are no bubbles to dislodge silt and destroy the visibility, and the deep technical divers like them because the 19 cu ft bottles allow them to dive for long periods of time without racking up enormous decompression stops. This is amply demonstrated by the divers on the great TV series Deep Sea Detectives. Photographers love them because the lack of bubbles allows them to approach their wary subjects to get better images.

I was on the live-aboard Nautilus Explorer diving the Socorro Islands with my Inspiration, and I was given the chance to "test dive" the new Evolution. The first thing that struck me was its size. It is considerably smaller than the Inspiration, yet manages to have all of the functions — plus a whole lot more. One of the main benefits of the smaller and lighter Evolution is that it will be much easier to pack for traveling. Weight limits for divers are a pain in the scrubber unit. Stripping down and rebuilding an Inspiration while on a dive boat means keeping track of various small parts.





The real “evolution” of the product is the new Vision Electronics that are light years ahead of anything else available to date. Some of the many features are the real time on-board computer for both nitrox and trimix, using the Buhlman Algorithm, with user adjustable gradient factors, open circuit bailout with selectable mixes, and it can be adjusted during the dive. One feature that no other unit offers is the revolutionary new “Temp Stick,” which is a scrubber monitoring system that takes into account water temperature, individual exertion levels, depth, and scrubber duration. It graphically displays scrubber usage. Other features include: two independent oxygen controllers with intelligent battery power management housed in a sealed battery box, fiber optic heads-up display (HUD), fed directly from both controllers and automatic set point switching.

The classic Inspiration Electronics have always been efficient at P02 control and management by providing oxygen injections from split second to 17-second duration, as required. The Vision Electronics have gone one step further – with the intelligent oxygen injection system, both controllers now monitor the P02, and will fire the solenoid independently of each other, if necessary.

The new handset is smaller than one of the Inspiration’s original ones. The oblong shape of the unit allows the display to have large digits that are easy to read underwater. Other features include battery display usage symbols for both batteries, a scrubber time remaining display, barometric pressure / depth display, and surface interval time. The interesting display for me is the scrubber usage display. The smaller scrubber canister has a planned usage of about two hours. I noticed after my dive of just over one hour that the display indicated about one quarter used. Further investigation showed that this was correct, and subsequent dives were made for another two hours and twenty minutes. In simple terms, there is a probe in the scrubber canister that monitors the temperature of the Sofnolime and calculates the remaining life. This is a far more accurate method of monitoring the scrubber duration, and gives the diver some peace of mind. If the probe determines that the scrubber is coming to the end of its useful life, then warnings are given audibly and visually to the diver.

One other really cool feature is the heads-up display (HUD) that is placed just in the line of vision of the left eye. Four light emitting diodes (LED), two red on top and two green underneath, are clearly visible all through the dive. As long as the two green lights are illuminated, all is well; if the red lights illuminate, that is a warning that something may well be wrong. This allows the diver to check the system and isolate the cause of the red light. I know that I should monitor the handset for partial pressures every minute or so, but the LEDs are a great reminder.





One of the dives that I made with the Evolution was at Roca Partida, a twin-coned rock, perched in the apparent middle of nowhere. We were taken to the dive site by the Nautilus Explorer's RIB, a quick back-roll off the side and we're into the deep blue waters. I'm used to the silence of my Inspiration, but the Evolution seemed even quieter; I'm not sure if this is possible, but that's how it seemed. I check with my buddy Craig, and we descend. I go to switch to my higher set point, but the new handset has done this for me. Good feature, huh? The set point switch depth is variable to the individual diver, and the handset will also complete the reciprocal switch on ascent. Down we go to 120 feet, and all I hear is the gentle hiss of the solenoid releasing the precious oxygen, and the gentle rush of diluent as the ADV adjusts to the depth. At 120 feet, all is well. White tip sharks cruise by; off in the blue yonder, a few tuna swim in formation, and all is well with the world.

As we approach the rock face, the strong upwelling starts to hold us in its invisible grasp, pushing us up about 25 feet, and then bringing us back down again. The current grabs us and insists we ascend about 15 feet; it changes its mind, and again returns us to our starting place. It seems that this is going to be a "washing machine" dive. Up, down, and round about. The Evolution continues to give me all the gas I need to keep swimming; will my legs be able to keep up, though? I look for Craig, and he's in the same holding pattern as I am. I can see the two green lights of the heads-up display in my left peripheral vision—but I check the handset, and all is well. The correct PO2 is showing, the scrubber indicates that all is well, and I'm at 85 feet. After 15 minutes of being thrown around – I think we're in the "rinse cycle" now – we ascend to about 60 feet and things are no better with the surge and current. I'm beginning to feel a little tired, so I let the current take me where it wants to go, and I watch the lobsters defend their rock apartments from attackers. I see more sharks swim by, an eel mouths silently at me from his crevice, and a manta glides gently overhead.

By now, the current seems to be running at about one and a half knots, the surge is still about 20 feet, and I'm beginning to get really tired. I try the cave diving trick of gently pulling myself along the cliff face, but the sharp rocks and abundance of black spiny sea urchins stab my fingertips. My breathing is getting heavier; however, the Evolution still gives me ample gas, and a glance at the handset confirms that everything is normal.

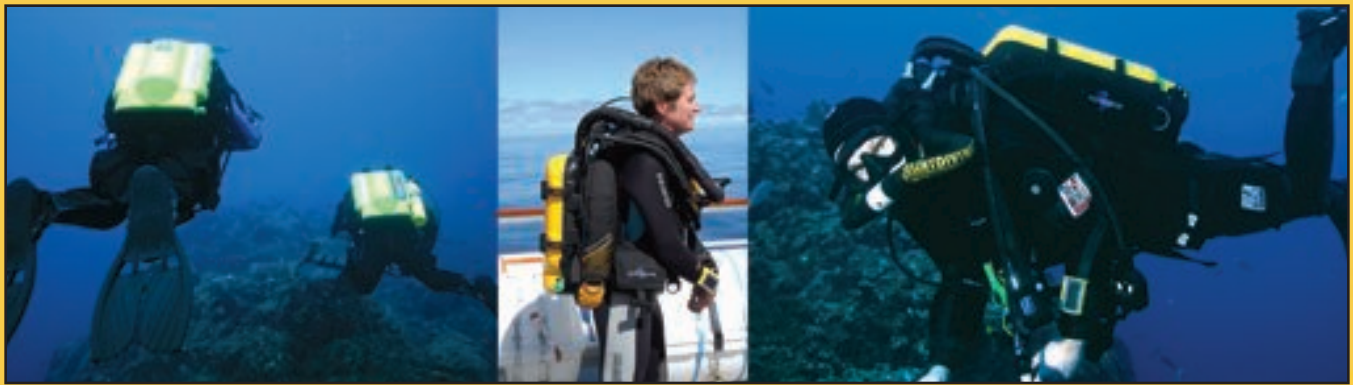
We've been on the dive for just under an hour, and I signal to Craig that I'm going up. He agrees to ascend. We deploy the safety sausage, and Sten, the dive master, comes over and collects us. Bernie and Cliff are already on the boat, and we all agree that it was a fairly strenuous dive. While sitting on the RIB, I do a final check on the gas gauges. I've used 30 bar (450 psi) of air and 25 bar (375 psi) of oxygen. As I mentioned, the scrubber display indicates that the Sofnolime is about one quarter used. All in all, I had an excellent dive.

So, how different is the Evolution to dive than the classic Inspiration? There is a completely new set of Vision Electronics in the Evolution, and now available in the Inspiration. Getting used to a single handset only takes a couple of dives; it's just getting used to the new layout of the handset. And it will be much easier to travel with, as it's about 20 lbs lighter. Nothing really has changed in the way of the physics of diving. There are no changes physiologically that we need to consider. The electronics have been brought up to date to keep us safer and give us more information. Bottom line...the new Vision Electronics TAKES CARE OF YOU!

I believe that the Evolution has made the task of diving a CCR a lot easier, and it makes an easy transition for open circuit divers. Perhaps the Evolution will allow us to stop being just visitors underwater, and allow us to become citizens of the sea.







# EVOLUTION

## CCR Schematic

- A Open/Close Mouthpiece
- B Exhale Counterlung / Water Trap
- C Manual Exhaust / Pressure Relief Valve
- D Manual Oxygen Addition
- E Spring Loaded Pressure Plate
- F CO2 Scrubber Canister
- G Tempstick
- H Triple Oxygen Sensors
- I Double Batter Pack
- J Dual Oxygen Controllers
- K Oxygen Solenoid
- L Inhalation Counterlung
- M Manual Diluent Addition
- N Dual Heads Up Display (HUD)
- O Diluent Cylinder and Regulator 1st Stage
- P Oxygen Cylinder and Regulator 1st Stage
- Q Oxygen Pressure Gauge
- R Diluent Pressure Gauge
- S Wrist Mounted Computer Display
- T Auto Air, BC Inflator, Deflator, Diluent 2nd Stage, Diluent Pressure Relief Valve
- U Automatic Diluent Addition Valve
- V Buzzer

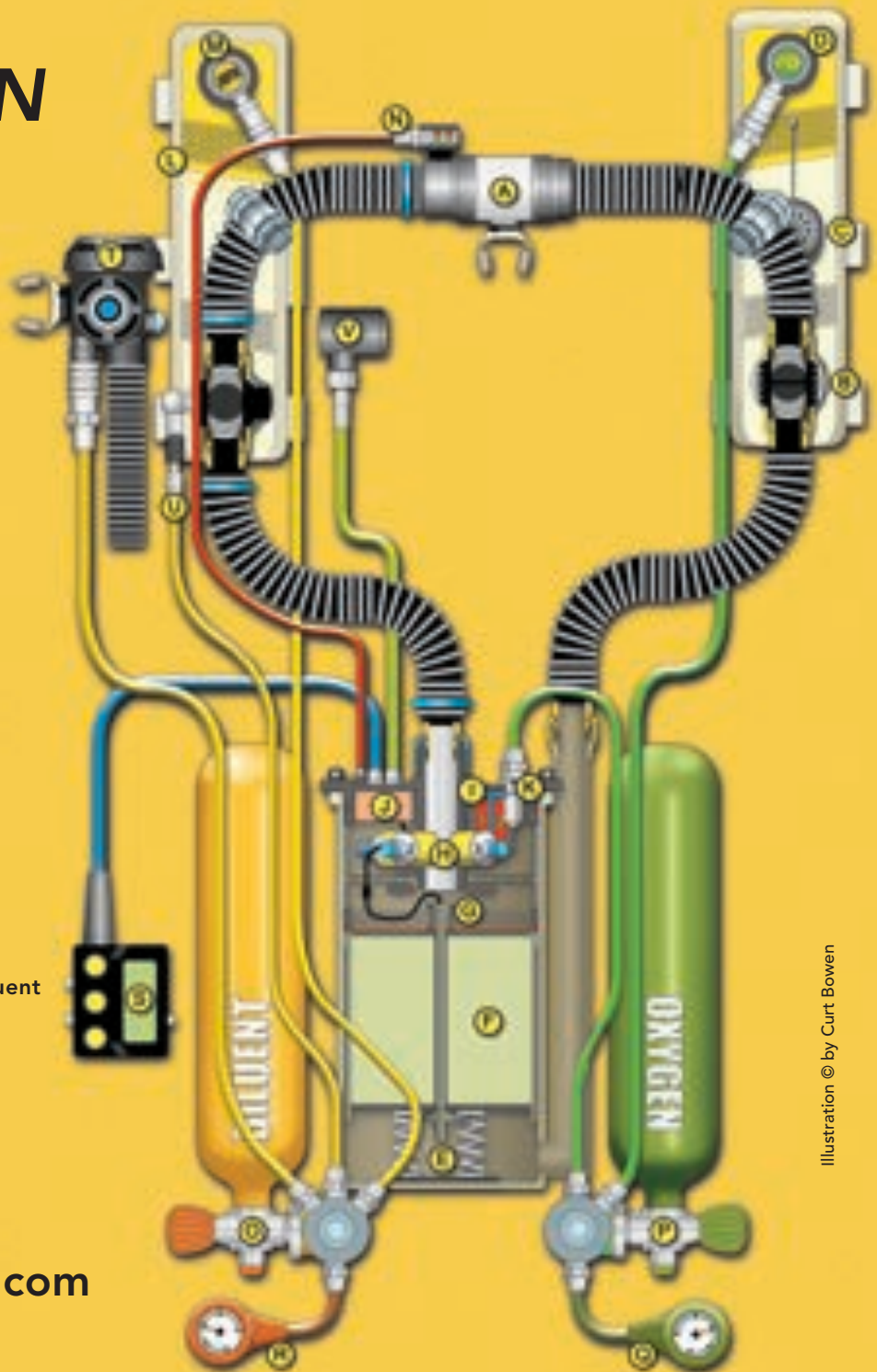


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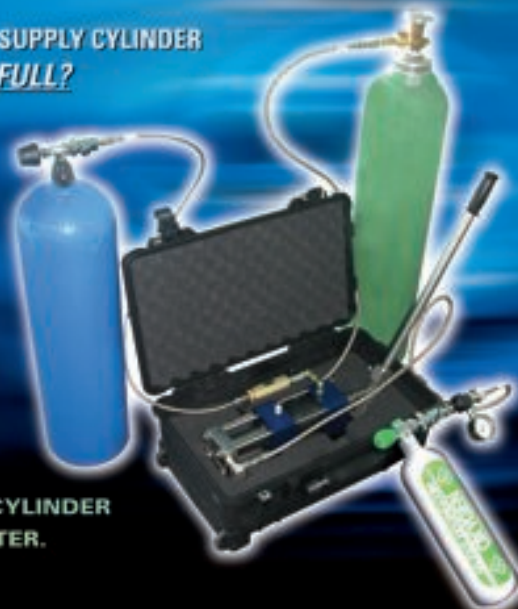
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# DOMINICAN REPUBLIC REBREATHING PIRACY

## SILENT ATTACK TO LAND AND SEA

Text by Curt Bowen

Photography by Jill Heinerth and Curt Bowen

**A** hoy, all hands! Harken now to a tale of pirates in search of wondrous bounty, adventures on the high seas...and below... and a merry search for new territories and new friends.

Tis an invasion unlike anything since the intrepid Christopher Columbus landed in Santo Domingo. These new intruders from a different world are able to venture where no man has dared, probe deeper, stay longer, and make no sound louder than a whisper. Beware, for they can encircle all too easily the unsuspecting!

These intruders are the new pirates of the sea, cloaked in dark masks and draped in high tech life support equipment. They are not here for a hostile take-over nor to rape and pillage, as have invaders in days of old. They do seek lost treasure, these new wave pirates, but not rubies, emeralds, nor doubloons in ancient

chests of oak and iron. They search for deep underwater canyons, giant sponge-laden walls, forests of precious coral as black as a raven's eye, and virgin subterranean passages as their bounty.

Every pirate tale contains a swashbuckling captain, full of spunk, with a quick eye and a nimble hand, in command of a crew willing and capable of running his vessel through any churning sea. In this tale, the captain's name would be John Mattera, owner of the Pirate's Cove Dive Resort & Spa. As in all sea yarns, the captain is shadowed by the first mate, an old scallywag sea dog made of spit and fire, equal to the task of barking orders when the captain has gone ashore. Unlike most pirate stories, the first mate of this vessel, Uwe Rath, is a kinder, gentler scallywag — always quick with a joke and eager to crack a smile. No ship has ever left its mooring without a trustworthy and experienced crew.

**Jetsam manufacturer Kim Smith explores a small wreck bubble free with the recreational designed KISS Sport CCR.**







And here is no exception: Pirate's Cove is manned by a seemingly endless band of stout deck hands eager to tote a bale, and nicely shaped lassies swift to serve the ale.

The invasion began on the 7th of May, and lasted for seven days of continuous deep-sea mayhem. An impressive list of some of the world's most scurvy CCR freebooters would attend, dive, and show off their garb.

Leading the horde of filibusters is the ever-impressive team of Shadow Divers, John Chatterton and his cannon loader Richie Kohler. Landlubbers Jill Heinerth and Curt Bowen ventured ashore to explore the Dominican underground. Kim Smith, of Jetsam Technologies, and Mike Fowler, of Silent Diving Systems, graced our presence to dive and boast about their newest CCR paraphernalia. The last buccaneers to dance the hempen jig were the old sea dogs Jeff Bozanic, Bill Oestreich, and Ron Micjan... followed by a dozen other CCR pirates enthusiastically flying the Jolly Roger.

The whole band of cut-throats met at the recently constructed Pirate's Cove Dive Resort & Spa, located a short sail to the east of Santo Domingo in the southern tourist town of Juan Dolio. The newly built pirate stronghold was beautifully designed to complement the tropical luster of Juan Dolio. The resort is situated on a stunning white beach, fringed by a myriad of tall palms that provide a relaxing shade for any mariner's tired bones.

Upon our arrival, the fine captain provided a tour of the new stronghold. The ground floor contains the dive shop, rental and maintenance areas, and compressor room. By the end of the year, the balance of the building will be completed. That will include accommodations for our captain and his first mate, luxurious cabins for the guests, an exercise room and full service spa for the extra-pampered pirate.

