

ADVANCED DIVER MAGAZINE

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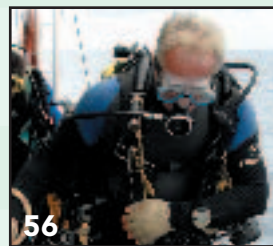
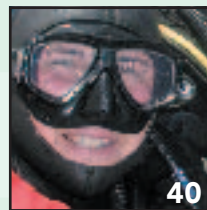
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Technical divers Erik Foreman, Curt McNamee and Jerry Whatley exploring the US Navy PV-2 Harpoon, located below 140 feet of water in Lake Washington, Washington State.

Photo by Mel Clark





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MORE DATES COMING SOON!
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Publisher's Notes

2007 comes in like a lion, and the staff here at ADM is busier than a one-legged man in an ass-kicking contest.

I've just returned from the scrub jungles of the Mexican Yucatan, and another exciting caving expedition has again reinforced the fact that exploration is not always discovery. Our teams spent ten days driving, walking, climbing, crawling, and rappelling into as many holes in the ground as we could find. We did not really discover anything fantastic. However, I could look at it not as a pessimist, but as an optimist: out of thirty-nine new caves, we did discover that thirty-seven of them don't need further exploration. The other two are on the list for continued exploration, and might hold some interesting discoveries.

2007 is ramping up quickly; the ADM staff photojournalists are already on the move around the planet in search of new and exciting destinations to dive, photograph, and explore. All this action just to provide you with the best images and informative text, and, yes, to satisfy our own ever-increasing desire to dive, explore, and photograph the few places on earth yet to be discovered. With some skill and a lot of luck, maybe 2007 will reveal some awesome discoveries -- not just for the staff of ADM, but also for you, our reader.

Curt Bowen
Publisher ADM



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The Wreck of the SS William Dawes

Text and photography by Richard Harris



Hand over hand, I desperately pull myself down the nearly horizontal shot line, squinting into the gloomy depths as I yearn for a glimpse of the wreck in the darkness below. With a full knot of current, it is almost impossible to drag my heavily laden body into the deep. Drysuit, rebreather, two large bailout cylinders, camera, and all the other paraphernalia of technical diving impede my progress into the current. If I loosen my grip for even a moment, it will pluck me off the line and whisk me away. Ahead of me, Craig Howell is working just as hard, staring intently at the rope before him and willing the wreck to come into view. In the lead, Craig Challen is making much better progress armed with a scooter, and has nearly reached our quarry...the wreck of the Liberty ship *William Dawes*.

Two other divers behind me make the decision to abort the dive as one starts to suffer the effects of increased carbon dioxide in the breathing loop. I am now 80m below the surface, and my left sling tank carrying backup gas suddenly slips from its restraining bungee. It takes all my strength to keep hold of the rope and reattach it. My breathing is becoming laboured, and I fear a CO2 hit at any time. An inner voice tells me I, too, should turn and head for the surface just as I look towards the seabed one last time, when I make out the first outline of the massive steel hulk below. With renewed determination, I consciously slow down my breathing and settle myself on the rope one last moment before making the final descent to the seabed at over 130m. On the sand, I am still breathing hard and I flip onto open circuit for a moment to settle myself further. At last, I am back under control and ready to explore this ship that has been so slow to reveal its secrets.

The second deepest wreck ever dived off the Australian coast, the *Dawes* has been visited on only three previous occasions. Those dives by our group and the Sydney Project team had been plagued with difficulties, and had added little to the knowledge of the wreck. Although this unpleasant descent had taken ten full minutes, we now had fifteen minutes to complete our planned exploration, photography, and commence the long ascent back to the surface. Challen scootered off to circumnavigate the wreck, while Craig Howell and I explored our immediate vicinity. It rapidly became clear that we were at one end of the wreck. Swimming to our left, an anchor appeared in its hawser hole and the bow loomed large above us. Now it was obvious why we could not orient ourselves on our first dive to this WW2 casualty...she was lying completely upside down with her superstructure and rigging in the sand. All that was on view was the smooth upturned hull draped in trawler's nets and some debris in the surrounding sand.

Above: Craig Howell and Craig Challen take a last look at the wreck as they commence the four-hour ascent from 130m. The current tries to pluck them from the shot line like flags in the wind.

Left Page: An axle assembly from one of the many vehicles that spilled onto the sand when the ship sank. So intent was I on looking at rusty objects, I never even noticed the clouds of fish that hovered around the wreck!



With limited options for exploration, we turn our attention to the scattered objects around us. On our first dive several months earlier, I thought I had caught a glimpse of a small field artillery gun on the sand. In front of me now lay a truck's axle assembly with a remarkably similar appearance! Craig H picks up a steering wheel from the sand and pictures himself in the ancient vehicle. So easy to forget our hostile environment for a moment, and suddenly we are really enjoying the dive. Sorting through the rubbish, we see a drinking glass and a heavy rectangular object that is perhaps a truck battery. Working our way along the wreck, we carefully avoid the old trawler's nets that helped locate the wreck, but now present a danger to the unwary diver.

Twenty-three minutes and time to get back to the shot line that is illuminated by my flashing strobe. Challen scooters back into view right on queue, and his eyes tell the story of a fantastic dive. We can't wait to hear his tale! After twenty-five minutes at depth, we now have a 4 - hour ascent to the surface in the cool Pacific waters off the New South Wales coast. As we lift above the protection of the wreck, I feel the current start to pull at my body again, and remember that the hard part of the dive is really just beginning. At 20m depth, we release the decompression station from the main shot line and suddenly it seems quiet and still as we drift with the current. I hadn't realized how much noise the water rushing past my face and the strumming of the shot line was making! All is peaceful and I start to relax for the first time, even though the bulk of the decompression time still lies ahead.

Left: Wearing a full face mask on his Megalodon rebreather, Craig Challen looks pretty business-like coming up the ladder!

Right: Craig Howell lost in his thoughts behind the wheel of a 1940's truck!

Craig Challen indicates he has scootered all the way around the wreck. However, the ship, which should be over 130m long, comes to an abrupt finish at perhaps 70m from the bow. Here, it is evident that the destructive force of the torpedo that sank her has entirely removed the stern section. A debris trail leads out over the sand, and perhaps another part of the ship lies in that direction? Craig can also confirm that the wreck lies face down with no superstructure on view.

An ache in my right elbow brings me out of my daydream, and indicates that the decompression is not going as smoothly as planned. I drop a little deeper to see if that brings relief. It does, and so begins a lengthy exit from the water; alternately rising up to my next stop then having to drop slightly when the pain recommences. By the time my planned decompression time is complete, the elbow is pain free and I cautiously rise the last few metres to the surface. Within minutes, the arm is starting to ache more than ever, and I contemplate a return down the line. But the seas are building, so I decide the safest place for me is back on the *Binjarra*, our trusty charter operated by Bermagui master mariner, Keith Appleby. Keith was the first man to locate and take divers to these wrecks, working closely with the team from the Sydney Project.

Our support diver, Mike Campbell, is in the water and helps me remove my sling tanks. In the heaving swells, the stern of *Binjarra* lifts high above me then crashes down spraying out sea foam and pushing me away. Picking my moment, I seize the ladder and am plucked out of the water by the next wave. I flop onto the deck like an exhausted fish, and the crew helps me out of my gear. Over onto a protected part of the deck, and I go back onto the rebreather to breathe oxygen for the next half hour. In that short time, the pain settles again. Some anti-inflammatory medication and plenty of rehydration and I remain symptom free, narrowly escaping a trip to the chamber. For the two Craigs, decompression is uneventful and we return to port cheered by our first really successful dive to the *William Dawes*.

Acknowledgments:

With thanks to Michael Campbell, our support diver on the *Binjarra*. To the master mariner, Keith Appleby, who locates the wrecks, has the confidence to let us dive them, and drops the shot with laser precision! And to our fellow wreck divers in the Sydney Project who have led the way and been kind enough to share their hard-won information.





William Dawes – Liberty Ship

Between 1941 and 1945, 16 American shipyards turned out over 2700 vessels to provide much needed transports for the British and U.S. fleets. Designed only to last five years, many of them broke apart during service due to issues with the newer welding methods, whilst many others met their fate at the hands of German raiders, U-Boats and Japanese submarines. In fact, today only two Liberty ships survive in an operational state.

At 7000 tons deadweight and 135m in length, these identical vessels were powered by twin triple-expansion steam engines with two oil-fired boilers. Their only armament was a stern mounted 4" gun and a selection of small anti-aircraft guns.

On route to the Pacific theatre with trucks and vehicles as its primary cargo, the *William Dawes* was one such Liberty ship that was attacked by a Japanese 1-11 submarine off the New South Wales Coast, opposite Tathra, on July 22nd, 1942. Two torpedoes struck near the stern, taking the ship and five crewmembers to their deaths. It appears the stern section was blown off, and as the shipped rolled and sank keel upwards, many of the heavy vehicles in the holds spilled out onto the sand.

The wreck was first dived by Samir Alhafith and Dave Apperley in October 2004; and, including our recent dive, has been visited only four times as of November 2006.

Note: Oxygen and rehydration are recommended first aid procedures for decompression sickness, but should be followed by immediate consultation with an appropriate expert in diving medicine.



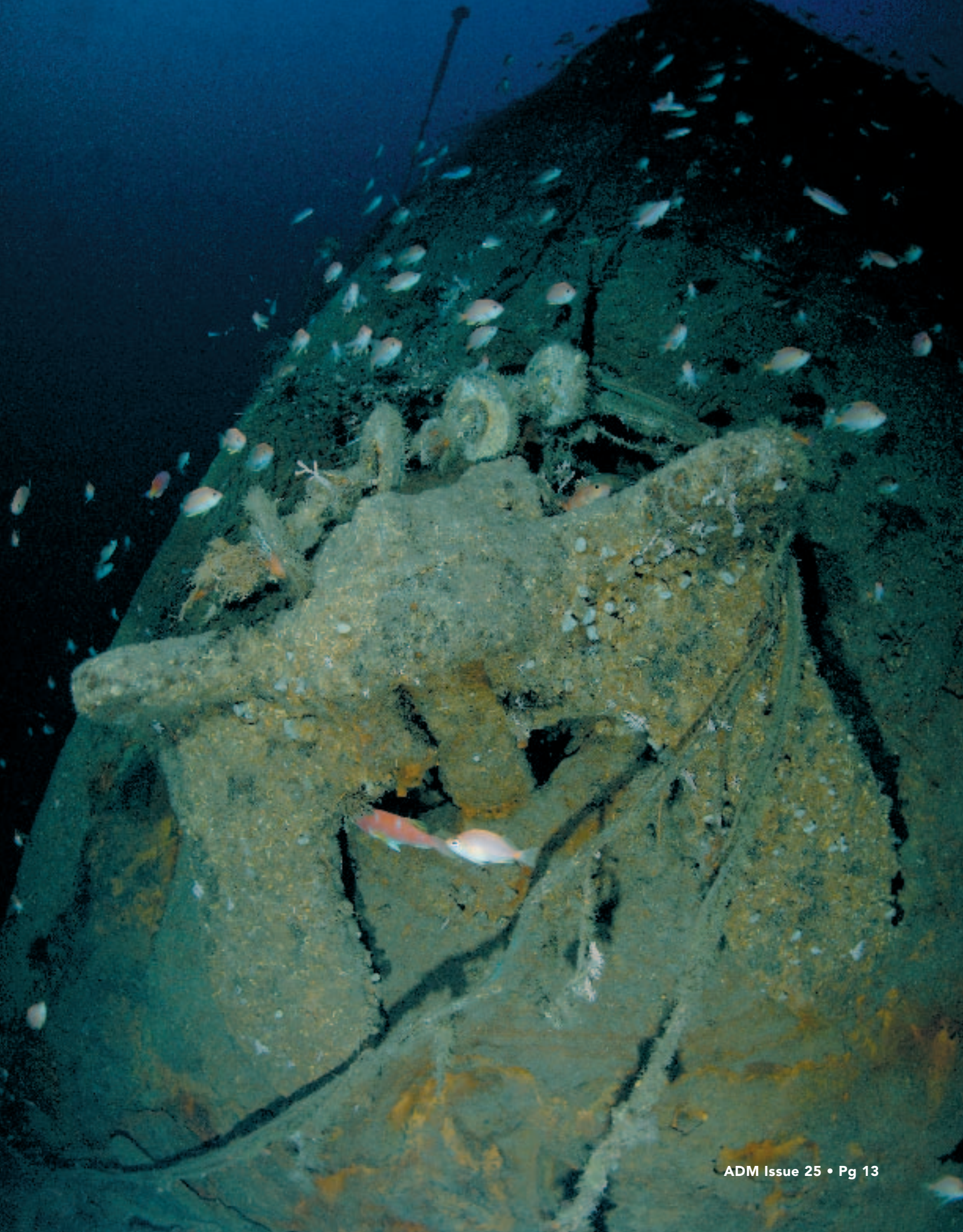
Above Left: Keith Appleby's trusty fishing boat Binjarra at dock in Bermagui. Divers load their gear in the dawn light.

Middle Left: A support diver enters the water to help Craig Challen to the stern of Binjarra as the seas build at the end of the dive. Grasping a line, he pulls himself to the boat.

Below Left: The divers surfaced to rough conditions 5 hours after leaving the surface. Craig Challen and Craig Howell relax with support diver Mike Campbell after the dive.

Right: The ship's anchor in its hawser hole at the bow of the ship, with the bow itself reaching skyward. Nets and buoys from passing trawlers drape the front of the ship.





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BECKY KAGAN

ADM FEATURED PHOTOGRAPHER

"I try to tell a story through a photograph. That's why I became a photojournalist. Not to use words, but to capture a moment in time and share my passion for these unique environments with others through photography."