The week's agenda included a variety of diving, with morning and afternoon charters running to the local sites. The options for diving here at Pirate's Cove include wrecks, reefs, walls, and caves. Perfect for recreational and technical divers alike. Want some variety? Why not do a deep pinnacle dive in the morning, a wreck dive in the afternoon, or a day excursion to a local cave? Never explored a cave? Try a cavern dive experience with one of the experienced cave diving instructors at Pirate's Cove. You will discover formations that will take your breath away — stunningly beautiful limestone-encrusted stalactites and stalagmites that sparkle and shine as your light beam moves across them. Many of the caves in the area also contain dry passages that you can stroll through for a firsthand subterranean experience.

Pirate's Cove is also an amazing place to conduct your dive training. It is staffed by a multitude of experienced and professional instructors for the best training experience possible, ranging from open water to technical as well as CCR rebreathers.



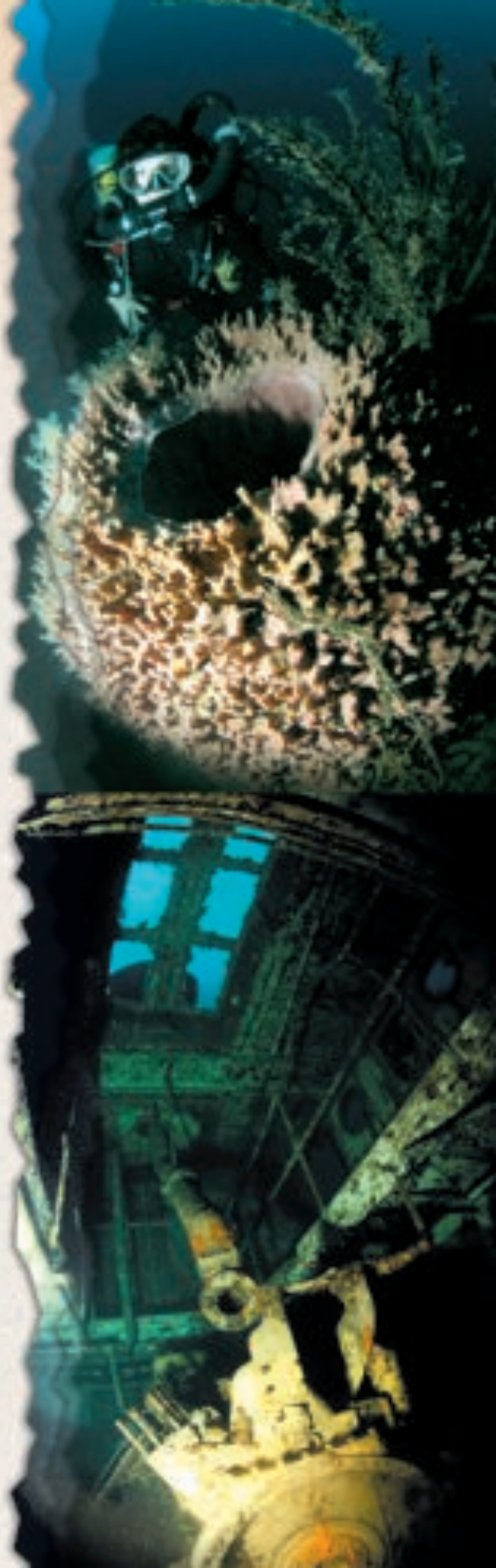


One of the best excursions offered for the recreational diver is on the shipwreck of the *Tanya V*, followed by a short swim onto the pristine Dominican reef. While the wildlife here is both large and small, diving on the Dominican reefs is a macro photographer's dream come true. Local pirate lass Susanne Heinz provides an excellent tour of her favorite macro reef that she calls "the kindergarten." The variety of life is truly amazing, as are the color and shapes of the animals. You will see a plethora of baby fish species, spotted drums, an astonishing assortment of shrimp, fireworms, etc. When the dive has ended and it is time to surface, just pop up and one of the Pirate's Cove lads will pick you up for a quick trip back to shore. As the resort has a number of large and small boats, there is never a problem finding a vessel to take you out for a dive or to pick you up.

While there are many wonderful dive sites to be had in this area, new and undiscovered, never-before-explored sites are being found every week. With such an abundance of wrecks, you will be feeling a bit like treasure hunters looking for new and exciting dive sites!

Another excellent wreck dive was the *Alto Velo*, which is located just a cannon's shot from the airport. The *Alto Velo* is resting in 50 feet of crystal clear, cobalt blue water. As rebreather divers, we all enjoyed a couple hours of down time, warm in the tropical water with the sun beating down on us, breathing warm, moist air, and enjoying being bubble free. This dive is a recreational rebreather diver's paradise. It was absolutely teeming with life. There were dozens of fish species, such as large green morays, black and white spotted morays, yellow striped grunts, and goatfish. Also on hand were plenty of fireworms, Christmas tree tubeworms, and arrow crabs to be seen and photographed.

The other group was out looking for the possibility of virgin deep wreck. The captain and his crew had seen a blip on the radar on a previous trip to the area, and wanted to explore. The radar had shown what looked like a wreck, sitting in about 300 feet of water, just on the edge of the wall. As it turned out, it wasn't a wreck, but a massive boulder sitting on the edge of a 500-foot drop off. But not all was wasted, the deep pirates explored down to 400 feet in an awesome canyon, and discovered giant barrel sponges, deep undercut caves, and an endless waterfall of white sands.

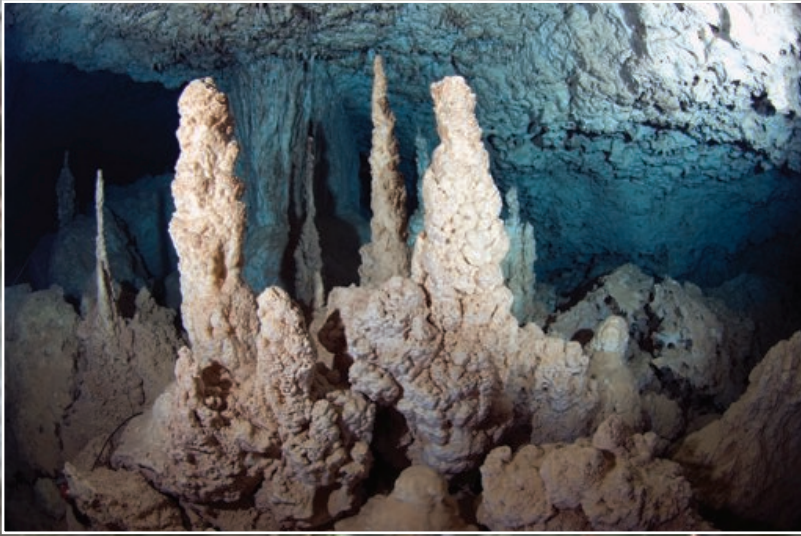




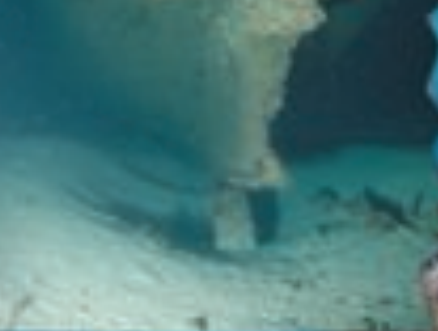


Jill Heinerth and Curt Bowen capture one of the Dominican Republic's beautiful cave entrances, La Sirena. Located within 30 minutes from the Pirate's Cove Dive Center.









The days of diving were followed by plenty of grog and grub prepared on the deck by the local galley master. The grub was delicious and decadent. Truly, fare fit for rich pirates who wanted nothing but the best after a day's work! Later each evening, while enjoying the grog (that's sangria to the landlubbers), one of the buccaneers would give an informative speech on their manufactured goods. The talks were of a good variety, covering different brands of rebreathers and rebreather accessories as well as some wonderful stories from underwater explorers.

Avast! Before ye walk that there plank and visit Davy Jones' Locker, let the wind grab yer sails, and take a compass heading to the best pirate hold in the new world: Pirate's Cove – Dominican Republic. Discovery and new treasures await your arrival.

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# The Ghosts of Sunda Strait

## The wrecks of USS Houston and HMAS Perth

Text and photography by Kevin Denlay

On the night of 28<sup>th</sup> February and early hours of 1<sup>st</sup> March 1942, while trying to escape the Japanese controlled Java Sea through Sunda Strait - that narrow body of water which separates the Indonesian islands of Java and Sumatra - into the relative safety of the Indian Ocean, the light cruiser HMAS *Perth*, accompanied by the heavy cruiser USS *Houston*, ran headlong into one of the Japanese invasion forces that they had been trying unsuccessfully to engage for the last several days. However, the ABDA - American, British, Dutch, Australian - Fleet had already been decimated, and the remaining ships scattered in encounters with an eastern Japanese task force during the previous days. Hence, the two cruisers were now on their own, and facing the full might of this western Japanese task force. Hopelessly outnumbered and outgunned, the one-sided night battle could have but one ending. Nevertheless, both cruisers fought on valiantly to the last, finally succumbing to multiple torpedo and gunfire hits from the numerous Japanese cruisers and destroyers patrolling offshore to protect their own invasion fleet transports - which were actually disembarking troops ashore at the very same time!

*Perth* was first to succumb, after a wild melee that lasted almost one and a half hours, sinking at approximately 12.30 a.m., followed soon after by *Houston*. Although several Japanese transports and a mine-sweeper were also sunk in the engagement, it is now believed they were actually sunk by errant running Japanese 'Long Lance' torpedoes aimed at - but overshooting - the two allied warships. For her part in the action, the United States Ship *Houston* was awarded the Presidential Unit Citation; and her skipper, Captain Albert Rooks, was posthumously awarded the prestigious Congressional Medal of Honor. The Australian government was not quite so generous, awarding the heroic Captain Hec Waller of His Majesty's Australian Ship *Perth* a posthumous 'Mentioned In Dispatches.'

The wrecks now lie a few miles apart in relatively shallow water near the northern entrance to Sunda Strait, just off Banten Bay, at the northwestern-most tip of the Indonesian island of Java. Although in shallow water - approximately 120 ft (36 m) - they are not regularly dived; when they are, it is more often by

A pre-war photo of USS *Houston*, a Northampton Class heavy cruiser with an overall length of 600 ft (183 m). The triple barreled forward 8" turrets, and the 'spotting top' high above the forecast, are noticeably evident (Photo credit - US National Archives)





'recreationally' equipped divers than technical diver groups intent on serious exploration, even though both wrecks can be very challenging dives as they are renowned for being racked by strong currents and poor visibility. As a matter of fact, tidal currents flowing into and out of the straits can be so strong as to make them undivable at times. And diving them – especially for international divers - can also be a logistically challenging affair, as dive charter vessels do not regularly service them, though they are both close to shore.

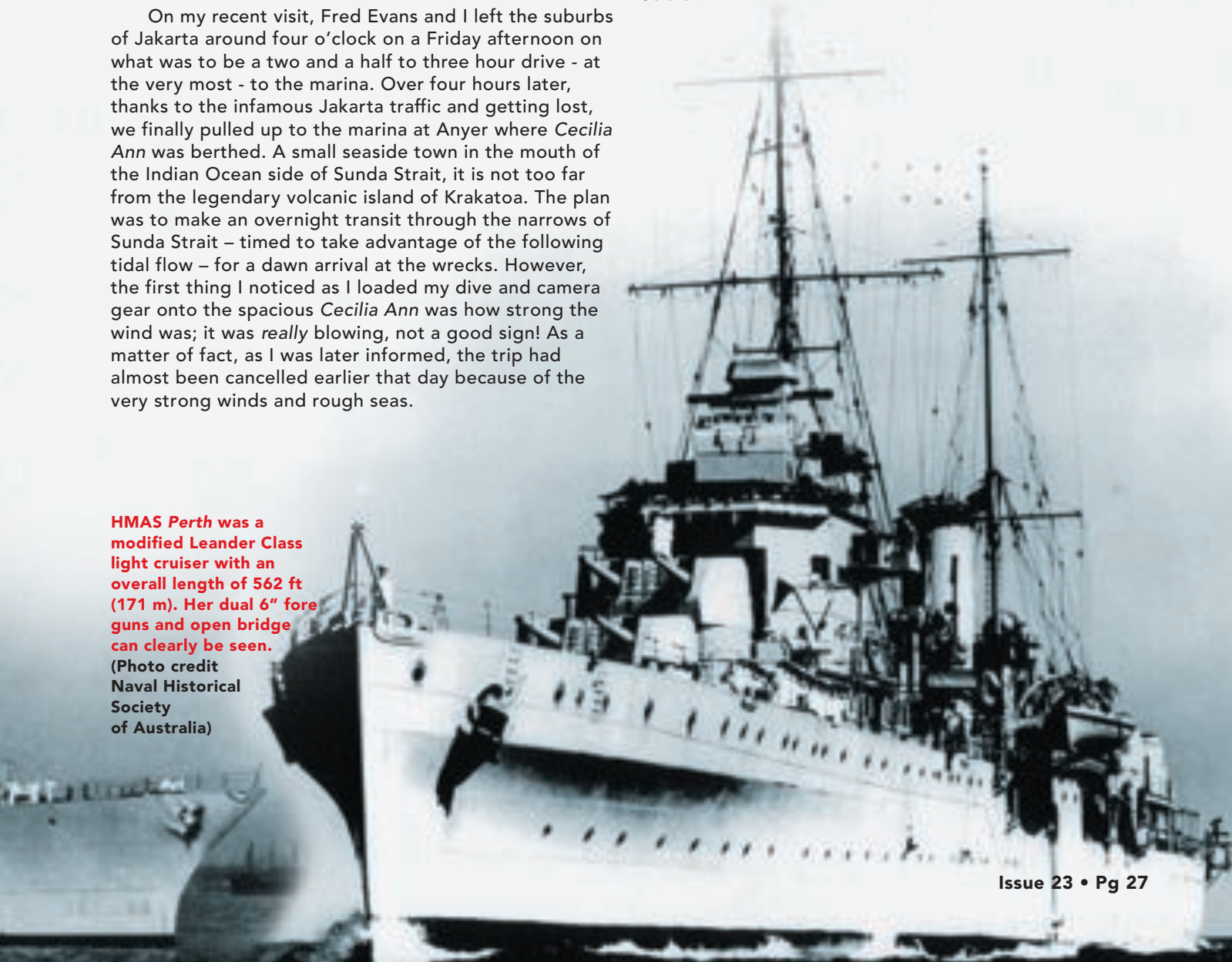
I had been fortunate enough to first dive both wrecks on a long range live-aboard charter out of Singapore on MV *Empress* in November 2002 – when she went on to discover the wrecks of the Dutch cruisers *Java* and *De Ruyter* - and then returned in January 2006 for a weekend of diving them off the motor sailing vessel *Cecilia Ann*, a Jakarta-based live-aboard. On my first visit, visibility was low and currents strong with choppy surface conditions, while the weather in the area was poor with rain and strong winds. During my second visit, the weather was good, if overcast, visibility reasonable, very little current, and glassy surface conditions.

On my recent visit, Fred Evans and I left the suburbs of Jakarta around four o'clock on a Friday afternoon on what was to be a two and a half to three hour drive - at the very most - to the marina. Over four hours later, thanks to the infamous Jakarta traffic and getting lost, we finally pulled up to the marina at Anyer where *Cecilia Ann* was berthed. A small seaside town in the mouth of the Indian Ocean side of Sunda Strait, it is not too far from the legendary volcanic island of Krakatoa. The plan was to make an overnight transit through the narrows of Sunda Strait – timed to take advantage of the following tidal flow – for a dawn arrival at the wrecks. However, the first thing I noticed as I loaded my dive and camera gear onto the spacious *Cecilia Ann* was how strong the wind was; it was *really* blowing, not a good sign! As a matter of fact, as I was later informed, the trip had almost been cancelled earlier that day because of the very strong winds and rough seas.


After some dinner - and a 'few' medicinal drinks at a local bar to fortify our sea legs - we set out into choppy seas, with the wind *still* blowing. Thankfully, within a couple of hours, just as we reached the narrows of Sunda Strait proper, the winds eased. When morning came, and we awoke over the first wreck site, it was calm and glassy with a light overcast. And it stayed like that the whole weekend! When we left the wrecks on Sunday afternoon, rather than fight back to Anyer against the strong currents that regularly sweep through Sunda Strait, we stayed in the Java Sea and motor-sailed directly east along the north coast of Java to the port of Tanjung Priok (Jakarta). What we had effectively done with this last transit was to trace in reverse the final tracks of the two gallant allied warships, as they had left for Sunda Strait from Tanjung Priok several hours before being sunk that fateful night so long ago. Without doubt, diving these two wrecks gives one a real sense of history and sacrifice. Their decaying hulks remain as ghostly memorials to the brave men that once served on them. They were so close, yet so far. History now records the naval engagement that resulted in the sinking of the two cruisers as 'The Battle of Sunda Strait'.