Becky is an award-winning news photojournalist in Tampa, Florida. She works daily shooting and editing video, and looks forward to the challenges of shooting on the run, during hurricanes, fires, or any other type of news. She is an experienced underwater photographer who enjoys focusing on deep wrecks and caves. Plus, in her spare time, she's a professional scuba instructor.


"I enjoy teaching as much as my photography. When you look at my photos, you can see the beauty I see while diving; but, if I teach you to dive, you get to experience it yourself."

Becky's had an interest in marine life since her parents gave her an aquarium when she was nine. The colors and the variety of fish just amazed her, so she took up diving in 1994 after a trip to Pompano with her father. Right away she wanted a camera so she could show friends and family the beautiful places she was visiting. She started with an Ikelite Aquashot that houses a disposable camera. Then, after a few years, acquired a Reefmaster with a small strobe to learn the basics of composition, framing, and lighting.

After graduating from high school, becoming full cave certified, and achieving her instructor certification, she moved to Tampa where she earned her Degree in Communications from the University of Tampa. She then decided to start using digital technology, and upgraded to a Canon 10D and an Olympus digital camera in a Light & Motion housing with dual Sea & Sea strobes. She was







now satisfied that this set up would travel to every kind of environment she ventured into!

Since then, she's been fortunate to photograph some of Florida's most beautiful natural wonders ranging from manatees to South Florida wrecks. She's worked for numerous dive shops, and participated in the Florida Aquarium's Shark Dive Experience helping to educate the public about sharks. Becky has had some great opportunities to travel to places like Mexico and Fiji, all the while shooting eye-catching stills.

This past year was busy: she was hired by Valeo Films to do a promotional photo shoot for them diving on deep wrecks in Pompano and north Florida caves. Her work has been used in calendars, on the cover of a new DVD called "Just-A-Bit About: Diving Florida's Caves," and many websites. She has also traveled to Mexico to photograph caves and to the Bahamas to photograph sharks.

In the future, Becky will be taking her land video skills underwater to shoot HD video, and hopes to travel to the South Pacific again this summer. She is always expanding her portfolio while looking for new and interesting ways to shoot subjects.

"Initially, I began to take up underwater photography as a means to share my love of the underwater environment with family and friends. I took a camera with me when I dove, now I dive to take photos! I feel so blessed that I get to combine my two passions in life."

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War and the Thistlegorm

Text and Photos by Jill Heinerth

The previous evening's local food left me worshipping the great white telephone in the hotel bathroom. Still, I was resolved that once my system was purged, I would be fine for the boat ride out to Sha'ab Ali in the Gulf of Suez.

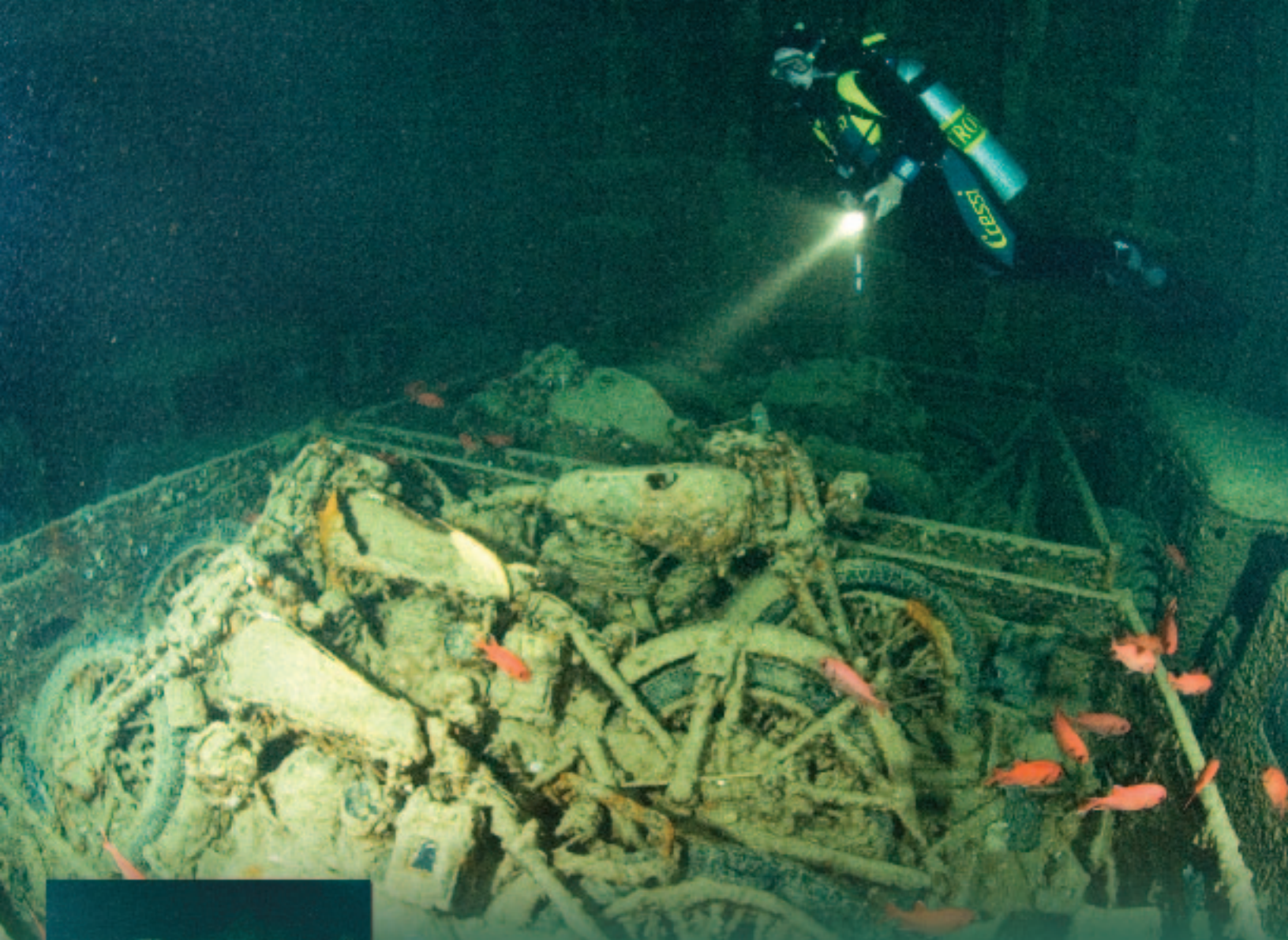
Our first drop was on a wreck near the famed dive area Ras Mohammed. Ironically, we were released in the water on a stunning drift dive that took us past a sea of toilets... on a day that I did not want to see another toilet. A wreck had foundered with its load of porcelain bowls - the wreckage now a beautiful vibrant reef.

School janitors probably had dreams about places like this... floating through the wreckage of a bygone world. Commodes filled with colorful fish and glorious sponges. Privys flushed continuously by the flowing tides. I resolved that I must be hallucinating. Perhaps it was a fever creeping in?