**HMAS *Perth* was a modified Leander Class light cruiser with an overall length of 562 ft (171 m). Her dual 6" fore guns and open bridge can clearly be seen.**

**(Photo credit Naval Historical Society of Australia)**







The collapsed remains of *Perth's* starboard quad torpedo tubes lie in disarray just aft of amidships. A diver's light beam can be seen upper center.

## HMAS *Perth*


The wreck of the Australian light cruiser *Perth*, the lead ship at the time of the action, now rests on her port side just to the east of – and the closest of the two wrecks to – the northern entrance of Sunda Strait. A large break, no doubt from a torpedo hit, almost separates the very bow from the rest of the wreck. Her forward or #1 6" dual main guns point forward, barrels askew, while the next or #2 6" gun mount points off to port, the twin barrels buried deeply into the seabed. Penetration to the innards of the ship in this forward area is possible from the gash in the foredeck or under the gun mounts. Moving aft, one passes the coral encrusted open bridge, and then comes to the remains of the fore funnel, aft of which the remains of the crane and aircraft catapult can be seen. (*Perth* was equipped to carry one observation/scout plane.) Interestingly, it appears both her starboard dual 4" secondary gun mounts have been completely removed in the intervening years since her sinking. As a matter of fact, much salvage work is evident on *Perth*, though the remains of her collapsed starboard quad torpedo tubes can still be viewed just aft of amidships.

Further aft, her #3 6" dual guns point defiantly off to starboard as do her aftermost or #4 6" guns. The coral covered remnants of lighter anti-aircraft weapons can be seen on her fantail, where pelagic fish often congregate above the wreck. Coming back along the hull, one can see that her accessible propellers have been removed/salvaged, while the bottom of the hull under the rear 6" guns is completely blown out - presumably from a torpedo hit - allowing easy penetration to this aft area. Another large lengthways gash just under the bridge is also evident - but much smaller in comparison to the others in her hull - either from an unexploded torpedo hit or a large caliber shell hit. Schooling pelagic fish are prolific at times on the wreck, as are smaller reef-like fish, while soft coral and barrel sponges can be seen in various locations; however, this is really a wreck dive, not a sea life dive.

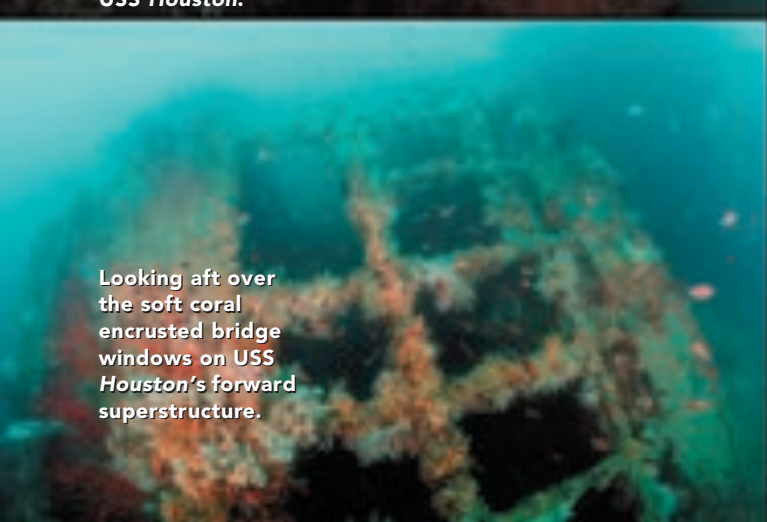
HMAS *Perth* was discovered and first dived by an adventurous one-legged Australian named David Burchell in 1967. (The exploits of his search and subsequent solo dive efforts are worth an article itself!) He recovered the ship's bell and other artifacts, and handed them over to the Australian Government/HMAS *Perth* Association. Along with her skipper, some 357 *Perth* crewmen – from a complement of 682 - lost their lives during the sinking, while many others failed to survive the war in the torturous Japanese prisoner-of-war camps.

## USS *Houston* (CA30)

A few miles to the south east of *Perth* rests the wreck of the American heavy cruiser *Houston*, lying on her starboard side not far offshore from Panjang Island. Because of her position closer to land, the visibility here is usually worse than on *Perth*, although the currents are often less. Swimming from the bow aft, one comes to a large split in the foredeck and port hull, thought to have



Rebreather equipped diver Fred Evans inspects loose barrette swivel gear rings as he swims around the side of the upside down #2 8" turret of USS *Houston*.



Looking aft over the soft coral encrusted bridge windows on USS *Houston's* forward superstructure.



occurred as her bow submerged and ploughed into the bottom while still underway during her death-throws, rather than from a direct torpedo hit. Her #1 8" main triple gun turret has fallen out of its barbette enclosure, and rests upside down on the bottom with the triple barrels still visible. Her #2 8" triple gun turret, which had taken a devastating direct hit during the action, also rests upside down on the bottom, although the barrels of this turret are now well buried in the seabed. Both open circular barbettes, where the turrets once stood, allow easy penetration into the wreck, although this is ill advised except by very well trained and disciplined divers as her interiors are thickly caked in copious amounts of very fine silt.

*Houston's* bridge and forward superstructure area is relatively intact, although the effects of the intense Japanese shelling are readily visible in parts, and the shallowest areas are now liberally adorned with soft coral. We saw numerous large groupers darting into the shadows or poking their heads out of the nooks and crannies in this superstructure area, while smaller ornate lionfish stood their ground with their poisonous spines arched out defensively. Just aft of the bridge, beneath the foremast, a large torpedo hole is plainly evident in the lower port hull. Seemingly intact at the top of the foremast is the 'spotting top' or battle lookout, no doubt a hazardous place from where to have viewed the action! Moving further aft from the bridge area along her main deck, one soon comes to the remains of the aircraft catapults, and then the hangar deck itself. (*Houston* was equipped to carry four observation/scout float planes.) Further attesting to the ferocity of her last moments, the whole rear superstructure area appears peppered with various sized shell and shrapnel holes. Snagged and abandoned fishing trawler net now drapes parts of this area and the mainmast further aft, making for somewhat hazardous conditions in the usually low visibility. The aftermost or #3 8" triple gun turret also rests upside down on the seabed, the open barbette also clearly visible. Unfortunately, this main gun turret had been put out of action by a bomb hit several weeks previously, and was still inoperable during *Houston's* final action, seriously reducing her firepower. Swimming up over the hull, one comes to the port propeller shafts, often surrounded by schooling fish and barracuda; and, as with *Perth*, finds the uppermost propellers have been removed/salvaged.

*USS Houston* was reportedly first discovered in 1973 by an Indonesian dive team led by retired Marine Major General R Soehadi. The ship's bell was recovered at the time, and subsequently handed over to the US government. It now rests on top of the *USS Houston Memorial* in a park in Houston, Texas. From a total complement of almost 1070 crewmen, approximately 700 - including her skipper - lost their lives killed in action, while many others also failed to survive the Japanese POW camps.

**Footnote.** It would be remiss not to mention the loss of the Dutch destroyer *Hr Ms Evertsen* several hours after *Perth* and *Houston*. Late leaving Tanjong Priok, she was unable to accompany the cruisers, and skirted wide of the area of the action. Nevertheless, she was caught and shelled to a wreck by two Japanese destroyers just as she entered into Sunda Strait. She was eventually beached on Sebuku Island off the south coast of Sumatra, where what little remains of her today can still be dived when the conditions are right. Also lost later the same day, in a separate action well to the northeast, were *HMS Exeter*, *HMS Encounter*, and *USS Pope* (whose wrecks as of this writing are yet to be discovered, though not from lack of trying), giving Japan's naval juggernaut complete control of Asian waters with the war not three months old.

*The author Kevin Denlay is a regular visitor to the many WWII wrecks in Indonesia waters, and travels on Garuda Airlines whenever visiting the archipelago. He can be contacted at [altdive@ozemail.com.au](mailto:altdive@ozemail.com.au)*

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MSV *Cecilia Ann* / Cameron McClean - [javasea@idola.net.id](mailto:javasea@idola.net.id)  
*USS Houston* Association website - [www.usshouston.org](http://www.usshouston.org)  
*HMAS Perth* website - [www.spruso.com/perth.htm](http://www.spruso.com/perth.htm)  
Garuda Airlines - [www.garuda-indonesia.com](http://www.garuda-indonesia.com)

Divers prepare to enter the water from the Jakarta based dive vessel *Cecilia Ann* onto a bouyed down-line over the wreck of *HMAS Perth*





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Photo by Jitka Hyniova



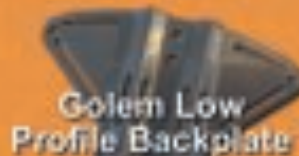
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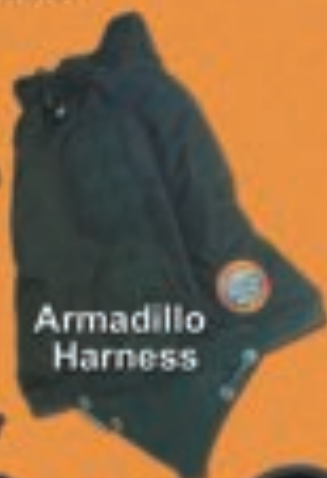
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# Exploring the **Blue Holes of Abaco** with the **Bahamas Underground**

Text and photography by Curt Bowen

**W**hen the average diver thinks of the islands of the Bahamas, the vision is generally of white sand beaches lined with palm trees, finning around the crystal blue waters and fish-filled coral reefs, or the post-dive beach bar where bikini and board-short clad tourists allow the warm Bahamian sun and umbrella-topped rum drinks to evaporate the stresses and realities of life back home.

Most of the divers who come to the Bahamas have no idea that some of the best diving in the world is actually under their feet. But divers in the know have realized that the extensive limestone platforms known as the Great and Little Bahama Banks have created a unique labyrinth of blue holes and underwater caves that make the Bahamas a world-class cave diving destination.


The list of explorers who have come in and out of the Bahamas in hopes of scooping big cave is long and impressive. George Benjamin, the "Godfather" of blue hole diving, British explorers Rob Palmer and Martin Farr, American explorers Parker Turner, Mike Madden, Sheck Exley, and Tom Mount have all left line in Bahamian caves. These divers were lured by rumors of bottomless blue holes, and visions of pushing big, long, and deep systems that are scattered throughout the sun-drenched islands.

Great Abaco Island, the northernmost island in the Bahamas, is a short, 40-minute flight from the east coast of Florida, and for the last 50 years has been regarded predominantly as a yachting and fishing paradise. The crystal clear waters of the Atlantic hold scores of fish, while dozens of small, quaint islands called Cays (pronounced "keys"), to the north and east of the main island, create bays and harbors which are the stuff of picture post-cards.

**Brian Kakuk, Explorer and owner of Bahamas Underground floats above one of the many ocean blue holes located around the island of Abaco. In an attempt to equalize tides across the island, these blue holes are known to move massive amounts of water both in and out. Timing is critical when planning an excursion into these ocean blue holes.**







The full moon rises above  
the Abaco pine forest as  
divers illuminate the  
greenish waters  
of Sawmill Sink.  
f2.8 @ 15 Seconds 10.5mm  
Nikon D100  
Photo by Curt Bowen

But it is the warm pine forests and shallow tidal creeks of the main island that hold the treasures sought after by so many cave divers. When discussing cave exploration on Abaco, a new list of explorers comes to light. Steve Omeriod, Dennis Williams, Gene Melton, Rafe Palmeroy, Fred Davis, Dan Malone, and Kenny Broad join the list of divers who have pushed into the nearly 100 known blue hole entrances located on or near the island.

For these divers, getting equipment to Abaco was generally difficult, lengthy, and at the very least, expensive. With few exceptions, cave exploration on Abaco has been literally expedition-style diving. Once the equipment arrived, acquiring air fills was usually not too difficult, but obtaining oxygen for decompression was tricky or impossible, and helium for deeper sites was just not available. Getting to the sites required finding a local who would be willing to give up their "secret spots." Once new sites were found, a few days to a few weeks of exploration would take place, then the divers and their mountains of equipment headed back to wherever they called home.

But the lure of virgin cave is strong, and many of these divers still return every few years to pick up where they left off, or to check out caves that they just didn't have the time to dive on previous trips. It is the many different types of caves found in the Bahamas that makes this island country a must-see destination. Whether you are a visitor or a local, there really are too many caves and not enough time!

### Underground Diversity

The blue holes and underwater caves in Abaco are as beautiful and diverse as anywhere in the world. There are generally three types of caves on or around Abaco. These include sinkholes (known as *blue holes* in the Bahamas), lens or solution caves, and fracture caves. Any one of these types of caves can also be broken down into two other categories: inland or marine (ocean) caves.



## Inland

There are numerous sinkhole-type blue holes that dot the island. These sites are generally bell-shaped underwater pits that reach depths of 80 feet to more than 330 feet, and may contain cave passages that extend off of the walls or floors. These sinks are where the term "blue hole" actually comes from, as the water appears to be incredibly blue when observed from the air. This may or may not be the case underwater! The walls of the blue holes are usually heavily decorated with massive columns or stalactites, giving divers a glimpse into the island's geologic architecture. These sites are typically considered cavern dives as sunlight can be seen from anywhere during the dive.

Nancy's Blue Hole, located in the shallow, clear waters of a mangrove swamp near Cooper's Town, has the largest speleothem columns found in the Bahamas. The water in Far Side Blue Hole (aka Magical Blue Hole) is so clear that divers feel as though they are floating in air. Local explorer and cave instructor Brian Kakuk and Swedish cave diver Michael Westerberg recently "bottomed out" Far Side at a depth of 334 feet using Megalodon Rebreathers and trimix. The entrance of this blue hole, when viewed from the bottom, is a stunning emerald window that looks up and out into Bahamian pine forest that creates a surreal halo around the edges of the hole.

Over the years, local hunters have leaked rumors of blue holes with "air clear, sweet water" within the thick pine forests of the island's interior. These solution caves such as Dan's Cave, Ralph's Sink, Sawmill Sink (currently off limits to divers for research purposes), and Lost Reel Blue Hole have incredibly decorated rooms of crystal speleothems, massive rooms and passages as deep as 150 feet. Explorer Fred Davis is currently surveying Dan's Cave, and estimates over 17,000 feet of passage in a series of 26 very large rooms. There are areas in Dan's that are simply too decorated to continue exploration, so it may never be known exactly how much cave is really there.

Ralph's Sink is located just over 2000 feet to the southwest of Dan's Cave, and explorer Steve Bogaerts is coming all the way from Mexico to attempt a connection between the two systems. Steve put more than 2000 feet of line in Ralph's Sink back in 2003, and he just knows that they will be connected. The stalactites, stalagmites, columns, draperies, and flowstones are easily the most beautiful in the Bahamas. There are places here where 1/8 inch thick, crystal soda straw formations are nearly 8 feet long!

The sheer size and beauty of the rooms of these inland caves can compete with any underwater caves in the world.



Local cave diver, Tim Higgs, explores the beautifully decorated passages of Dan's Blue Hole.





## Ocean Blue Holes

The ocean caves and blue holes of Abaco are truly natural wonders. These caves are usually fracture or solutional caves, and are located off shore or in shallow tidal creeks and lakes throughout the island. Ocean caves are usually tidally influenced, making cave diving a challenging effort. Each cave has its own lag time (time of slack current) with relation to the tides. As the tides move on and off the shallow banks, and in and out of tidal creeks, the caves act as conduits for the moving water. This means that currents in some of these caves can be so strong that diving during the wrong part of the tidal cycle can have disastrous results.

However, diving these amazing systems can be safely accomplished by studying the tides at each site, and documenting the currents in relation to local high and low tides. Local knowledge is paramount, if the dives are going to be done with any degree of safety.

The ocean caves are very different from the sterile caves found inland. Some form of marine life is found in literally every crack and crevice. The currents that often

intimidate cave divers are literally the conveyor belts of food that support one of the most interesting and diverse ecosystems in the world. The walls, ceiling, and floors are covered with filter feeding animals such as sponges, hydrocorals, tunicates, hydroids, and thousands of other animals all competing for their own little place in the cave.

Cat-sized lobsters gather in the entrances of caves such as Reel Breaker, Big Blue, and Star Fish Blue Hole. These tasty crustaceans can also be found foraging for clams, snails, and crabs throughout the passages of the cave. These critters seem to know that by Bahamian law divers are not allowed to capture them while using SCUBA. Clouds of reef fish often gather in the entrances of the caves in hopes of finding a meal being pushed out by the tide. The Bahamas is the only place in the world where cave divers can come up from an awe-inspiring cave dive and out of an entrance that can only be described as an over-stocked aquarium!

Deeper into the caves, the web of passages disperses the velocity of the currents. The caves transition from psychedelic, sponge-covered walls to tranquil, decorated rooms where cave-adapted fish and crustaceans rule. New species of crustaceans are found in these systems on a routine basis, making Bahamian caves virtual treasure-troves of new life yet to be discovered.





### Easy Access

In May of 2006, a new, technically oriented dive facility opened in Marsh Harbor, which is located within twenty to thirty minutes of many of the caves on Abaco. The Bahamas Underground is a cave and technical diving, training, and adventure facility recently opened by local businessman and entrepreneur Michael Albury and Brian Kakuk. Brian is a veteran cave explorer who has been residing in the Bahamas, and exploring underwater caves throughout the islands for nearly 20 years. He has been involved in many world-class cave diving expeditions, both in the Bahamas and internationally, and his experience is now being focused on cave research, cave conservation, and running the Bahamas Underground.

He's also well aware of the difficulties that cave divers have had to face in order to explore in the Bahamas, and the Bahamas Underground is his answer to the problem. The facility hosts a well-stocked rental equipment program, including double cylinders for cave divers and single tanks for cavern and side mount cave divers.

They also provide air, nitrox, and trimix fills, and support both open circuit and rebreather diving on Abaco. Guided diving and transportation is provided to both inland and ocean caves depending on tides, weather, and the client's preference. All levels of technical and cave training can be provided, and certifications are earned through the International Association of Nitrox and Technical Divers (IANTD) and the National Association Cave Divers (NACD). Classes are conducted in an air-conditioned classroom, and in-water training is completed in caves, open water, or deep blue holes.

**Brian Kakuk prepares for a rope descent into Owl's Blue Hole. A massive hole just a few miles from Marsh Harbor.**





One of the great things about Abaco is that it is almost impossible to get weathered out during a trip. Unlike Florida, heavy rains have little effect on island caves. If it's too hot to dive inland, then there are dozens of warm ocean blue holes to dive by land, boat, or kayak. There really is nothing like diving in a cave where the water temperature can reach near 90 degrees! In the winter, if it's too cold or too windy to dive in the ocean caves, the water temperature of the inland caves is a consistently comfortable 75 degrees. Either way, divers will experience caves unlike anywhere else on earth.

The local reefs are accessible through several open water dive shops located in Marsh Harbor and throughout the Cays offshore, so non-cave diving family members or friends can enjoy a day of open water diving, beach lounging, or shopping in the many shops around town.

The Bahamas has long been recognized as an exciting but remote cave diving destination, allowing cave diving opportunities for only the most hard core explorers. This is no longer the case, and divers of every experience level can now see for themselves what all the talk is about. After all, it really is "better in the Bahamas."

Special Thanks  
Tim Higgs • Brian Albury  
Nancy Albury • Bradley Albury

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# OPERATION HAILSTORM

## CCR INVASION

Text, photography, and  
illustrations by Curt Bowen

Photo: Closed circuit  
rebreather diver  
explores the bow  
deck artillery on the  
*San Francisco Maru*.

A second invasion hailed down upon the world famous Truk Lagoon as a group of technical CCR divers, headed by Going Under Dive Center's Ron Benson, coordinated a 10-day closed circuit rebreather only assault on the sunken Japanese fleet. The use of CCR's enabled divers to conduct dives upon some of the more remote, deeper wrecks, doubled normal open circuit bottom times, and greatly cut down on outrageous helium and oxygen prices.

### History of Truk (Chuuk) Lagoon

For more than a decade prior to World War II, the Japanese Empire had secretly planned their assault upon the United States at Pearl Harbor. Their intention was to swiftly cripple the U.S. naval strike capability, and gain superiority in the Pacific. Chuuk Atoll, a naturally protected deep-water port, was a superb geographical location to construct a massive military base. This base became the main supply, refueling, and armament location for the Japanese Pacific fleet. All Imperial assaults upon Allied forces were, in some manner, routed or supplied through Chuuk Atoll.

To protect this base, the Japanese built large fortifications on and around the islands located within Chuuk Atoll. Large battery artillery, submarine/ship mines, and bunkers were constructed to defend against any possible Allied landing invasion. Chuuk Atoll was rumored to be impenetrable by Allied naval forces. March 17<sup>th</sup>, 1944, would provide the Allied forces with the truth about Chuuk's military might.

Allied forces would not attempt to penetrate Chuuk's stronghold by the land and sea invasion that the Japanese had expected. Instead, they mounted one of the largest air-sea strikes in naval history. Massing together an immense naval force that included three strike groups and nine aircraft carriers, the *Enterprise*, *Yorktown*, *Belleau Wood*, *Essex*, *Intrepid*, *Cabot*, *Bunker Hill*, *Cowpens*, and *Monterey*, provided the Allied forces with the ability to deliver over five hundred quick-moving, high-punching aircraft. Additional naval attack vessels also included seven battleships, six heavy cruisers, four light cruisers, twenty-seven destroyers, and ten patrol submarines.



## Blue Lagoon Resort



## WW II Wrecks of Truk Lagoon

1. Yamagiri Maru	Passenger-Cargo	418' - 8,438 tons
Depth 10-120 ft	45 crew	
2. I-169	Submarine	338' - 1,400 tons
Depth 150 ft	84 crew	
3. Tonan Maru	Raised and salvaged	
4. Heian Maru	Passenger-Cargo	510' - 11,818 tons
Depth 80-120 ft	150 crew, 285 passenger	
5. Unknown		
6. Tachi Maru	Cargo	269' - 1,885 tons
7. Kanzo Maru	Passenger-Cargo	384' - 4,862 tons
Depth 115-130 ft	Unknown	
8. Faragami	Salvage Tug	131' - 625 tons
Depth 85-90 ft	58 crew	
9. Tugboat	Tugboat	113' - 300 tons
10. Kiyosumi Maru	Passenger-Cargo	453' - 8,618 tons
Depth 120 ft	50 crew, 12 passenger	
11. Hoyo Maru	Tanker	415' - 8,881 tons
Depth 75 ft	50 crew	
12. Patrol Boat	Patrol Boat	274' - 935 tons
Depth 80 ft	116 crew	
13. Unkar Maru	Cargo	331' - 3,228 tons
Depth 120 ft	Unknown	
14. Gosei Maru	Cargo Ship	272' - 1,935 tons
Depth 30-120 ft	Unknown	
15. Rio de Janeiro Maru	Passenger Ship	481' - 8,628 tons
Depth 125 ft	150 crew, 1140 passenger	
16. Yabaw Maru	Cargo Ship	305' - 3,217 tons
Depth 120 ft	Unknown	
17. Patrol Boat		
18. Taiho Maru	Cargo Ship	321' - 2,827 tons
Depth 165 ft	Unknown	
19. Hwa Maru	Cargo Ship	200' - 998 tons
Depth 30 ft	Unknown	
20. Supply Vessel	Cargo	100' - 90 tons
Depth 100 ft	Unknown	
21. Lighter	Water Tanker	130' - 350 tons
Depth 130 ft	Unknown	
22. Sankisan Maru	Cargo	370' - 4,778 tons
Depth 50 ft	Unknown	
23. Amagisan Maru	Passenger-Cargo	450' - 7,629 tons
Depth 90-200 ft	48 crew, 7 passenger	
24. Unknown		
25. Fujisan Maru	Tanker	493' - 9,524 tons
Depth 115-200 ft	48 crew	
26. Nippon Maru	Cargo Ship	353' - 3,764 tons
Depth 165 ft	Unknown	
27. Aikoku Maru	Transport Ship	498' - 10,437 tons
Depth 85-210 ft	133 crew, 800 passenger	
28. Monkawa Maru	Passenger-Cargo	354' - 3,824 tons
Depth 150 ft	Unknown	
29. Reiyu Maru	Passenger-Cargo	400' - 5,448 tons
Depth 210 ft	52 crew	
30. Nagano Maru	Passenger-Cargo	345' - 3,824 tons
Depth 160-210 ft	Unknown	
31. San Francisco Maru	Passenger-Cargo	385' - 5,831 tons
Depth 145-195 ft	42 crew	
32. Shoten Maru	Cargo Steamer	385' - 1,998 tons
Depth 165 ft	Unknown	
33. Seiko Maru	Cargo	382' - 5,185 tons
Depth 130-155 ft	Unknown	
34. Hokuyo Maru	Passenger-Cargo	397' - 4,217 tons
150 - 280 ft	Unknown	
35. Kitakawa Maru	Passenger-Cargo	354' - 3,833 tons
Depth 165 ft	Unknown	
36. Opima	Salvage Tug	180' - 812 tons
Depth 165 ft	Unknown	
37. Hori Maru	Passenger-Cargo	450' - 7,112 tons
Depth 150 ft	50 crew, 12 passenger	
38. Fujikawa Maru	Transport Ship	433' - 8,938 tons
Depth 40-115 ft	40 crew, 762 passenger	
39. Destroyer Ono	Destroyer	323' - 1,523 tons
Depth 205 ft	148 crew (480+ Passenger)	





Photo: Divers photograph this Japanese Mitsubishi G4M Navy Type I Attack Bomber (Allied code name "Betty"). Located 150 yards southwest of Eten Island in 60 feet of water.

The initial air attacks upon Chuuk at 0600 hours were intended to obtain air superiority by engaging Japanese fighter aircraft, disabling airfields, and striking anti-aircraft positions. The following strike at 0700 hours was intended to deliver a massive blow upon enemy shipping with an emphasis on warships. Air strikes continued in fifteen to twenty minute intervals, pounding assigned enemy land and shipping targets throughout the day. March 18<sup>th</sup>, 1944, included clean-up strikes on missed and damaged shipping targets, airfields, and land based fortifications.

Within thirty-six hours after the initial assault, the Allied forces had destroyed or damaged two hundred and fifty to two hundred and seventy-five Japanese planes, sunk forty-five ships, damaged an additional twenty-seven vessels, destroyed ninety percent of Chuuk's oil supplies, and damaged over fifty percent of ground installations and airstrips.

Allied losses were minimal at twelve fighters, seven torpedo bombers, and six dive-bombers. A total of twenty-nine Allied pilots and crewmen were lost or reported missing.

#### Truk (Chuuk) Lagoon 2006 CCR Expedition

Going Under Dive Center's owner, and closed circuit rebreather diver, Ron Benson envisioned exploring the deeper wrecks of Truk Lagoon without the limitations of using standard open circuit equipment, and breathing gases other

than air. Obviously, rebreathers in Truk would be the answer to these problems; but their use would open up a whole new can of logistical problems.

The two dive facilities of Truk provided only basic recreational wreck diving, with minimal excursions to some of the deeper wrecks by using double aluminum 80s and deep air diving.

In 2002, Ron started working closer with Blue Lagoon Resort and Dive Center, located on the main island of Moen. His desire was to bring in additional equipment such as small rebreather cylinders, sodasorb, oxygen, and helium, thus making mixed gas CCR diving possible.

After four years, CCR mixed gas diving is now possible in Truk, extending the standard 20-25 minute deep dive, using air and aluminum cylinders, to 45-60 minutes of bottom time. Non-existent helium mixtures — because of the high \$150-\$200 per open circuit fill — can become manageable at \$25. Oxygen fill costs are also reduced to a few dollars rather than the \$40 - \$50 open circuit cost. With increased bottom times and reduced decompression obligations, CCR diving is the only way to experience some of the world's greatest wreck diving.

Included in this editorial are some of the interesting and historical wrecks you can visit while in Truk Lagoon.



# Japanese Destroyer Oite

Illustration by Curt Bowen



Above: *Oite's* stern deck artillery.  
Left: View of the *Oite's* deck just forward of the stern deck artillery.  
Right upper: Diver searches for artifacts within the large torpedo hole in the *Oite's* bow.  
Right lower: Twin brass props half buried in the sea floor.  
Below: Side illustration of the *Oite*. Yellow highlights represent the sections of the ship damaged or missing.





## Japanese Destroyer *Oite*

Takemutsu Matsuda, captain of the Japanese light cruiser *Agano*, searched the horizon for any possible enemy vessels as the sun's last rays dipped below the western horizon. About 160 miles north of Truk Lagoon, the *Agano*, escorted by the Japanese destroyer *Oite*, steamed westward towards Saipan.

Lieutenant Commander W.P. Gruner, captain of the U.S. Submarine *Stark*, kept his eyes glued to the periscope as he studied the silhouette of a slow moving ship on the horizon. Dusk — a perfect time to attack and escape undetected, he thought.

"Load torpedo tubes 1, 2, 3, and 4. Range 2,400 yards, 340 degrees," barked Captain Gruner. Slowly the submarine turned nose forward into position. "Fire 1, 2, 3, and 4 torpedoes," commanded the captain. The load sound of rushing air, followed by the high pitch of spinning props echoed throughout the submarine.

Lieutenant Yasuhiko Uono, captain of the Japanese destroyer *Oite*, was also searching the glistening waters as the sun descended. He noticed the prop trails of the four speeding torpedoes heading straight for the *Agano*.

Captain Matsuda never saw the 3000-pound tubes of death before they slammed broadside into his ship. The *Agano* shuddered violently as three of the four torpedoes exploded just behind the amidships, knocking the captain and his crew to the deck. Giant flashes of light and fire engulfed much of the ship's stern. "Abandon ship," echoed throughout the *Agano*.

"Hard to port, full power ahead," ordered the captain of the *Oite*, as he frantically searched the waters for the hidden submarine. Large air-powered catapults launched 300-pound anti-submarine depth charges 75 yards to port and starboard off the *Oite*. The water behind his ship mushroomed into giant boils of steam and light as the charges exploded a hundred feet below the surface.

The last rays of the sun faded, and darkness engulfed the seas as panicked sailors rushed for lifeboats. The only light was the flame from the burning *Agano*. The *Oite* dared not light a single search strobe for fear of the prowling U.S. submarine. Rescue must wait until the morning light.

Next morning, as the sun's rays illuminated the eastern skies, the *Agano* was surprisingly still floating, listing hard to port. The *Oite* began to pick survivors out of the salty waters, the men still clinging to the floating wreckage. Over all, the *Oite* was able to rescue over 450 sailors, including Captain Matsuda. With the overload of sailors aboard the *Oite*, her captain had no choice but to run for the protection of Truk Lagoon. On March 17<sup>th</sup>, the *Oite* was radioed that a large invasion of Truk was underway, and the captain was ordered to continue into the Lagoon to assist with the battle.

Steaming south, the *Oite* entered the north pass on the morning of March 18<sup>th</sup>, a day after the initial attack. Still overloaded with survivors from the *Agano*, the *Oite* steamed full power ahead towards Moen Island.

March 18<sup>th</sup>, just before sunrise, nine American torpedo bomber pilots aboard the aircraft carrier,

*Bunker Hill*, slipped into their cockpits. Their mission was to search the northern atoll and attack any remaining vessels trying to escape or left floating from the previous day's assault. Launching off the aircraft carrier, the torpedo bombers' engines whined as they climbed above the clouds. Within an hour, the bombers were over the northern atoll. To their surprise, they found a Japanese destroyer steaming into the Lagoon.

"Evasive maneuvers," commanded Captain Uono as he attempted to ward off the aerial attack upon the *Oite*. Under full power, the destroyer turned sharp to port, then to starboard. Anti-aircraft fire from the deck filled the skies with bullets in an attempt to ward off their attackers. The 450 survivors of the *Agano* were ordered below deck as bullets from the strafing attacks of the enemy planes took their toll of casualties.

Dropping in from the low clouds, two U.S. torpedo bombers lined up the Japanese destroyer. Skimming 50 feet off the surface of the water, the two bombers screamed into position to unleash their deadly payload. Less than 1000 feet from the destroyer, both planes dropped their 2000 pound torpedoes, then banked hard upwards and to the left to escape the onslaught of anti-aircraft guns aboard the *Oite*.

Captain Uono's eyes followed the white paths of death as they sped towards his ship. He had no time to maneuver away as the torpedoes slammed into the *Oite*'s port side. One impacted just behind the bow anchors, and the second directly at the ship's engine room. A deafening explosion rocked every inch of the ship as it tore metal from metal, and bone from flesh. Sailors below deck were killed instantly by the explosion, or lay dazed and confused. Sailors above deck were either blown into pieces or hurled from the ship like papers in a tornado. As the water rushed in, no sailor could even save himself.

As the bombers raced away from the destroyer, the pilots watched as their torpedoes smashed into the *Oite*'s side. The massive explosions engulfed the ship with smoke and flames as the bow section buckled under the pressure. The *Oite* split in half and sank in less than one minute, taking over 600 Japanese sailors to the bottom of Truk Lagoon with her.

## Diving the *Oite*

Due to its distance from the main diving wreck zones and increased depths, the *Oite* is seldom explored. As the *Oite* split in half during the sinking, the section from just aft of the pilothouse to the bow turtled and smashed hard into the sand floor, crushing all the superstructure and deck guns underneath the hull. Tilted slightly to the port side, it is possible to squeeze up underneath the bow section and into some of the bow sections. The forward bow torpedo explosion is easily seen from the massive hole and destruction. The stern of the *Oite*, from just aft of the engine room, sits upright on the sand floor. The main deck sits at 180 feet, with the sand at 202 feet. The *Oite* has twin brass props half buried in the sand. Anti-aircraft guns and a large main battery gun point towards the sky. Lifeboat davits and a depth charge rack can be examined on top of the deck.