For safety I passed on lunch and concentrated on getting well hydrated. I was determined to stay fit enough to make the afternoon dive. We were headed

to the wreck of the Thistlegorm and I was eager to see the warship sitting in 100 feet of water. The visibility is less favorable than the Gulf of Aqaba and Ras Mohammed, and the water is a little cooler, but when surface temperatures are soaring around 115°F and your body temperature feels like 104°F, the coolness and embrace of pressure are welcome.





The Thistlegorm was launched 1940. At over 400 feet in length, she was a member of the Thistle fleet. She was funded by the British war chest and was destined as a supply ship from the moment she was conceived.

The Thistlegorm was armed with a deck gun, but she was badly under-armed because of a shortage in weaponry. During gunnery practice on an early voyage, a round jammed in the breech, resulting in serious damage and return to port.

In May 1941 the ship was loaded with relief supplies including vehicles, land mines, shells, ammunition, weapons, motorcycles, cars, trucks, radios, boots and even aircraft. In addition to war supplies, she transported two sets of railway cars on the deck, bound for the Egyptian Rail System.

As the ship headed into the Gulf of Suez, the captain learned of a collision that was now blocking entry to the Suez Canal. He was ordered to a safe anchorage, where he waited for almost two weeks reckoning he was a safe distance from German sorties far to the north. But, the Thistlegorm's luck was soon to change as German forces learned that the Queen Mary, loaded with troops, was heading for the Gulf of Suez.





After searching in vain for the Queen Mary, the German pilots were preparing to head home when they spotted the Thistlegorm at anchor. After releasing two bombs directly over the Thistlegorm's bridge, they departed with their remaining fuel. Both bombs penetrated the main hold and detonated the ammunition stores. It took very little time to send the ship to the bottom and the crew into the sea. It was a great surprise that only nine lost their lives.

Jacques Cousteau brought international attention to the ship in 1956, when National Geographic covered his exploration of the ship for a story in the magazine. After the story was published, Cousteau refused to share the ship's location, and it passed into obscurity until modern times. Despite the fact that few Americans have heard of the ship, it is the most visited wreck diving site in the world, frequented by boatloads of Italians and Germans from various Egyptian ports.

Location: 27° 49' 03" N 33° 55' 14" E, Shag Rock, Sha'ab Ali, Gulf of Suez

How to Get There: Day boat or liveaboard from
Sharm El Sheikh or Hurghada

Flights: Very inexpensive to book all inclusive packages from Italy

Depth: 30 feet at top of bridge, 100 feet on the railway car on the sea floor

Average Visibility: 75 - 100 feet

Water Conditions: 75° F in summer, often with swift current



Lake Washington - the Time Machine

US Navy PV-2 Harpoon

Article by Mel Clark and John Rawlings
Photography by Mel Clark

The city of Seattle in Washington State is bordered by two large bodies of water – the saltwater Puget Sound to the west, and the freshwater Lake Washington to the east. Lake Washington has long been known to hard-core technical divers as a gold mine of historical artifacts. Her cold, dark, and dirty waters cover a bounty of lost treasures for the bold diver to uncover and explore. My team recently visited the resting site of a U.S. Navy Lockheed PV-2 Harpoon aircraft. This historically important wreck is located in over 140 FFW in Lake Washington off of Sand Point, a former Naval Air Station.

During the Second World War, Lockheed completed a major redesign of the PV-1 light bomber. The plan was to create an aircraft capable of carrying an increased payload (bombs and munitions), in a maritime reconnais-

sance role. The first PV-2 entered air trials in December 1943. Lockheed ran into some fairly major problems with this redesigned aircraft, resulting in many subsequent revisions of the design. Even after these revisions, the PV-2 had a reputation among her crews as being sloppy in the controls. The PV-2 resting on the muddy bottom of Lake Washington is of considerable historical significance, as it is believed to be an example of the final revision of the aircraft, a PV-2D, one of only 35 that were put into service. The PV-2 was a twin-engine patrol bomber that could be identified easily by the distinctive bomb bay on the underside as well as by the twin tail configuration. The earlier versions of the PV-2 had five fixed forward-facing 0.50 caliber guns in the nose, two guns in the Martin dorsal turret, and two guns in the ventral tunnel position. The PV-2D, the final revision, had eight of the 0.50 caliber guns in the nose, and a modified twin tail to increase stability.




Jerry Whatley and Jeff Manor investigate the Martin dorsal turret, which is located right below the now detached tail section.

On September 4, 1947, Ensign Donelson and Lieutenant Soelter taxied for take off from Sand Point Naval Air Station, just as they had many times before. On this day, however, the two would end up ditching their aircraft in Lake Washington, fortunate to escape with their lives. Ensign Donelson noticed during take off that the tail was too slow to lift. He corrected the situation and made other compensations to get the plane airborne, only to realize once the plane was over the water that it was a hopeless situation. Their Harpoon struck the surface of Lake Washington about 1000 yards north of the runway. Witnesses reported that the aircraft skipped three times before settling to the bottom. The PV-2 Harpoon now rests in over 140 FFW, with the aircraft's nose thrusting deep into the muddy bottom. This unfortunate position has completely covered the nose guns and other critical clues that would identify the aircraft as a PV-2D revision.

The team met as usual at "O-dark-30" at the Sand Point boat launch. Although this was not the first time we had dived on the wreck of the PV-2, there was an extraordinary sense of anticipation amongst us. We gathered our rebreathers and multiple bailout bottles, and loaded the gear aboard our boat, the *Altech II*. Like most wreck sites in Lake Washington, the exact location of the aircraft is fiercely protected by local divers. As such, acquiring GPS coordinates for this site is challenging but not insurmountable. The best way to get out to the wreck site is to dive with a local dive group in possession of the coordinates. Most charter operators will run divers to sites in Lake Washington as long as they have the coordinates. That being said, we motored out to the location just off of the former Sand Point Naval Air Station (now closed). Once on site, we spent a few minutes "mowing the lawn" looking for the PV-2. Once you float over top of her, there is no mistaking the eerie, almost cross-like, vision that appears on the depth sounder.

The aircraft wrecks in the lake are very fragile. Divers can have a huge and negative impact on these treasures, if they are not careful when setting the up-line. Our boat captain, Captain Curt, is also a pilot and has a great appreciation for this issue. He has set up a safe drop chain. This "ball" of chain is rigged in a way that, if it actually hits the plane, it will flare out and do no damage. This is attached to an up-line and a surface float. Unfortunately, not all divers use this care when




Curt McNamee and Erik Foreman working their decompression. Jerry is seen in the background starting his descent to the bomber.

setting the line, and instead use grapples or "cannon ball" weights, all causing irreparable damage to these historical sites. As this bomber is nose-in to the bottom, there is much less of a target to hit from over 140 feet above. This fact presents a much greater challenge to accurately land the chain on the wreck itself.