Many artifacts, including china, bullet casings, the ship's bell (or maybe the *Agano*'s bell), are stowed away just below the stern battery gun. Multiple human remains can be found within the wreckage, along with some books.





## Passenger / Cargo Ship Momokawa Maru

Built in 1941 as a cargo ship, and requisitioned by the Japanese Navy in 1943, the 354-foot, 3,829 ton *Momokawa Maru* was assigned as a military supply ship.

During the initial attacks on March 17<sup>th</sup>, the *Momokawa* was found anchored in the northern extremes of the Fourth Fleet anchorage east of Dublon Island.

The *Momokawa* was attacked several times on the 17<sup>th</sup>, but received minimal damage. Clean-up attacks on the 18<sup>th</sup> would send her to the bottom with a direct hit from a 1,000-pound bomb placed into cargo hold #5. Retreating attack planes reported seeing the ship listing to port with the stern engulfed in flames.

Today, the *Momokawa Maru* can be found lying on her port side in 154 feet of water. Descending onto the bow and into cargo hold #1, you will discover piles of aircraft parts, barrels, tires, and bombs. All the cargo has shifted towards the port side, some spilling out onto the sea floor.

Cargo hold #2 contains the remains of the Douglas L2D "Tabby," Navy Type O transport aircraft, along with some fuel tanks, aircraft engines, aircraft props, and trucks. Again, most of this is located in a large shifted pile (top left photo).

Cargo hold #3 also contains many aircraft parts, tires, aircraft belly fuel tanks, and a couple of buried trucks.

**Top left: Large aircraft prop sticks out of an assortment of tires, barrels, and bombs (cargo hold #2).**

**Bottom left: CCR diver Ron Benson illuminates the *Momokawa's* pilothouse telegraph.**

**Right: Lying on her port side, the *Momokawa* was propelled by a massive single prop.**





Swimming towards the stern, you can enter the pilothouse either through the front windows or upwards through the port doorway. Inside, the ship's main telegraph and some other interesting artifacts can be found (bottom left photo).

The *Momokawa* has an interesting engine room, but the lower levels can become confusing because she is lying on the port side. A diver must remember that up is not the way out.

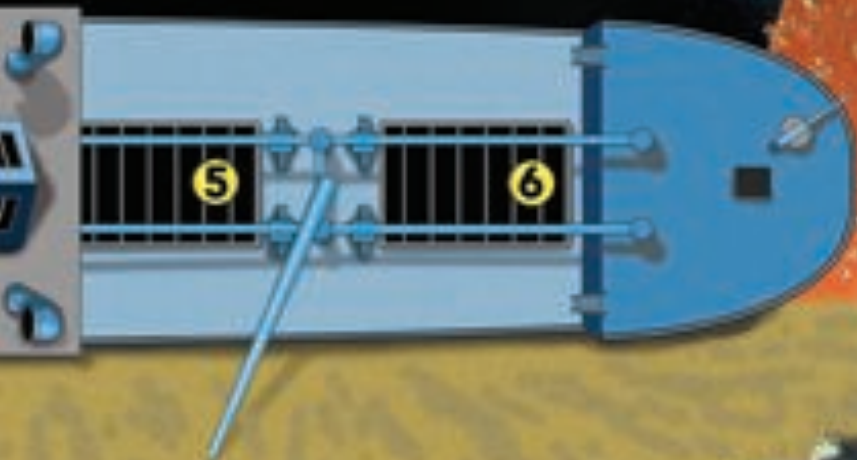
Cargo holds #4 and #5 are mostly empty except for some artillery shells. The area of cargo hold #5 received major damage from the 1,000-pound bomb explosion.

The stern of the ship contains a small artillery piece, and an access hatch entrance for the below deck stern rooms. Swimming around the stern, you will discover a massive single propeller and rudder encrusted with soft corals (right photo).

Swimming along the sea floor at 150 feet, you can discover many artifacts and pieces of machinery that have fallen from the cargo holds, pilothouse, and crew's quarters.

The starboard side of the ship is covered with soft corals, sponges, and an array of marine life.

- 1: Hold #1: Aircraft parts, tires, bombs, metal sheets, and barrels.
- 2: Hold #2: Tabby aircraft, trucks, aircraft engines, and fuel tanks.
- 3: Hold #3: Trucks, aircraft engines, tires, and fuel tanks.
- 4: Entrance into engine room through skylight.
- 5: Hold #4: Empty.
- 6: Hold #5: Artillery shells.







## Passenger / Cargo Ship *Hoki Maru*

Originally built in 1921 by the Union Ship Corporation of Scotland, the 450-foot, 7,112-ton cargo ship was christened the *M/V Hauraki*. In 1940 she was requisitioned by the British Ministry of War and assigned special wartime duties.

In July 1942, the *Hauraki* departed Sydney, Australia, bound for a port in Colombo when Japanese raider ships, the *Aikoku* and *Hokoku*, seized her. Her crew was taken to prison camps in Singapore, while the ship was delivered to Japan.

After refitting, the *Hauraki* was renamed the *Hoki Maru*, and commissioned as a special transport vessel for the Japanese Navy.

The *Hoki Maru* was anchored just southeast of Eten Island on the morning of March 17<sup>th</sup>. Attacked first by the Essex single-engine torpedo bombers, the *Hoki* received minimal damage. Dragging her anchor in a desperate attempt to escape, she was attacked again by torpedo bombers from the *Bunker Hill*.

Twin torpedoes struck the forward holds one and two. These holds were loaded with hundreds of 55-gallon gasoline barrels. The detonation from the torpedoes within the barrels of gasoline triggered such a massive explosion that it almost disintegrated most of the ship forward the pilothouse. The massive explosion and fireball also consumed most of the pilothouse, galley, engine room, and crew's quarters. Ripping the ship in half, the flames were quickly extinguished by the flooding seawater as she sank within minutes.

Today, the stern section of the ship lies upright in 165 feet of water. Most of the ship, from the bow to the amidships, is a pile of twisted metal and not worth exploring.





The pilothouse, galley, and crew's quarters have received major damage. The primary reason for visiting the *Hoki Maru* is located in holds #4 and #5, towards the stern of the ship.

Hold #4 contains many radial A/C engines, bombs, depth charges, beer bottles, and mines.

Descending through the hatch cover beams of cargo hold #5, you will come upon a large bulldozer supported on hatch cover beams (top right photo). Swimming below deck, towards the starboard side, you will find an interesting tractor (bottom right photo). Continuing below deck and towards the stern, a strange white mist encompasses several Isuzu Type 94 trucks. Continuing around towards the port side of the cargo hold, several more flatbed type trucks come into view along with a diesel steamroller.

Descending over the stern, large twin screws and rudders come into view, with the sea floor at 165 feet.

Exploring in the masses of twisted metal below the pilothouse, crew's quarters, and partially collapsed engine room, some gauges, machinery, and human remains can be located (left photo).

Caution must be taken not to stir up the silt in lower sections of this wreck. It contains large amounts of some type of caustic chemical that can cause skin burns and eye irritation.

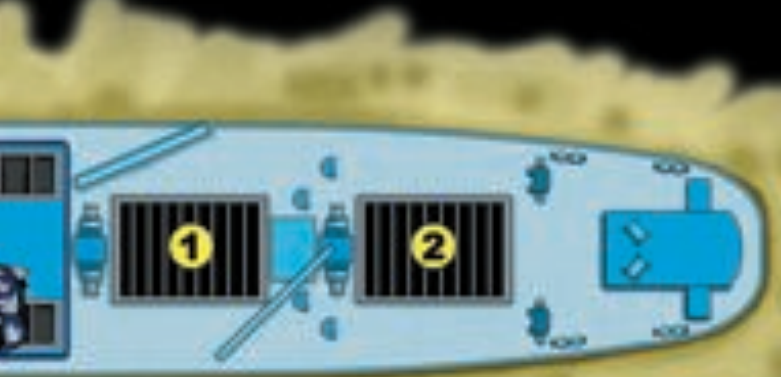
**Left: Diver discovers a pile of human bones within the wreckage.**

**Upper right: CCR diver Jim Rozzi examines the large bulldozer in cargo hold # 5.**

**Middle right: Isuzu-type 94 trucks located on level 2 in cargo hold #5.**

**Lower right: Farm-type tractor located on level 2 in cargo hold #5.**

**1: Hold #4: Mines, depth charges, bombs, and radial AC engines.  
2: Hold #5: Bulldozers, movers, trucks, tractors, and diesel roller.**











1: Signs of the sacrifices of war, a Japanese sailor's skull and bones are located deep within the engine room of the *Yamagiri Maru*.

2: Japanese-type 95 light battle tanks are located on the starboard foredeck of the *San Francisco Maru*.

3: CCR diver Amy Ferguson examines the prop of a 25-foot long, 2000-pound torpedo, located within hold #2 of the *Heian Maru*.

4: Scattered throughout cargo hold #5, these 14-inch diameter artillery shells were destined for one of the large Japanese battleships, *Yamato* or *Musashi*.

5: After a long day of awesome wreck diving, it is nice to grab a couple drinks at the Blue Lagoon's tiki hut and watch the beautiful Pacific sunset.

6: A lone gas mask sits upon a pile of small arms debris, as CCR diver Jim Rozzi drops into cargo hold #1 of the *Nippon Maru*.

7: A 25-second night camera exposure creates an interesting photography effect as the full moon illuminates the Blue Lagoon's palm tree covered grounds (author in photo).

8: Several Japanese Howitzers with splinter shields sit on the aft deck of the *Nippon Maru* (diver Jim Rozzi).

9: Exploring deep into the third engine room level of the *Heian Maru*, CCR diver Ron Benson discovers this engine room telegraph and engine pressure gauge panel.

Below: Workers for the Blue Lagoon Resort travel from distant islands each morning aboard these small motorboats.







①



②



③



④



⑤

# Aircraft Transport Fugikawa Maru



⑥



Built in 1938, and requisitioned in 1940 by the Japanese Navy as a special aircraft transport vessel, the 437-foot, 6,928-ton *Fujikawa Maru* served many roles during WWII.

On the morning of March 17th, the *Fujikawa* was anchored just off the southeastern side of Eten Island. In the early morning light, a skeleton crew was attending to standard morning duties. Many of the crewmembers were ashore working on construction details.

As all hell broke loose with the arrival of the Allied Air Force from the north, the *Fujikawa* became a sitting duck, unable to pull anchor and escape because of the lack of crew. It would be only a matter of time before the inevitable torpedo would breach her hull. And at 1420 hours, the attack aircraft of the *Bunker Hill* strike force 3E recorded a direct torpedo hit, with a large smoke and fire burst to follow.

On March 18th, the *Fujikawa* was found by the clean-up attack aircraft, heavily damaged but still floating, anchored in the same location; nothing that a 1,000-pound bomb on her port quarter wouldn't take care of. Thus, the *Fujikawa Maru* was sent to her final resting place.

Today, the highlight of the *Fujikawa* is the Japanese Zero aircraft fuselage located in cargo hold #2 (cover of this issue), and the ship's engine room that is accessible through skylights just behind the smoke stack.

**1: Toolbox located on the lowest starboard level of the engine room.**

**2: CCR diver Ron Benson swims over the massive engine cylinders.**

**3: Pressure gauges located on the lower third level of the starboard engine room.**

**4: Pair of pilot binoculars located beside an airplane cockpit in cargo hold #2.**

**5: Standard pressure gauge located just aft of the engine room.**

**6: CCR diver Ron Benson examines the inside of a Zero attack aircraft, located in cargo hold #2 (cover photo).**

**Above right: Thousands of beer bottles scatter the second level of hold #5.**

**Right: CCR diver Ron Benson illuminates a large air compressor located in the lower level of the engine**

**1: Hold #1: Aircraft parts, machine guns, torpedo, and boat motor.**

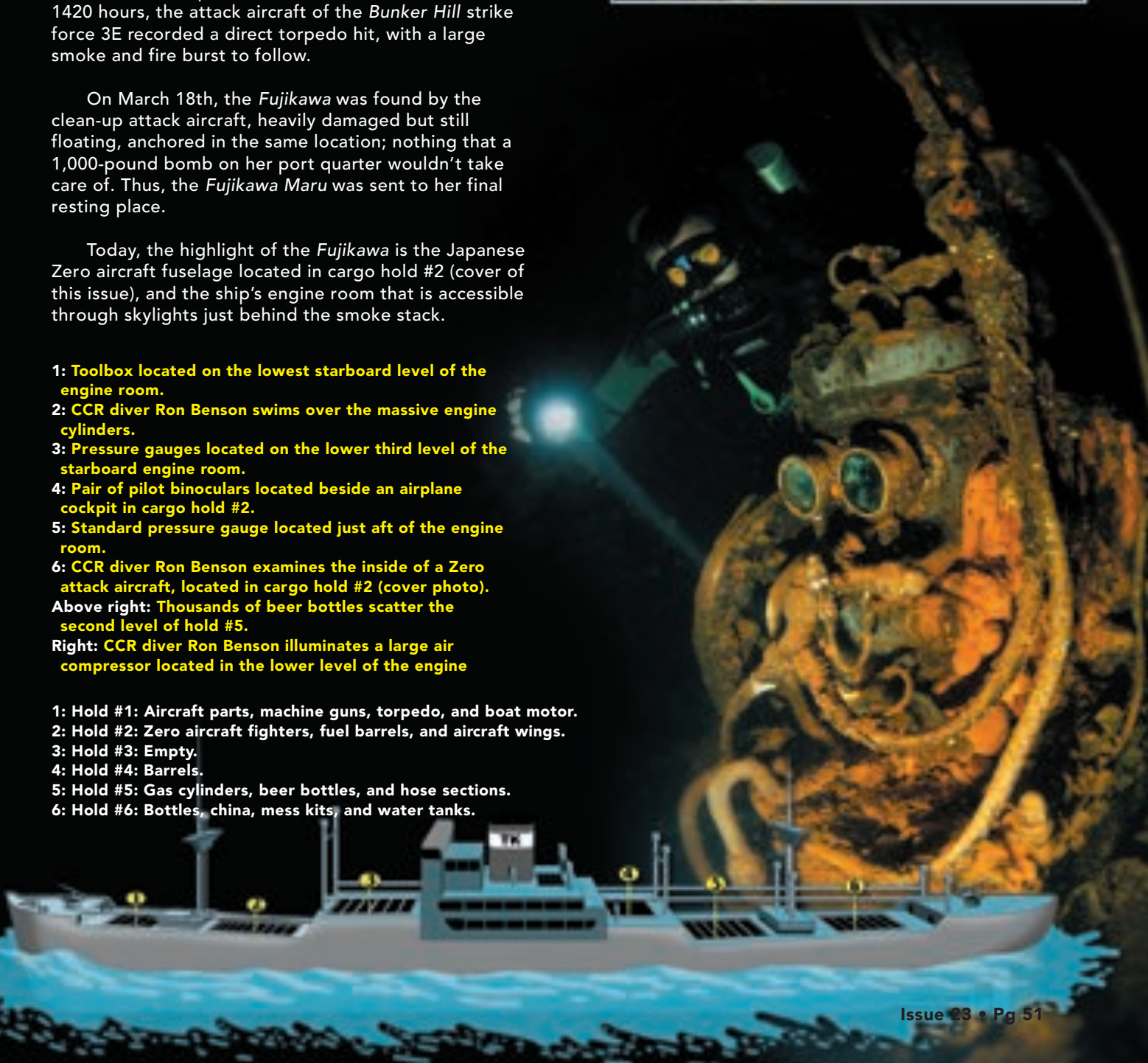
**2: Hold #2: Zero aircraft fighters, fuel barrels, and aircraft wings.**

**3: Hold #3: Empty.**

**4: Hold #4: Barrels.**

**5: Hold #5: Gas cylinders, beer bottles, and hose sections.**

**6: Hold #6: Bottles, china, mess kits, and water tanks.**







Searching cargo hold #2, you will discover the remains of four of the famous Japanese Zero fighter aircraft, along with wing sections and some personal artifacts.

Exiting the cargo hold and swimming towards the stern, you will pass the upper superstructure and over the engine room.

Descending through the engine room skylight, you will encounter a large, triple-level engine room separated by grated catwalks and walls. Winding past the massive engine cylinders, and to the second level, you will discover a very interesting workshop containing a large air compressor, nicknamed R2D2, a workbench, lathe, supply rooms, and tool chests. Further exploration, along the forward engine room and down to the third level, will bring you to a wall of electrical contacts, pressure gauges, and the ship's engine room telegraph (see above). Additional exploration reveals a multitude of gauges, tools, and equipment.

Exiting the engine room and swimming towards the stern, you will find two more cargo holds containing many different sized gas cylinders, beer bottles, and debris.

The *Fujikawa* was fitted with two large 6" deck guns, one on the bow and another on the stern. Descending over the stern towards the sea floor, the rudder and massive single screw propeller come into view (right).

The *Fuji's* engine room is a must-do for exploration and photography.