The problem with Lake Washington is that there is normally less than 10 feet of visibility – sometimes FAR less. If a diver descends the line and is not right on the target, the chances of finding the site can be extremely low. We have had many "mud" dives in the lake that amply prove this point. It is thus absolutely critical to get a well-set upline. Fortunately, Captain Curt has become a pro at this. In fact, on this particular day he joked about dropping the chain right into the plane, and that is exactly what he did!

For this dive, our plan was to have two dive teams. Team one consisted of Erik Foreman, Jerry Whatley, and me. Team two was Curt McNamee, Jeff Manor, and Russ Helsley. With this plan there would always be a team ready to go in case of an emergency and to offer assistance. Erik, Jerry, and I suited up with our friend Gordy Hendrickson's always welcome help.

The water temperature at the surface on this day was 55F, which is fairly warm for the lake. It can get up to 60F in the summer months, which is very welcome warmth for those long hangs! We slipped quietly below the emerald green waters backlit by the sun. This light is fleeting and only lasts until around 40 FFW. At this point the lake engulfs the light like a black hole. As we slowly drifted deeper, the pitch black enshrouded everything except for anything within range of our mask lights and HID lights. The blackness of the 60-125 FFW range is oddly peaceful. Unfortunately, as you get closer to the muddy bottom of Lake Washington, the blackness turns into a solid sludge-like brownness due to the ever-increasing amount of silt. This increasing amount of silt makes itself felt approximately 10-20 feet before you even get to the silt hovering over the bottom. It is absolutely critical during descent to not pull on the line in any way or we could pull the chain away from the site, and then be unable to locate the wreckage in the resulting silt-cloud. However, it is also critical that a descending dive team holds the line so that the team remains together and on-course in the pitch-blackness. As you descend into the darkness, all you can do is watch your depth gauge and start putting on the brakes at approximately 100-130 FFW.

A high-angle, top-down view of a diver inside the tail section of a bomber aircraft wreck. The diver is positioned in the center, surrounded by the curved, rusted metal structure of the tail. The scene is dimly lit, with several bright green lights illuminating the diver and the surrounding area. The diver is wearing a dark wetsuit and a mask, and appears to be working on the interior of the tail section. The overall atmosphere is dark and mysterious, with the green lights providing the primary source of illumination.

Jeff Manor and Jerry Whatley at the tail separation. The separated tail allows diver access to the plane's interior and the controls for the Martin dorsal turret.

Like all sites in the lake, the PV-2 can sneak up on you in an instant. All of a sudden, it will appear like a ghostly apparition in the murk, or worse yet you will end up at 140 FFW plowing deep into the mud with no wreckage in sight. Fortunately, on this day I saw the bomber right away and signaled to Jerry. Unfortunately, the lake's water is so thick with floating silt that it ate up my 18 watt HID light as if it were a penlight, and Jerry missed my signal. He followed the plan to the T, however, and immediately tied off his reel to begin a search for the wreck. I tugged on the line, and we were able to link up our team and tie off on the plane where the tail has separated from the fuselage.

With the team now together and the aircraft located, the dive could really begin. We carefully descended to the mud line to check out the cockpit. The nose is buried so far into the silt that the cockpit is barely visible. Only the escape hatch window can be seen. This is unfortunate as we will not be able to positively identify whether the aircraft has the five or eight gun configuration in the nose that would determine whether this is a "D" series or not.

The team next headed slowly along the underside of the aircraft to examine the bomb bay, taking intense care not to disturb the muddy silt beneath us as well as on every surface of the aircraft itself. The doors of the bomb bay are wide open, but no bombs are inside. It has been rumored that a bomb was on board at the time of the accident, and fell out close to the PV-2's current location. So far, we have found no evidence to support this claim.

Jerry and I next moved down the port side wing to the end. It is here that the tail section of the PV-2 rests on the bottom. The tail section has somehow been sheared clean off the end of the plane, leaving the fuselage open just above the military star on the side. The cut is so clean that it appears to be the work of salvage divers as compared to damage from the accident itself. The PV-2 was originally built in three sections: the nose, mid-body, and aft portions. This would allow for easier removal of the tail section to access the plane's interior. The tail section is large enough that Erik was able to swim right into it. The problem is that this portion of the aircraft is right on the bottom of the lake, and the brown sludge layer inhibits photography of this particular portion of the wreckage. The team next inspected and photographed the twin tail to determine whether this is truly a PV-2D. We were able to positively identify the windows in the rear section.

By this time we had been on the wreck for approximately 25 minutes, and we headed back to the fuselage on the underside of the port wing. The landing gear is still down and intact. We decided to continue down the starboard wing to the end. The wing tip is missing, but other than that there is nothing remarkable in this area of the aircraft. We returned to the fuselage where the tail section was sheared off. Erik and Jerry inspected the



Curt McNamee returns after a successful dive on the PV-2 bomber aircraft.

now open body of the PV-2. We attempted to determine exactly what it was that we were looking at. It appears to be the Martin dorsal turret firing station. This would make sense since this is where the tail had been sheared off, and it is also located right around the star on the fuselage.

Unfortunately, our planned bottom time was now up. I gave the signal to turn the dive, and the team headed for the upline. Our 30-minute bottom time cost us 30 minutes of decompression using v-planner with a conservatism level of 4. The team's decompression was uneventful except for the welcomed thermocline of 55F at 40 FFW for our remaining ascent and stops. The lake water at the upper depths was not only warm but with the improved visibility nearer the surface, it now glistened with bright sun rays streaming through. I couldn't help myself, and started shooting pictures of the rays of the sun dancing off my dive buddies as they ascended. It is hard to recreate digitally the sparkling green water and sun rays that now surrounded us. It is also hard to believe that literally moments earlier we had been engulfed in a black soupy mess. It was a perfect end to a great dive on the PV-2. Upon surfacing, we were greeted by Captain Curt, 2nd Mate Gordy, and the often-elusive Seattle sunshine. Our second team stood by with wide grins, anticipating their descent to the wreck after hearing our description of our dive.

This operation could not have happened without great surface support. I would like to offer special thanks to Captain Curt McNamee (that's Curt with a "C"!), skipper extraordinaire with Silent Scuba. Gordy Hendrickson played the critical role of 2nd mate as well as stage slinger - thank you. Finally, huge kudos for a job well done to the dive teams: Erik Foreman, Jerry Whatley, Curt McNamee, Russ Helsley, Jake Bender, and Jeff Manor.

<http://www.silentscuba.com>
Curt McNamee: flyingcash@hotmail.com
Mel Clark: scubagrunt@hotmail.com

Above Right: Erik Foreman discovers the star just below the tail separation. The star is on the side of the fuselage just below the Martin dorsal turret.

Right Middle: Looking into the fuselage from the top at the tail separation, the Martin dorsal turret controls are visible. Further below is the bomb bay.

Right Bottom: Team leader Mel Clark focuses on the upcoming dive.