**Above: Ron Benson examines the *Fugikawa Maru's* pressure and electrical wall.**

**Right: A diver poses behind the *Fugikawa's* massive single prop.**

**1: Japanese torpedo bomber "Jill" sits in 120 feet just off Eten Island**

**2: One of the lovely Chuuknese local women working at the Blue Lagoon Resort**

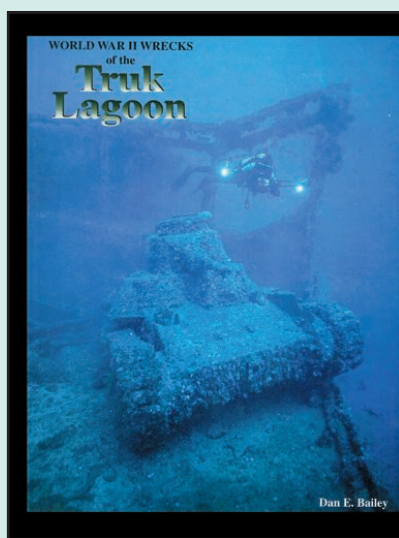
**3: Gauges located inside the engine room of the *Fugikawa Maru***







Above: Our quest for the ten-day visit at Truk Lagoon was to visit and photograph as many of the best wrecks and their artifacts as possible. Jim Rozzi and I hired the "best" guides Blue Lagoon had to offer. Anthony Sickemen (left) and Rendy Rotenis (right) proved invaluable and well worth the extra money.



Do not visit Truk Lagoon without first buying this incredible book. Your visit to the shipwrecks and islands of Chuuk will be a hundred times better knowing the impressive history of Operation Hailstone.

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## World War II Wrecks of the Truk Lagoon by Dan E. Bailey

[www.northvalleydiver.com](http://www.northvalleydiver.com)

Below : CCR Divers: (Left to right)

Lee Selisky, Curt Bowen, Maria Nordlund, Patty Mortara, Jim Rozzi  
Chris Jackson, Rick Peters, Amy Ferguson, Rob Infante, Bob Ferguson  
Keith Holmes, Bill Mattson, Ron Benson, Mel Clark  
Curt McNamee, Ren Mortara





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# LINGCOD

## Queen of Northwest Predators

Text and Photography by John Rawlings

They say that the first thing that you can recall in your memory as a child influences you for life. When I look back into my memory that certainly seems to be the case with me. I was 3 or 4 years old, I would guess, and I was on my Dad's boat somewhere in Puget Sound. My Dad was a fisherman, and I remember him letting me help reel in a fish. It was a lingcod, and about 2 1/2 feet long. To me as a child, it seemed huge...to my Dad, however, it was "bait." Slipping a pair of large hooks into the small ling, he lowered it down into what he told me was a deep, dark hole where he said the "big ones live." I'm sure that my eyes were wide. It didn't take long before the bait was taken, but this time Dad wouldn't let me help. I could see that whatever it was on the end of the line was bending that huge rod down until the tip struck the water. Eventually he grunted, "Johnny, take a look, there it is!" I peered over the side at what I thought at first was a slick brown log just under the surface...until I noticed the teeth. The massive ling glared up at me from the water, giving me a fright that I recall to this day.

Almost 50 years later, I spend my time dropping down into deep, dark holes photographing things with teeth.

Lingcod can be found from the waters of Northern Baja California in Mexico up the entire western coast of the United States to the Bering Sea in Alaska. They are not, in fact, true cods, they are greenlings. Lingcod belong to the Hexagrammid family – a group found only on the west coast of North America. The scientific name of this species is *Ophiodon elongates*, which is from the Greek *ophis* and *odons*, meaning "snake" and "tooth," and the Latin *elongates*, meaning "elongate." The most recent source that I have been able to find cites that lingcod can be found down to depths of 1,583 FSW (475 MSW), although this species is more typically found on or around rocky reefs from 30 to 330 FSW (10-100 MSW). It is a rare west coast diver who hasn't encountered one of these fish on a regular basis, yet few divers really know much about them at all.







Photo by C. Bowen

Lingcod can grow to weigh 105 pounds (48 kg), and measure over 5 feet (150 cm) in length, although I swear they can get larger! My son, who is 6 feet tall, once lay on the bottom next to a massive female lingcod near Edmonds, Washington, and she seemed to approach his length, including his fins! Males are much smaller than females, and will rarely exceed 3 feet in length. Females, on the other hand, can achieve the massive size described above, and divers' tales of huge specimens inevitably involve mature females. Females will tend to gain around 3 to 3 1/2 pounds per year, so the large fish seen on occasion by divers can be over two decades old. Their color is extremely variable, usually mottled with dark spots or clusters against a gray or light brown body, although some can be extremely dark or even black. Fish from a particular vicinity are often colored similarly, and many "old salts" claim to be able to identify the general location that a lingcod came from based on its coloration.

Absolutely voracious predators, the lingcod's huge mouth holds a cluster of 18 extremely sharp teeth...and they know exactly what to do with them! Bottom-dwellers, lingcod are not stalkers but are ambush hunters - launching themselves from a completely stationary position toward their prey as swiftly as a torpedo. In central Puget Sound, there is a dive site known as Scatchet Trench - an underwater trench extending out from a shore feature known as Scatchet

Head. The upper edges of this trench are stone overhangs on which large numbers of mature lingcod patiently wait on the edge of the trench like logs for the active currents in the area to sweep smaller prey across the flat sandy bottom toward them. When a smaller fish, squid, or small octopus is swept within range, the attack is virtually instantaneous with little chance for the victim to escape. Once the attack is over, the lingcod will not move on, but will tend to settle down in the immediate vicinity of its original position. Lingcod are lightning quick in short bursts, and are quite capable of capturing and devouring prey known for speed in their own right. I once speared a lingcod that was heavy with a full belly - upon gutting the fish we discovered that it had seized and swallowed whole a medium-sized Chinook salmon! For such large prey to fit, it had to be doubled over inside the stomach of the lingcod, hence the remarkably heavy belly we had noticed. As my fisherman father well knew years ago, smaller lingcod are also often the prey of larger specimens, the species being cannibalistic whenever opportunity presents itself. In fact, studies have shown that cannibalism is the highest cause of lingcod mortality.

Males and females reach maturity at different times. Healthy female lingcod reach sexual maturity around 3 to 5 years of age, at an average length of 24 to 30 inches (60-75 cm). Males start to mature around 2 years of age when they reach approximately 20 inches (50 cm).



Fecundity (the quantity of eggs produced by a mature female) steadily increases depending on both size and age. Although spawning is regionally impacted, lingcod tend to begin spawning throughout much of their range in the winter, generally beginning in early December, with the peak spawning period taking place from mid-January to mid-March. When spawning, male and female lingcod congregate amongst rocky reefs, the best areas being those impacted by strong tidal currents that assist in aerating the egg masses. Following a speedy "tryst" with her much smaller consort, the female lingcod will deposit her eggs in a rocky crevice, and then hurriedly swim off to feed on anything she can catch to restore her strength after spawning. The male lingcod remains behind to guard the large cluster of eggs until hatching. The egg cluster itself can be huge, up to 30 pounds, and containing several hundred thousand eggs in a whitish/yellow gelatinous mass resembling thick tapioca pudding or a chunk of Styrofoam. The male's role in protecting the nest is vital to the survival of the species. If a male is ineffective, driven away or killed, the egg mass will be immediately assaulted by other fishes and invertebrates, the voracious Sunflower Seastar being a particular threat. The male's presence at the nest is thus absolutely essential for spawning to be successful. Nest-guarding males will stay near their eggs while at the same time they will be extremely aggressive toward anything they perceive as a threat to their brood. They will often charge and nip at divers and other intruders, which causes them to be extremely vulnerable to predators such as sea lions and spear fishermen. A nest-guarding male killed or driven away prior to hatching will result in the loss of the entire nest - a disaster for the maintenance of the population. Spawning success can be highly variable, so the loss of a nest due to thoughtless acts by divers can have long-lasting repercussions.

Depending on local conditions, such as water temperatures, salinity, and aeration of the eggs, it typically takes between 5 to 11 weeks for the eggs to hatch. Most egg masses will thus hatch between mid-March and mid-May, some will also occur as late as June. Upon hatching, larval

lingcod are generally from 1/4 to 1/2 inch (6-10 mm) in length. Without the strength or size to fight it, they are at the mercy of the current and lead a pelagic existence, feeding on other smaller pelagic animals and fishes also swept along in the water column. Before the end of the summer, they will reach approximately 3 inches (80 mm) in length, and will settle to the bottom to begin their existence as a bottom-dwelling predator, feeding on other small fish and invertebrates. As it grows, the prey taken by young lingcod will be almost completely governed by the size of its mouth - basically, if it can be swallowed, it will be eaten! After approximately two years, juveniles will begin to use habitats similar to those of adults, though in shallower water, and their diet will begin to resemble that of adults as well.

Throughout the Pacific Northwest, lingcod have been my treasured companions on almost every dive - walls, rocky reefs, and even sometimes out in the sand on deep, dark underwater slopes. My favorite place to find them, though, is on an old wreck. One of my favorite wrecks is that of the *Capilano*, a small coastal freighter that went down in a storm off British Columbia's Sunshine Coast in 1915. When I think of her, my mind conjures up images of huge lingcod lying about her decks like logs, or perched on anemone-enshrined ledges like trophies on a wall. As I write this, I am looking up at MY wall, my eyes centering on a photo taken on the *Capilano* a year or two ago. The shot is of a lingcod nestled on top of a huge cloud sponge, looking as a queen might when surveying her court. To me, the shot is breathtaking and I consider it one of my best. It is an image that makes me think of my world...my life...and my Dad. May sights such as this always greet me whenever I plunge down into the deep, emerald green waters of my home.





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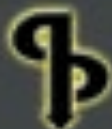


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# Wreck of the *Selah Chamberlain* Lake Michigan

Text by Bethany Nelson and Keith Meverden  
Photos by Tamara Thomsen

The steam revolution began on the Great Lakes with the side-wheel steamer. Carrying mostly passengers and some package freight, side-wheel steamers dominated steam traffic on the Great Lakes for nearly fifty years following their introduction. With their bulky steam machinery located in the middle of the ship, however, side-wheelers lacked the capacity to carry large bulk cargos. By 1870, the elegant and luxurious passenger steamers were losing passengers to the railroad, while rapid industrial and agricultural development of the Great Lakes region increased the need for bulk freight carriers. A new generation of steamers appeared, the steam barge, which was based on a technology created by Swedish inventor John Ericsson - the screw propeller. Screw steamers, or propellers, were far more efficient as cargo ships than side-wheel steamers. Propellers were cheaper and easier to outfit and operate. Their machinery was less expensive, burned one fourth of the fuel, and their compact engines left more of the ship available to carry bulk loads that brought the largest profits for owners.

The *Selah Chamberlain* was a first-generation Great Lakes steam barge. She was similar in size and design to the *R.J. Hackett*, considered to be the first steam-powered bulk carrier. Built by Quayle and Martin of Cleveland, Ohio, in 1873, she was one of the last vessels constructed on the Great Lakes before the Panic of 1873 brought a halt to ship construction for nearly ten years. Throughout her entire career, she was owned by the Bradley Transportation Company, a large Cleveland shipper. A major investor in the ship's construction was the railroad mogul and banker, Selah Chamberlain, for whom the vessel was named. Her voyages took her from Buffalo, New York, to Duluth, Minnesota, and many ports in between, carrying cargoes of iron ore, coal, and grain. She frequently towed a consort of one or more schooner barges.



The *Selah Chamberlain* was 212 feet in length, 34 feet in beam, and 14.8 feet in depth of hold. She was constructed with one deck, three masts, one stack, and one screw. Propulsion was from a 30" x 30" high-pressure, non-condensing steeple compound steam engine with two Globe Iron Works tubular boilers that carried 95 pounds of steam pressure. One year following her launch, however, the *Selah Chamberlain* was refurbished with a second deck to increase her carrying capacity from 894 to 1207 gross tons. Her early rebuilding is perhaps related to an episode in May of 1873, when the *Selah Chamberlain* ran aground on one of her first voyages. The *Selah Chamberlain* received another repair in November of 1883, after her broken mainmast washed overboard during a fierce northwest gale and became entangled in the propeller. Yet another fierce storm hit in 1884 while the *Selah Chamberlain* was at the dock in Port Arthur, Ontario, on Lake Superior. The ship held together against prediction of her certain demise, but she caused \$1,500 worth of damage to ore docks to which she was moored.

After thirteen years of service on the Great Lakes, luck ran out for this sturdy steamer one foggy night late in 1886. On October 13, 1886, the *Selah Chamberlain* set out from Milwaukee, Wisconsin, with the schooner barge *Fayette Brown* in tow. Running empty to pick up a load of iron ore in Escanaba, Michigan, the pair sailed into a strong southerly breeze and a fog so dense that witnesses claimed they could not see from one end of the ship to the other. The *Selah Chamberlain* was sounding her whistle at regular intervals. Around 8:30 p.m., a few miles off Sheboygan, Wisconsin, the crew suddenly saw the running lights of another vessel. They had time to blow one warning whistle and begin to turn

the ship, but the *Selah Chamberlain* was struck on the port bow by a ship whose identity was masked by the fog. The resulting force of the impact pushed the vessels apart, and the two ships quickly lost sight of one another. The *Selah Chamberlain's* crew had no time to worry about the fate of the other ship, for the rush of water into her hold indicated that the ship was badly holed. In the cursory reports of what followed there was a sense of considerable panic.

The towline to the *Fayette Brown* was severed, and the freed schooner headed south under sail in the heavy gale. Seven of the *Chamberlain's* men boarded a lifeboat, but in the process of lowering the boat the davits broke. Six deck hands and the Second Engineer fell into the frigid water and were immediately lost from sight, although their calls for help pierced the fog. The *Chamberlain's* remaining crew successfully launched the other lifeboat and pulled two crewmembers from the water. A search for the other five men proved futile. The crew removed the stern light from the sinking steamer and began the treacherous trip to shore. The lifeboat had just cleared the *Selah Chamberlain* when she sank to the mastheads, barely 15 minutes after the collision. The lifeboat reached shore around 11 p.m., and the crew walked into Sheboygan. Further searches yielded no signs of the five missing crewmen.

It was only in the days following the accident that the identity of the other ship was confirmed. The *John Pridgeon Jr.*, a steamer headed to Milwaukee, Wisconsin, with a load of iron ore, had suffered only minor damage in the collision. According to Captain Shorewood of the *Pridgeon*, the *Selah Chamberlain's* light appeared suddenly and he immediately ordered the





engines reversed as he signaled the *Chamberlain*, but a collision was imminent. The force of the impact turned the *Pridgeon*, but caused no major damage to the vessel. The *Pridgeon* immediately lost sight of the *Selah Chamberlain* in the dense fog, but heard four whistle blasts. They searched for three hours but found no sign of the other ship. Assuming that the *Chamberlain* must have continued on its way also undamaged, the *Pridgeon* continued for Milwaukee.

Both Captain Greenly of the *Chamberlain* and Captain Shorewood of the *Pridgeon* were hesitant to speak with reporters beyond their initial reports. Captain Greenly would not even offer the names of the five lost men, claiming that he did not know them. Greenly ordered the rest of the crewmembers to remain similarly tight-lipped; both Captains feared they would be trapped into claiming responsibility for the collision. Nicknames of the lost men were eventually offered, as this was all that was known about them without the ship's records. The *Selah Chamberlain's* crew claimed they had complied with all steamer regulations regarding fog signals, but that the *Pridgeon* had not. When the case eventually went to court in 1890, the court decided against the *Pridgeon* and her owners, awarding \$60,000, the full value of the ship, to the Bradley Transportation Company. Several parties made unsuccessful attempts to salvage the *Selah Chamberlain* over the two years following her loss at a total cost of \$15,000.

Today, the *Selah Chamberlain* rests on a sandy bottom two miles northeast of Sheboygan, Wisconsin, in 80 feet of water, not far from the site of her fatal accident. GPS: N 43° 46.196' W 087° 39.401'. Visibility on the wreck ranges from 20 to 80 feet, and water temperature in the summer varies from 40 to 60° Fahrenheit. The *Selah Chamberlain* offers an exceptional opportunity to explore one of the Great Lakes' earliest wooden bulk freighters. The Wisconsin Historical Society, with assistance from local divers, installs a seasonal mooring buoy at the site.

Divers descending the mooring line find themselves atop the large steeple compound steam engine that remains upright, and rises 25 feet above the lakebed. Swimming towards the vessel's stern, divers can follow the engine's crankshaft aft to the large thrust bearing that isolated the engine's crankshaft from the propeller's forward thrust. From the thrust bearing, the propeller shaft extends through the upright sternpost and fashion timber to the large four-bladed propeller. Aft of the propeller, the large iron rudder stands upright, turned to starboard. On either side of the propeller and rudder, both the port and starboard sides have collapsed outward, and rest on the bottom. Many artifacts can be found in this area, including the large towing bit used in towing schooner barges as part of a consort system.

Moving forward from the engine, divers can follow the steam pipes that still connect the engine to the boilers. Immediately in front of the engine are two large tubular boilers that produced the steam to power the engine. The boilers were fired with coal that was handed by the crew with shovels into two small stokeholes (furnace doors) on the front of each boiler. This coal fed the fires that heated water into steam within the boilers, and then passed through the steam pipe to drive the engine's piston.