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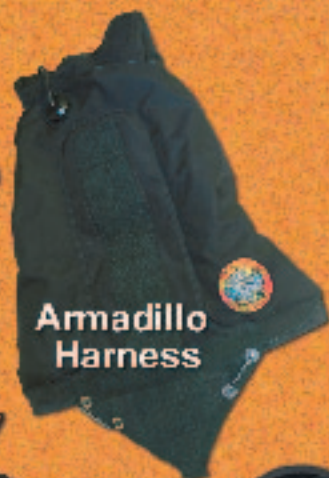
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A Wreck Diver's Paradise

Manitowoc, Wisconsin

By Tamara Thomsen

In Mariner's Park, where South 8th St. intersects the Manitowoc River in downtown Manitowoc, Wisconsin, the Wisconsin Historical Society has erected a marker reading:

"In 1847 Captain Joseph Edwards built the schooner Citizen here, beginning an era of maritime tradition in Manitowoc which has still not ended. The Challenge, believed one of the first clipper ships produced on the Great Lakes, was built by one of the shipyards that lined the river banks. The Cora A., launched here in 1889, was the last schooner built on the Great Lakes. During the late 1800s, the Goodrich Transportation Company played an important role in the growth of Manitowoc. Their passenger steamers brought people and goods to their docks east and west of this point. As the smaller shipyards disappeared, a new yard, the Manitowoc Shipbuilding Company, grew and prospered. They built 437 hulls in Manitowoc, including 28 submarines during World War II. By 1978 the Burger Boat Company was the only shipyard left in Manitowoc. Manitowoc's proud maritime heritage is preserved here in the Maritime Museum."

Lake Michigan's bottomland is also a testament to these early years of merchant traffic, passenger interchange and shipbuilding. Today, many of these vessels remain well-preserved, and document the area's rich maritime history. Nestled in the pocket of Lake Michigan's Maritime Bay, Manitowoc is known as "The City of Opportunities". Wreck diving opportunities certainly abound for divers of all levels.

One of the better kept secrets of Great Lakes wreck diving, Manitowoc boasts a range of recreational and technical wreck dives, often with upwards of 100 feet of visibility - a result of mild to moderate currents and increasing zebra mussel populations. Although the zebra mussel and her cousin, the quagga mussel, now partially cover wreck surfaces, carved-wood adornments, machinery and sail handling apparatus are not yet lost to the analytical diver's view. Manitowoc's incredible collection of sunken vessels is extraordinarily well preserved by the Lake Michigan's cold, fresh water.

Built in 1843, the 85-foot schooner Home sank after a collision in 1858. Wisconsin's oldest shipwreck, she rests in 170 feet of water 10 miles off Manitowoc.

A Sampling of Manitowoc Area Wrecks

Schooner Home

N 43° 56.932' W 087° 33.211'

One of the oldest known shipwrecks in Wisconsin, the *Home* was built in 1843 in Lower Sandusky, Ohio. While laden with a cargo of cedar fence posts, the two-masted, 84-foot schooner was lost on October 23, 1857, when she collided with another vessel. Today, she rests in 165 feet of water with the collision damage is visible on her starboard bow. The port side anchor rests in the sand and her anchor chain remains wrapped around the whelps of the windlass on deck. Most of the deck planking remains intact. Her toppled mizzen mast lies balanced on her port side rail.

Schooner Floretta

N 43° 57.242' W 087° 32.200'

Built in 1868 in Detroit, Michigan, the schooner *Floretta* was en route to Chicago from Escanaba, Michigan, with a cargo of iron ore consigned to Joliet Steel Works. On September 8, 1885, eleven miles off Manitowoc, she sprung a leak and sank quickly. Her eight man crew only had minutes to escape in the ship's yawl. Trapped air from the sinking schooner blew off her cabin and snapped her two masts. The wreck now lies in 180 feet of water.

Steamer Vernon


N 44° 12.125' W 087° 24.738'

Launched on August 16, 1886, in Chicago, Illinois, the steamer *Vernon* was built for the A. Booth Fish Company to transport general merchandise between Chicago and Manistique, Michigan. The steamer was reported to be unstable when carrying a full cargo, the result of a miscalculation by the builder in determining her displacement. On October 29, 1887, the *Vernon* was battling a fierce storm north of Manitowoc near Rawley Point. She lost the battle in the early hours of the morning, and came to rest in 210 feet of water. Two anchors and decorative carvings adorn her bow. "Vernon of Chicago" remains carved into her stern. Much of the cargo of general merchandise can be seen by carefully penetrating her holds.

Schooner Rouse Simmons

N 44° 16.640' W 087° 24.863'

The schooner *Rouse Simmons*, better known as "The Christmas Tree Ship", was built in Milwaukee, Wisconsin, in 1868. She faithfully served Wisconsin and Michigan's lumber industry for 43 years. During her last years of service the ship's part-owner, Herman Scheunemann, chartered the vessel to bring a load of Christmas trees from Thompson, Michigan, to Chicago on her final voyage of the season. The *Rouse Simmons* sank in the teeth of a storm on November 23, 1912, off Rawley Point in 165 feet of water. Today, the ship remains intact with her masts broken and rigging thrown forward. Her cargo of Christmas trees can be seen neatly stacked in the hold.



Diver Gary Daehn explores the schooner *Home*, whose collision damage is visible at the ship's bow. Like most Wisconsin shipwrecks, the *Home* is covered in fine silt that is easily disturbed by a diver's movements.



Barge S.C. Baldwin

N 44° 10.873' W 087° 29.179'

Built in 1871 as a wooden steam barge with two-masts in Detroit, Michigan, the *S.C. Baldwin* was reportedly the first double decked steamer on the Lakes. She worked in the iron ore trade until 1902 when she was purchased by the Green Stone and Quarry Company of Sturgeon Bay, Wisconsin. In 1903, her machinery was removed and she continued her service in the stone trade as a tow barge. On September 3, 1908, the *S.C. Baldwin* sprung a leak off Rawley Point and quickly took on water and capsized, and then righted herself as she sank in 80 feet of water. Although largely broken, there is still much to see around the wreck site. Her capstan remains, as well as her starboard hogging arch. Cargo hatch combings can be found in the shifting sand.

Crane and Loader

N 44° 10.608' W 087° 26.897'

In 1997, a work barge carrying a front end loader, crane, a bull dozer, and a load of slag overturned in 140 feet of water. The bull dozer was recovered, but the front end loader lies on its side atop a large pile of slag, and the crane sits upright nearby. Other tools, equipment, and debris from the accident is scattered around the site.

Tug Henry Gust

N 44° 08.341' W 087° 29.642'

Built in 1893 in Milwaukee, Wisconsin, the *Henry Gust* was a 72-foot wooden steam fishing tug. Beginning in 1929, the U.S. government required inspections of all boilers on vessels 65 feet in length or over - the *Henry Gust* did not pass and was condemned. Rather than replace the boiler, her owner shortened her by 10 feet to avoid the required inspection. By 1935, the *Gust* began leaking badly and became too expensive to operate. Her owner stripped her of all copper and brass, towed her into Lake Michigan, and scuttled her. Today, the *Henry Gust* rests in 80 feet of water. She is largely intact, and examining her engine, boiler and propeller make for an interesting dive.

Above Left to Right: Historic images of Steamers Vernon, Francis Hinton and Continental. Wisconsin Historical Society's Maritime Collection

Below: Divers swim along the rails of the 124-foot schooner Rouse Simmons. Known as "The Christmas Tree Ship", she was lost along with all hands while carrying Christmas trees to Chicago on November 23, 1912. The yuletide cargo remains below her deck.





Steamer *Continental*

N 44° 13.932' W 087° 30.462'

After 22 years on the Great Lakes, the *Continental* met her fate in a blinding snowstorm. On an early December morning in 1904, the *Continental* was steaming south past Rawley Point on her way to Manitowoc to lay up for the winter. Disoriented by the storm, the captain mistakenly steered toward shore. Without a cargo, the ship rode high in the water as she approached the shore at high speed until she hit a sand bar and grounded. All 20 crew made their way safely to shore with help from local fishermen. Salvage tugs tried to pull the *Continental* free, but she had grounded too hard. Over the winter, ice shoves and winter storms destroyed the vessel. Today, the *Continental* rests in 15 feet of water. In periods of low water, the cylinder heads of her compound steam engine break the surface. Most of her hull structure remains, and new sections of the wreckage are occasionally uncovered by shifting sand.

Steam Barge *Frances Hinton*

N 44° 06.671' W 087° 37.883'

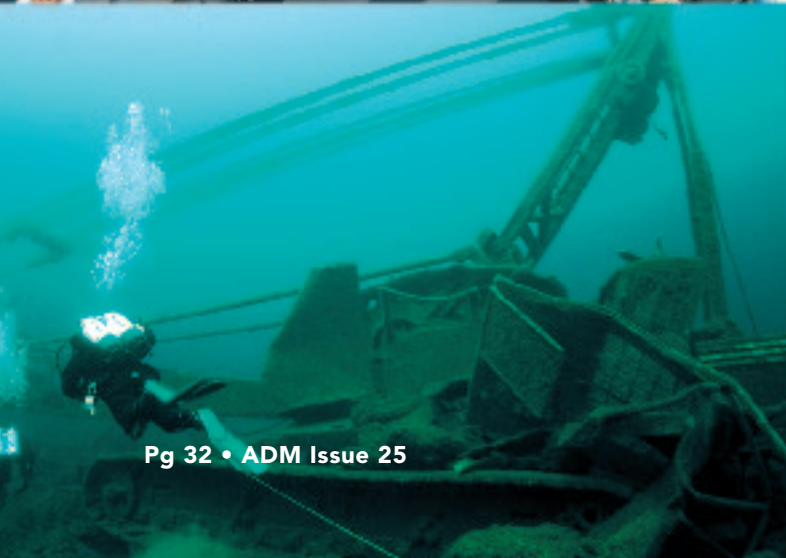
The *Frances Hinton* was built in Manitowoc in 1889 for the Lake Michigan lumber trade. On November 16, 1909, while en route to Chicago from Manistique, Michigan, the *Frances Hinton* began taking on water. In an attempt to make shelter and save his cargo of Norway pine lumber, Captain John Campbell steered his ship toward shore. Before reaching shelter, however, the fire in the steam boiler was extinguished by the rising water, rendering the vessel helpless. The wind blew the vessel aground where she was broken into pieces by the heavy surf while hundreds of onlookers watched from the shore. Today, the *Frances Hinton* rests in 15 feet of water. Her compound engine rests off her starboard side, and her boiler rises to within 5 feet of the surface. Her propeller remains connected to the shaft, and much of her hull structure remains scattered on the lakebed.



Shore Side Attractions

If you're weathered out on Lake Michigan there is still plenty for the wreck diver and family to do ashore!

The Wisconsin Maritime Museum offers exhibits commemorating the sailors, shipbuilders, and submariners who contributed to Manitowoc's prosperity. With an exquisite collection of model ships and boats, a rotating, full-size triple expansion steam engine, and exhibits for kids of all ages, there is something for everyone to enjoy. A tour of the *USS Cobia*, a World War II submarine, will definitely make a day ashore go faster!



Top Left: Steam pipes on the steamer *Continental*

Center: Jeff and Tom Milbrath suit up to dive into cool Wisconsin waters aboard one of the areas six-pack dive charters.

Bottom Left: Divers swim along the crane boom in 140-feet of water.

Just north of Manitowoc in Two Rivers, Wisconsin, the Historic Rogers Street Fishing Village celebrates the area's commercial fishing heritage with industry exhibits, a working Kahlenberg Marine Oil Engine, and a tour of a 1932 wooden fishing tug. The village hosts a Great Lakes Coast Guard exhibit and local shipwrecks exhibits.

Tour the Lighthouses! Three historic lighthouses grace the shores of the community: Rawley Point Lighthouse, Two Rivers North Pier Lighthouse, and Manitowoc's Breakwater Lighthouse. These lighthouses have seen their share of shipwrecks.

Take a ride on the historic car ferry *SS Badger*. The last of the coal-fired railroad car ferries on the Great Lakes, the *Badger* shuttles passengers and automobiles across Lake Michigan between Manitowoc and Ludington, Michigan. This trip offers a rare opportunity to experience life aboard a Great Lakes steam vessel.

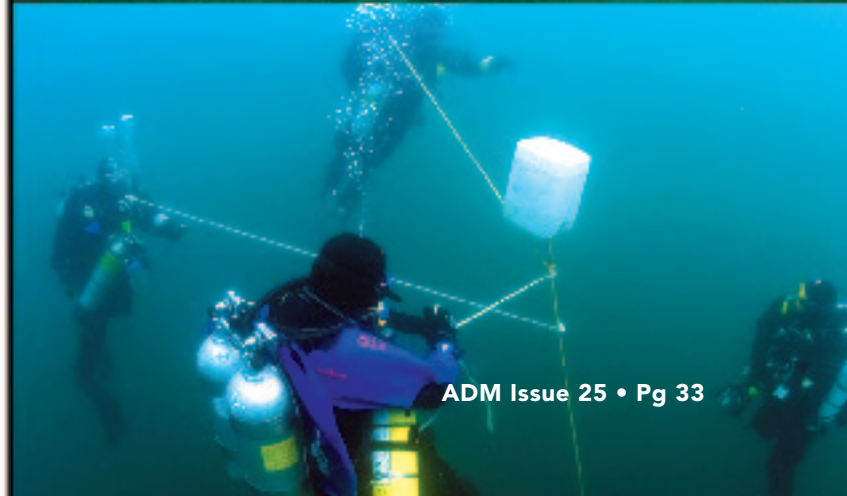
If you go, start on the Maritime Trail. What are Wisconsin's Maritime Trails? The Wisconsin's Maritime Trails program is more than just a tradition "trail". Encompassing four stretches of Wisconsin's Great Lakes coastline, the Lake Superior Trail, Green Bay/Door County Trail, Mid-Lake Michigan Trail and Lower Lake Michigan Trail wind above and below the waves. Through interpretive signage, presentations, and shipwreck moorings, the Maritime Trails initiative encourages divers, snorkelers, kayakers, boaters, maritime enthusiasts, and tourists to visit and enjoy Wisconsin's diverse collection of maritime resources. Visitors can explore shipwrecks, lighthouses, museums, shore-side parks and exhibits, historic vessels and waterfronts of each region. Through the Web sites www.maritimetrails.org and www.wisconsinshipwrecks.org, the Maritime Trails Resource Database and Wisconsin Shipwreck Database are great places to start planning a trip or learn more about Wisconsin historic shipwrecks. The searchable databases include contact information, hyperlinks, and maps of maritime venues, as well as historic data and information about shipwreck sites.