From the boilers forward, divers can follow the vessel's keelson along the lower hull. Much of the lower hull is covered with shifting sand, and returning divers are likely to discover previously unseen hull sections and artifacts. Two mast steps remain along the keelson that once held the *Chamberlain's* masts. Early steam vessels continued to carry masts and sails to help propel the large vessels and to help steady them in rough seas.





The starboard side has collapsed outward, and lies at an angle to the lower hull. The port side is also covered with shifting sands, and new artifact discoveries are often made. The starboard side's most prominent feature is the bow, which remains intact and lies on its side, complete with stem post and associated deck gear.

The port side is also present, but is often deeply buried beneath the sand, with only a few deck beams projecting from the lakebed that rise 10 feet from the bottom. As with many other wrecks in the Great Lakes, zebra mussels have colonized the *Selah Chamberlain*. Dive guides to the *Selah Chamberlain* and other shipwrecks in Wisconsin waters are available, produced by the Wisconsin Historical Society and the UW Sea Grant Institute. These dive guides can be purchased by emailing [underwater@whs.wisc.edu](mailto:underwater@whs.wisc.edu).

Additional information about diving at the *Selah Chamberlain* site is available in local dive shops.

Bethany Nelson works as an archaeologist for the Wisconsin Historical Society's Museum Archaeology Program.

Keith Meverden works as an underwater archaeologist for the Wisconsin Historical Society's Maritime Preservation and Archaeology Program, and owns Points North Diving, a dive charter operation on the Great Lakes. [www.diversions-scuba.com/pointsnorth](http://www.diversions-scuba.com/pointsnorth)

Tamara Thomsen manages the U.S. office for Delta P Technology, Ltd., makers of the VR2/VR3 Dive Computers ([www.vr3.co.uk](http://www.vr3.co.uk)) and owns Diversions Scuba in Madison, WI. [www.diversions-scuba.com](http://www.diversions-scuba.com)



## Advanced Diver Magazine On-Line

A screenshot of the Advanced Diver Magazine website. The page features a header with the title "Advanced Diver Magazine On-Line". Below the header, there are several sections: "TAS" (The Advanced Scuba), "WET" (World Exploration Team), "ADM VIDEO DEPOT", and a grid of magazine covers. The "WET" section includes a "Free Articles" link and a "World Exploration Team" link. The "ADM VIDEO DEPOT" section includes a "Video" link and a "Photo" link. The grid of magazine covers shows various issues of the magazine, each with a different cover image and title.

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photo by William Graham



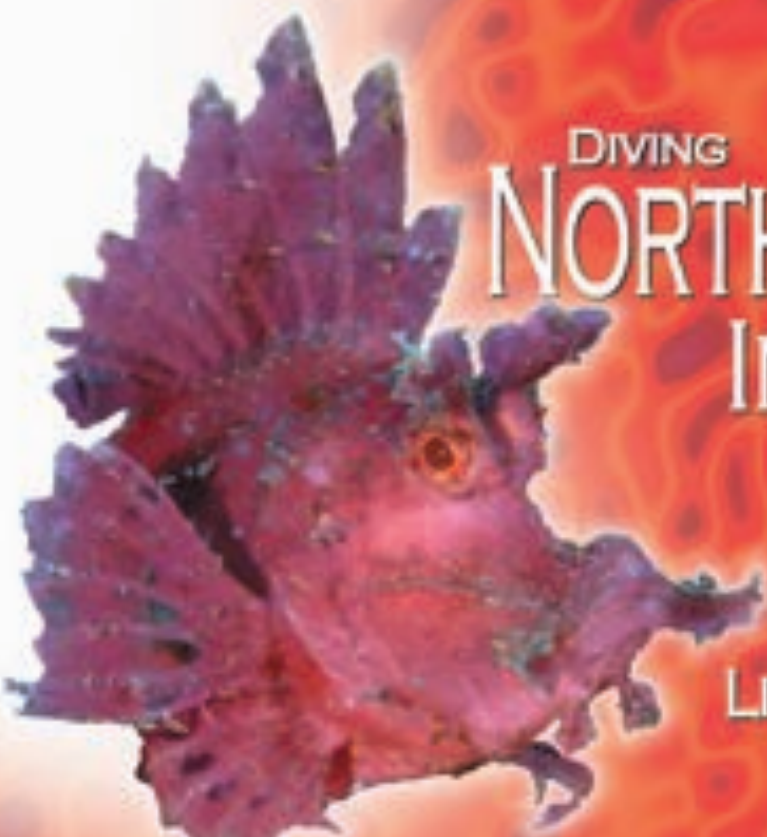
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# DIVING NORTHERN SULAWESI INDONESIA

## LIVEABOARD & LAND BASED

Scorpionfish (*Rhinopias frondosa*)

Text and photography by Tom Isgar

Indonesia offers some of the world's best diving – monumental coral-covered walls, over 600 wrecks, clear water, modest water temperatures, and some of the most unusual critters ever photographed. This is my third trip to Northern Sulawesi, the best of Indonesian diving, where I spent two and a half weeks diving with two great organizations: Aggressor Fleet, Ltd. diving the Lembeh Strait and the Bangka Islands, and Two Fish Divers which has expanded to cover two of North Sulawesi's best diving areas – Bunaken National Marine Park and Lembeh Strait.

**The North Sulawesi Aggressor: Start with the Best and Explore the Rest**  
([www.aggressor.com](http://www.aggressor.com))

The Aggressor Fleet added North Sulawesi to their already impressive list of dive territories in early 2006. The *North Sulawesi Aggressor* is probably the most comfortable and functional of the 15 or so live-aboards I have been on. She was built in 1988, retrofitted in 2005 to U.S. Coast Guard and A.B.S. standards, with a full complement of safety equipment. Her vitals are: length – 107 feet, beam – 22 feet, cruising speed 10 knots, two KT19M 1,020 h.p. Cummins engines, two 55 KW generator sets, two 5,000 psi Mako compressors with 3,600 cu. ft. cascade storage systems, fire detection system, water maker and full-service galley with freezer and refrigerator storage, as well as several communication and navigation systems.

For divers, there is a swim platform with two freshwater showers, a dive deck with personal gear lockers, 80 cu. ft. air/nitrox tanks, rinse tanks, three-tier camera table, and last — but not least — a head. Most diving is done from a dinghy, but a safety bar with integrated air/enriched air capabilities accommodating up to eight divers can be lowered when diving from the main ship. Eighteen guests can be accommodated in seven staterooms with double and single berths, lavatory, private head and shower, and one quad stateroom with four single berths, private head and shower.

**Comparison Chart for Number of Species**

	Asian Pacific	Caribbean	East Atlantic
Hard Coral	719	62	0
Soft Coral	690+	6	0
Sponges	244	117	0
Mollusks	494	63	31
Crustaceans	340	118	30
Fishes	4000	1400	450

World Atlas of Coral Reefs; Spalding, Mark. D., Ravilious, C., Green, E.P., Weltatlas der Korallenriffe, Bielefeld 2001





## Bangka Island Group

While the Lembeh Strait is best known for its critter diving, there are beautiful walls at the north end. The variety and brilliance of the crinoids makes the walls dazzling. We dove California Dreaming and Angel's Window on the Lembeh side. These two sites are BIG; deep bottoms, huge coral heads, sponges large enough to hold a diver, and fans that can conceal the entire dive group - if the group is four or fewer (standard in the Strait and on the Aggressor).

We also dove Teluk Kembahu and Batu Mandi on the mainland side. Teluk Kembahu is similar to other dives in the Strait. However, I photographed the fairly uncommon Longspine Waspfish here. Batu Mandi, on the north side of the mainland, was more typical of the diving in the Bangka Islands — a sheer wall best described as "lush." We also dove this site as a night dive. It was very productive both times. Several cuttlefish and twospot lionfish were the best photos of the day.

The Bangka Islands, just north of the tip of Sulawesi, are the first in a series of volcanic islands (some active) in the Celebes Sea which end 160 miles or so north at the Island of Sangihe, about half way to the Philippines. The area can have strong currents, which bring food for the pelagics and the large schools of fish. The sites included most types of open water terrain, some strong currents

### Left top to bottom

1. Nudibranch - Royal Hypselodoris (*Hypselodoris* sp.)
2. Juvenile Barramundi (*Cromileptes altivelis*)
3. Adult Ribbon Eel (*Rhinomuraena quaesita*)

### Below

False Clown Anemonefish (*Amphiprion ocellaris*) with Banggai Cardinalfish (*Pterapogon kaudemi*)

### Right page

Ornate Ghost Pipefish (*Solenostomus paradoxus*)

## Diving Indonesia

Located on the other side of the world from the U.S., Indonesia is a collection of 27 provinces, many of which occupy separate islands. Depending on who's counting, Indonesia has 13,000-17,000 islands - 6000 of which are inhabited. All together the islands have 34,000 miles of coastline. Some islands are quite large. Java, home of the capital city of Jakarta, is 48,990 sq. miles, whereas Bali is 2,147 sq. miles. Bali is one of the smaller provinces, but has more than three million people. Indonesia is the fourth most populous nation in the world with nearly 210 million people in 2000.





and others that were great for drifting. Some of the sites had not been dived before from the Aggressor; but after three days of diving several sites, the consensus was that they should be on future itineraries.

One of the better-known sites is Sahaung Pinnacles, made up of several underwater boulders that just break the surface of the ocean. Absolutely stunning! I was reminded of the soft coral of Fiji or Palau. There were clouds of fish everywhere. We saw about everything you would want to see underwater, but no whale shark. Other divers watched a cuttlefish place eggs in the coral. I photographed three different cuttlefish as well as pygmy seahorses, pipefish, and black egg cowries as large as baseballs.

By combining this destination with Lembeh diving, Aggressor Fleet has created a truly unique diving experience. While you could dive all these sites from shore, the long boat or car rides just aren't worth it. Spend your money for dive time rather than commuting time.

**Two Fish Divers** ([www.twofishdivers.com](http://www.twofishdivers.com))

Bunaken Marine Park with its towering walls, big fish, 8-foot sea fans – or — Lembeh Strait and Lacy Scorpionfish, nudibranchs, cockatoo waspfish! Both sites have been attracting divers to Northern Sulawesi for years. Bunaken has numerous dive operators, some of whom offer trips to Lembeh. Usually this involves a car ride, followed by a boat ride, and a change of resorts. Given the hassle, most divers tend to pick one place, planning to do the other on a return trip.

Two Fish Divers has had an operation on Bunaken for six years. Owned and operated by Tina and Nigel, who gave up real jobs to pursue their first love, they have been living and diving in Manado, Bunaken, and Lembeh for more than six years. They have recently opened a small resort on Lembeh, oriented toward serious divers. I arrived at three p.m., and was asked whether I wanted to see my room or go diving. I dug my dive gear out; left the rest on the sandy floor of the dining area/dive shop, and headed for the dive boat. Most of the dive sites are only 10 minutes from the resorts on both Bunaken and Lembeh.

On Bunaken, the resort's ten wooden cottages and four rooms are clean and comfortable, and right in front of the beach, overlooking the gardens. They have fans and western-style toilets, and can accommodate 14 guests as singles, or 28 if sharing.

On Lembeh, the main accommodation is in a family house that consists of two large bedrooms, each with a shower and western-style toilet. They accommodate a single or double/twin share, and are large enough for triple share. There are also four budget rooms above the dive center, with shared toilet facilities. Facilities at both resorts include 24-hour electricity, computers for viewing pictures and burning cd's, large balconies with hammocks for relaxing, and a book swap facility.





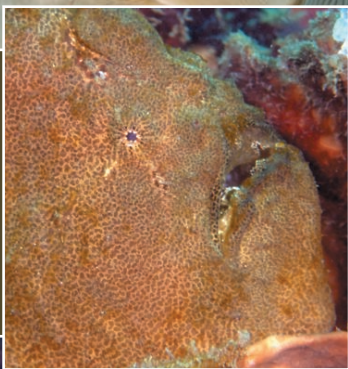


### Bunaken National Marine Park

Bunaken National Marine Park, one of the first of Indonesia's marine parks, was established in 1991 and covers 344 square miles, mostly water. There are five islands in the park: Bunaken, Manado Tua, Montehage, Nain, and Siladen. They are reached easily by local dive boats. (Manado-based dive boats bring divers from the mainland, but the trip is significantly longer.)

Spectacular diving can be found around all five islands and the mainland. Bunaken is the largest island, and has the most dive sites. The diving terrain is varied, but the standout feature is towering walls covered with corals and sponges. I saw sharks, rays, turtles, or large Napoleon wrasse on every dive. The depth in Manado Bay, which adjoins the park, is nearly one mile. The visibility can be 100 feet, and the water temperature in the low 80's, which nearly matches the land temperature. Some sites have some current.

This is my second trip to the Park. Had my memories of the great diving been inflated by the passage of time? The first dive confirmed the memories. Lekuan 2 is a great wall dive - two leaf Scorpionfish, a turtle (with a remora on its back), adult and juvenile lionfish, and nudibranchs everywhere. There were also corals, sponges, tunicates, crinoids, and more. Many of the dive sites display this abundant life, and the likelihood of seeing something big or exotic makes every dive special.



#### Top to bottom

1. Common Lionfish (*Pterois volitans*)
2. Coral Shrimp ( *Vir phillipinensis*) in Bubble Coral
3. Giant Frogfish ( *Antennarius commersoni*)
4. Painted Frogfish (*Antennarius pictus*)



## Diving Lembeh Strait

The Strait is between Lembeh Island and the Sulawesi main-land. Most divers fly into Manado, and then commute to a lodge or live-aboard at Bitung (about 30 miles away). Bitung's population was nearly 148,000 people in 2000. It's an important port capable of accommodating modern cruise ships.

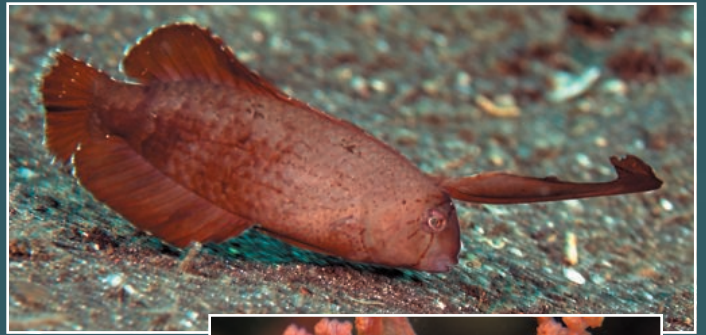
The 7.5 mile long Lembeh Strait is the undisputed capital of muck diving. While muck elicits many images, in Lembeh it's mostly on black sand with low visibility. The water flushes daily as the current in the Strait changes. However, the water surface and some of the water column is host to the local garbage. So why would anyone want to dive here? The answer is on display in dozens of coffee-table books - weird and unique critters. Many fall into the fish classification, but do not swim as their primary mode of moving. They have adapted fins that serve as stubby legs and pincers. All are masters of camouflage. The secret to successful photography in Lembeh is having an experienced local guide who can spot the critters.

Many of the dive sites have similar characteristics – shallow slope to 25-30 feet, then a steeper slope to 80-100 feet. Some sites, such as Nudi Retreat, have some coral near the top; and Nudi Falls has sheer wall on one side. However, most of the terrain is sloping sand with a mix of human debris (old tires, pieces of plastic) and invertebrate life (anemones, soft coral, and algae). In the debris and under the sand are the amazing critters that draw divers from all over the world.

## Getting There:

All the diving described above is easily accessible from Manado, which can be reached from Singapore, Bali or Jakarta. The operators will pick you up at the airport. The Aggressor van will take you directly to the boat, and return you to the airport at the end of the trip.

This is the fourth Advanced Diver Magazine article on Indonesian diving. See Issue 12 for diving at Tulamben, Bali; Issue 18 for diving the islands between Bali and Komodo; and Issue 22 for diving in Raja Ampat. Go to [www.advanceddivermagazine.com](http://www.advanceddivermagazine.com) to obtain all back issues.



### Top to bottom

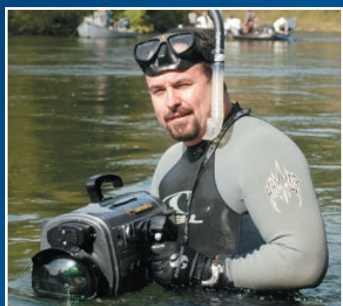
1. Juvenile Peacock Razorfish (*Iniistius pavo*)
2. Pygmy Seahorse (*Hippocampus denise*)

3. Nudibranchs mating Tryon's Risbecia (*Risbecia tryoni*)  
All nudibranchs are simultaneously male and female. When they get together they decide who will be who which might change the next time they meet.

4. Ocellate Phyllidia (*Phyllidia ocellata*)







# THADDIUS BEDFORD

## ADM FEATURED PHOTOGRAPHER

I was introduced to diving when I was 6 years old by my father in 1977. He took me out in front of our home on Higgins Lake and showed me how the horse collar BC worked, how to turn the air on, and that if it got hard to breathe to switch the valve to reserve. He then proceeded to throw my equipment overboard into 20ft of water. He turned to me and said "If you can't swim down and put on your own equipment you must not be old enough to dive". Needless to say I have been diving ever since. Diving for me has always been about sharing an experience with someone starting with my Father.

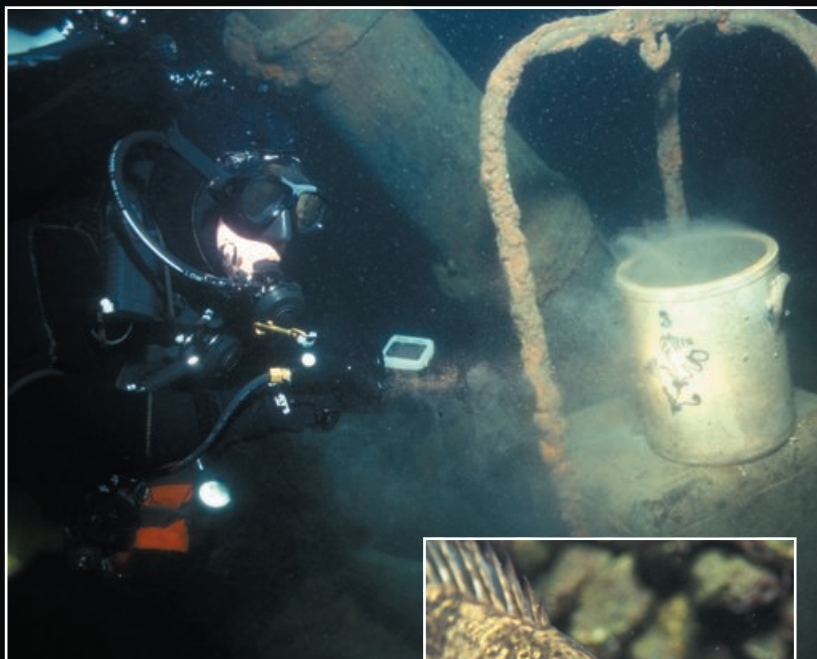
When I graduated from high school I decided to go to college for graphic design. While there I was required to take a photography course. That requirement sealed my fate. Photography was my second passion in life. It was a natural transformation for me to take a camera in the water. In 1992 I started working as a professional photographer in Mount Pleasant, MI where I was a staff photographer and Photo Editor for Central Michigan Life. Shooting Sports, News, and college life was a tremendous experience builder. But it was in the water with my camera where I felt I could really express myself and bring the



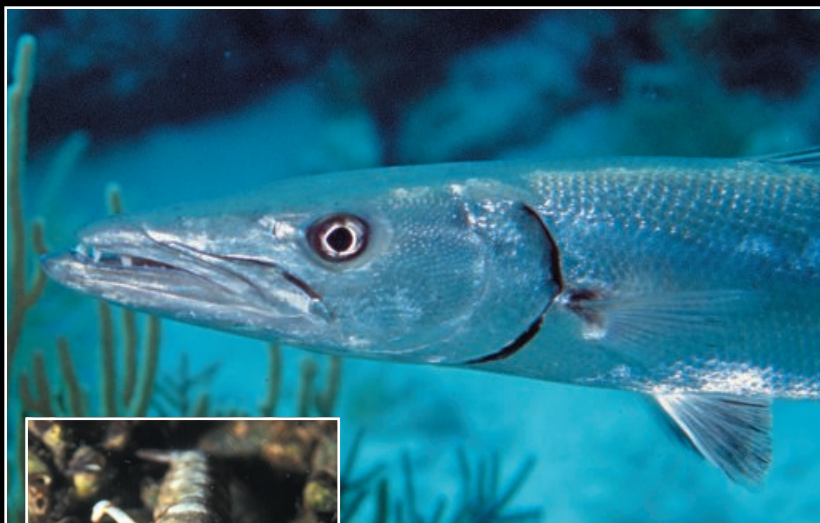


underwater world to life for my audience. In 1994 I graduated From Central with a Bachelors Degree in Photography and Art History. I opened my company, Liquid Image, that same year and started to freelance for magazines and newspapers. I decided that I wanted to try to market myself within the dive industry so I went to DEMA. While I was there I bumped into an intense individual that claimed to own a dive magazine called Deeptech. He was looking for a photographer to shoot an article right after DEMA so he invited me along to see what I could do. The rest is history. I have been working with ADM ever since and given the opportunity to photograph some incredible expeditions including: Whitefish Point, The Monitor, Warm Mineral Springs, the Yucatan and many more.

More recently I have been exploring a different avenue of creativity. In 2003 a company called Wolf Creek Productions sought out my expertise to run an underwater video camera for a fishing show that was to run on the Outdoor Channel. That led to a host of underwater jobs for them until mid-2004 when they decided that they wanted me to start filming topside also. In the last 2 years I have filmed on location in 4 different countries and 11 different states. In the past three weeks we have been in Montana filming Rainbow Trout, the Bahamas filming Bonefish, Permit, Tarpon, Mahi Mahi, Shark and Tuna then back to Michigan filming Muskey and Northern Pike. We are also working on two pilot shows: Modern Day Explorers & H2O,



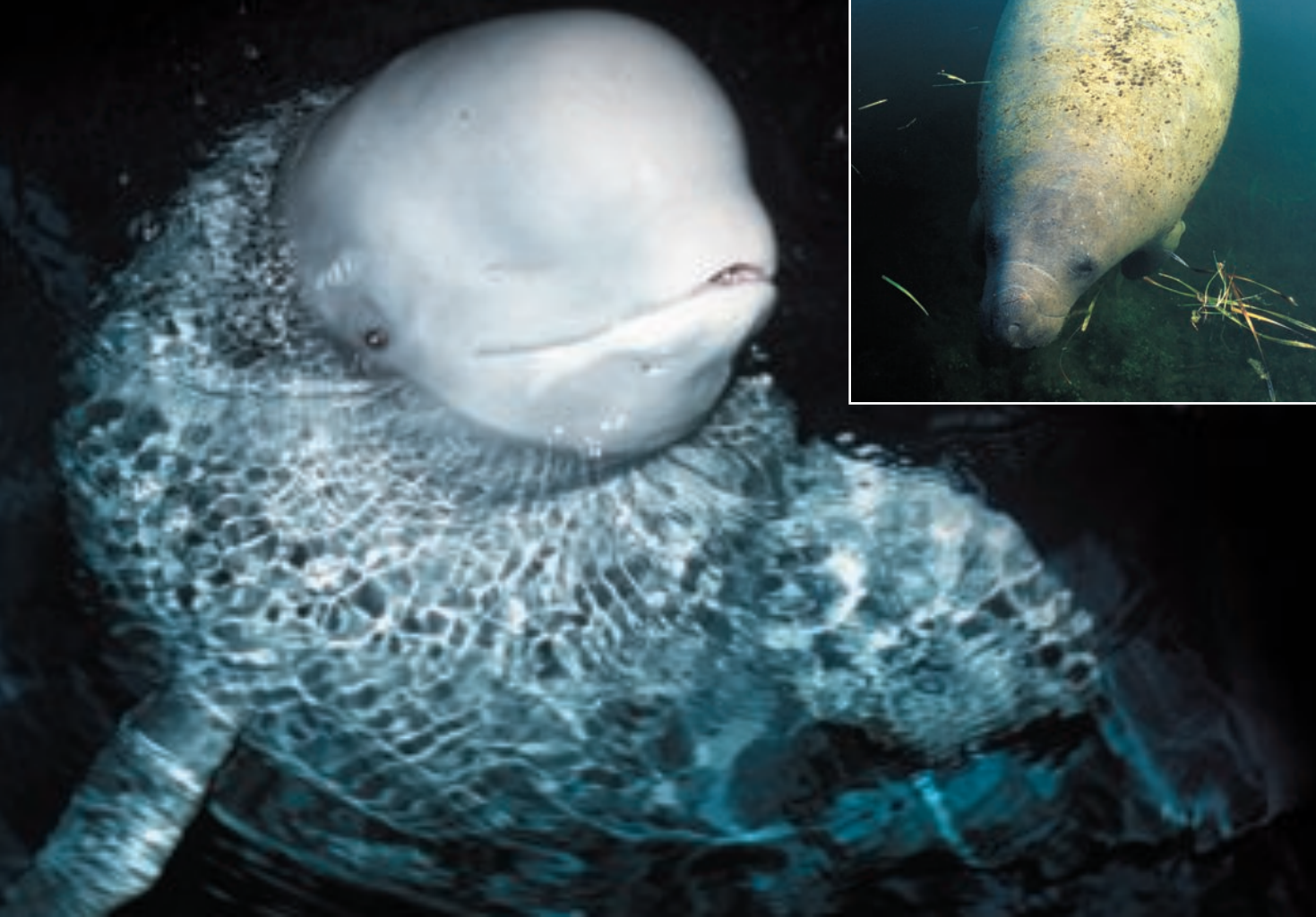




both co-hosted by ADM's Curt Bowen. Modern Day Explorers focuses on people like Thomas Illiffe, Jim Bowden and their exploration of undiscovered caves around the world. The other pilot, H2O, is a recreational and advanced recreational divers travel show. We just finished filming the pilot in the Bahamas where we featured Unexso and their unique diving program that allows divers to swim with their trained dolphins in the open ocean and to experience a close encounter with Caribbean Reef Sharks.

In the past 30 years I have had the opportunity to meet some incredible people and experience more than I ever dreamed possible. From virgin shipwrecks to a 12 foot white sturgeon, it's been an incredible ride that I hope carries on for the next 30 years. I look forward to the many adventures to come.

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# UNEXSO

SHARKS • DOLPHINS • WRECKS • REEFS • CAVES

Text and Photography by Curt Bowen

A short hour flight from most of the eastern coast of the United States will land you in Grand Bahama, a mecca for both diving and fishing. Grand Bahama boasts some of the best in both sports, whether its catching bone fish in the early morning or incredible reef diving at night.

For a dive facility that offers all the best that Grand Bahama has to offer, I chose UNEXSO Dive Center. It is conveniently located in the heart of downtown, and right beside the plush Pelican Bay Resort, shopping, and an abundance of nightlife.

Having only four days available to dive as many sites as possible, I hooked up with UNEXSO's Director of Technical Diving, Cristina Zenato. Don't let her small, 125-pound stature fool you: Cristina is the local expert for the Grand Bahama caves, walls, wrecks, and reefs, not to mention also being the chain mail clad shark master.



GRAND BAHAMA



# SHARKS

With her hand in a PVC tube of chum, Cristina hand feeds up to a dozen hungry Caribbean grey reef sharks at a time. Reaching lengths of over 8 feet and weights of 400 pounds, this action is fast, up-close and personal. These are not tame sharks nor sharks kept in an aquarium, but true wild predators from the ocean. "I have to keep my eyes open at all times. Any type of shark can show up for a free handout! It's not uncommon to see a giant hammerhead or tiger make an appearance," says Cristina.

With years of experience taming sharks, Cristina has gained the ability to change one of these so-called monsters of the deep into a docile, cuddling pet —kind of like a poodle with thousands of sharp teeth.

When one of the larger 400-pound sharks rushed in like a freight train, Cristina softly grabbed the beast by the nose and turned it into her belly. Rubbing softly under the shark's nose calmed this ferocious predator down, allowing it to be petted. At one point, Cristina actually removed her regulator from her mouth and gave the shark a soft kiss on the top of its head. After a minute of petting, the shark calmly turned and swam away, uninjured.

UNEXSO offers this shark dive as one of their special activities; and it is a must-see, even for those of us with thousands of dives and years of experience. It is professionally run with strict rules and ample safety divers.

**Left Photos:**  
Shark Master Cristina Zenato interacts with multiple sharks for an incredible action-packed show of woman tames the beast.

**Center Photo:**  
Dressed in heavy chain mail, shark master Cristina Zenato stands ready for action with her left hand stuffed into a tube of smelly chum.



# DOLPHINS

One of the other must-see special activities that UNEXSO offers is their open ocean dolphin experience.

Professional dolphin trainers and handlers release a couple of their trained bottlenose dolphins that then follow the dive boats out of the pass and into the open ocean. Once on site, the divers are instructed about special hand signals and safety tips. The divers are then escorted to the sandy bottom and formed into a loose circle with the dolphin trainers in the center and safety divers circling the outside.

Once the circle has been formed and all participants are comfortable, the trainers instruct the dolphins to move clockwise from diver to diver. The first time the diver is greeted, the dolphin stays calmly at their side and allows the diver to softly touch and pet its back. In the second interaction, the trainer has the divers stand on the tips of their fins and extend their right arm with an open hand. The dolphin then places his nose into the diver's hand, and slowly spins the diver three times in a circle. The last personal interaction the diver encounters is a soft, wet kiss from the dolphin. The trainer instructs the diver to settle on their knees on the sandy floor, slowly remove their second stage regulator and pucker up. The dolphin will then softly come up and give you a nice, wet, fish kiss on the lips, no tongue included.

To end the day, the divers are allowed to swim around the small reef with the dolphins frolicking amongst the group. Over all, this is an excellent activity for the whole dive family to participate in and remember.

**Right Photos:**  
Bottlenose dolphins  
interact with divers  
during the UNEXSO  
Dolphin Experience







# WRECKS

UNEXSO also offers a variety of wrecks to dive for both the novice and intermediate range diver. The largest of the group is called Theo's Wreck, a 240-foot long intact freighter resting on her port side in 96 feet of water. Sunk in the 1980's as an artificial reef, the wreck offers divers an excellent opportunity to experience wreck diving in a somewhat controlled environment.

Covered in soft corals, Theo's Wreck also provides some moderate wreck penetration into the engine room, crew's quarters, galley, and pilothouse. Multiple photo opportunities include the stern deck, the single large propeller, inside the engine room, and the forward bow winches.

Multiple schools of Atlantic spadefish, yellow tail, and barracuda encircle the wreckage. A few large grouper and an occasional shark can be seen off in the distance, skimming the white sands.

Theo's Wreck is an excellent location for advanced open water and basic wreck diver training.

**Below: Diver hovers above the stern of Theo's Wreck, a 240-foot long freighter that was sunk in 96 feet of water.**

**Left: Cristina Zenato, UNEXSO's director of technical diving, explores deep into the wreck's engine room.**



# CAVES

Grand Bahama also contains the largest cave system in the Bahamas, boasting over 35,000 feet (or 7 miles) of surveyed cave passage. Although not as decorated as some of the other Bahamian island caves, it offers excellent locations for the novice cave diver, and a challenge for the most experienced cave explorer.

UNEXSO also offers a special cavern tour for the non-cave diver into a system called Ben's Cave that is located in the Lucayan National Park, just a short 20 minutes from the dive facility. This is an excellent cavern dive containing a large ambient light zone, enormous flowstones, halocline, calcite crystals and fossilized coral reef formations.

Cristina Zenato, UNEXSO's director of technical diving, is an excellent guide to the multiple systems Grand Bahama has to offer, including such names as Mermaid's Lair, Owl's Hole, and a multitude of ocean blue holes scattered around the island.

**Below: Divers paint the cavern with lights as cave photographer Curt Bowen captures the beauty of Ben's Cave on film.**

**Right: Grand Bahama offers some outstanding caves encrusted with amazing speleo formations, passages, and cavern zones.**





# REEFS



Last, but not least, is the vast reef system that Grand Bahama has to offer. Novice divers can enjoy color-filled shallow coral gardens loaded with a multitude of marine life. Intermediate divers can glide over massive sloping coral beds loaded with a variety of fish, sea fans, colorful corals, and an occasional visiting shark or turtle. Very experienced divers can visit an offshore sea mound called Mount Olympus. Rising up from the deep, this undersea fish-covered mountain comes within 80 feet of the surface. Flushed by nutrient rich waters, this site is visited by the top predators of the ocean, including giant hammerheads, tiger sharks, bull sharks, and manta rays. Special reservations and fees are required to dive Mount Olympus.

UNEXSO specializes in offering memorable and exciting diving adventures for all levels of certified divers and non-divers alike. They have a complete staff of knowledgeable and highly experienced personnel, along with a large dive facility that is fully equipped with a variety of scuba equipment, rental gear, and clothing.

UNEXSO is conveniently located adjacent to Pelican Bay Resort, a four-star hotel containing multiple pools, tiki-style bars, restaurants, and comfortable rooms. A short stroll along the yacht-laden boardwalk brings you to a multitude of gift shops, bars, restaurants, an ice cream parlor, a candy shop, and a fascinating blend of local flavor. An excellent spot to unwind and socialize with your newly found dive buddies after a day of swimming with sharks, dolphins, or on wrecks, reefs, or in caves.

## **Contact Unexso**

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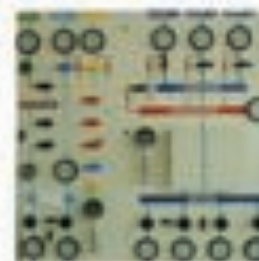
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