Tamara Thomsen works as a Historic Preservation Specialist with the Wisconsin Historical Society's Maritime Preservation and Archaeology program. She owns Diversions Scuba in Madison, Wisconsin www.diversions-scuba.com where she teaches courses through Technical Cave and Advanced Trimix.

Top Right: Intricate carvings adorn the bow of the steamer *Vernon*.

Center: Divers descend on the schooner *Home*.

Bottom Right: In choppy water, divers spread out on deco with the use of jon-lines.



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Getting the Shot

Text and Photos by Jill Heinerth

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 - Technical Diving Equipment \$15,000.00
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As more people purchase digital cameras and take them cave diving, I get more inquiries about how to get a good shot. Despite the fact that new digital cameras are very inexpensive and quite powerful, caves still require a lot of light to get a great shot. Point and shoot cameras with internal or attached strobes can net decent diver shots; but if want to capture the cave or wreck environment, you will need considerably greater strobe power.

Lighting up a Model

The picture of Paul Heinerth diving his Optima rebreather was produced using the Nikon D-2X camera in a Subal housing with a 10.5 mm Nikon lens. On the camera, two strobes are attached with arms. One illuminates the general foreground, and the second is operated as a slave unit with a goal to get light into the diver's mask. Behind Paul, I have placed two slave strobes with the face and sensor pointing directly at the camera. These backlight strobes separate the diver from the background and give the illusion of a second diver following Paul.

Illuminating a Big Space

The photo of the Breakdown was shot for the Peacock Springs Interpretive Trail – a project of the Peacock Springs Citizen’s Support Committee. This trail will follow the topside path of the cave. It will be marked with information kiosks that display photographs of what lies below the surface. A hiker will be able to stand above the Breakdown Room and see exactly what is beneath their feet.

The goal of this photo was to show the grandeur of the room without filling it with divers. The focus of the shot was to be the geology, rather than a dive team. For this shot, I swam a large weighted tripod into the cave with my housed camera. I carefully placed the tripod on top of a rock in the upper chamber, and then took considerable time to place several slave strobes behind rocks throughout the room. This was done with a rebreather so the silt would not be disturbed or percolated from the ceiling. Each slave had to be carefully hidden, but the slave sensor had to be placed in view of the camera. Numerous test shots demanded that I replace the strobes over the course of about 45 minutes in order to get the shot I wanted. The camera was set to a 60-second exposure. At the beginning of the exposure,

both strobes on the camera fired and caused the slaves to fire. A manually operated strobe was then used to fire approximately ten shots around the room to fill in dark holes. My assistant, Kelly Jessop, was then dispatched to swim down the line. As I fired my manual strobe, his slave fired directly into the cave illuminating the depths and giving him a shadowy presence in the bottom of the photo – a wonderful representation of scale.

Each shot attempt was carefully reviewed, and took approximately ten minutes to reset. The entire dive in that area of the cave took about 90 minutes, but the mental preparation, gear testing, and planning for the shot was conducted on several previous dives.

Below: When shooting long exposures in areas like the Breakdown Room in Peacock Springs, the photographer is challenged by camera shake caused by the flow passing over the tripod and camera. Even subtle flow like that found in Peacock can cause blurry images. To combat this, 12 pounds of lead weighted the tripod in place.

Right Page Top: Intent to head into the cave, many photographers forget the beauty of the streaming light in the cavern zone.

Right Page Bottom: Small areas like the Peanut Restriction in Peacock Springs are much easier to light than vast rooms.



How to Get Started

Starting your career in the cavern zone will allow you to learn about your camera while shooting some of the prettiest opportunities available in the overhead environment. Get shallow and look at ambient light angles. Use f125 or faster to freeze beams of light.

Supplement the ambient light with a well-balanced and subtle quarter power fill flash. Supplement ambient with a hand-held light that gently fills a diver's mask, illuminating his or her eyes.

Moving Into the Cave

If you get close to your model, you will have a good chance of illuminating his or her face as well as triggering the remote strobe. Getting close to the model is the key to success since larger spaces need considerably more light.

Slave strobes are triggered by a primary strobe that is mounted to the camera. Slave sensors are either built into the strobe or are connected with a cable from the main strobe body. The strobe can be mounted on a diver's body and directed to flash behind him or her, illuminating the cave. In this case, a remote sensor pointing towards the camera will be needed for effective triggering. Slave strobes can also be placed in the cave behind formations or hung from the ceiling to cast a light from above.





Above: Waiting patiently for divers to swim over the opening of Little Devil Spring, I poised myself looking towards the surface. By using a rebreather, all bubbles were eliminated from the shot. I waited almost 20 minutes completely motionless, finger on the trigger, with only my right hand steadying my posture. Unfortunately, I still missed the shot, because a weary Water Moccasin bit my moving pinky finger in an attempt to rush me out of his den. It worked.

Backlighting with Slave Strobes

Backlighting can be achieved when the diver in the rear hides the strobe from the camera, but points it towards the lens. Hiding the strobe directly behind the model will surround him or her with a glowing backlight. The sensor eye will need to be seen by the camera strobe in order to fire.

More advanced techniques require additional strobes and more complex dive planning, so start in the intimate spaces that tell the real story of cave diving. Getting the shot takes dedication to diving practices, a great assistant, and a lot of professional equipment. It is a very rewarding activity; but, above all else, it is a task load that can create serious safety issues. Enjoy the development and learning process, since there will be many times when you come home with only the memories!

Jill Heinerth offers specialized photography instruction and photo apprenticeships to photographers and models. See her website at

www.IntoThePlanet.com .



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COELACANTH FEVER

By Jitka Hyniova

IN SEARCH OF THE LIVING FOSSIL

The living fossil fish Coelacanth (*Latimeria chalumnae*) is regarded as an extremely rare species. Only fossil records of Coelacanths were known until the famous discovery in 1938 in South Africa. The second fish was caught 53 years later in Mozambique, but thereafter more specimens have been caught off the coasts of the Comoros, Madagascar, Kenya, and recently Tanzania.

Underwater studies off the coast of South Africa, using submersible vessels, revealed that Coelacanths inhabit submarine caves and canyons found in slopes and walls in waters 100-700 meters deep. The adult Coelacanths can grow to about 1.5 meter long. They appear to be active at night, spending their day hovering near the ocean bottom. Scientists believe that Coelacanths can live as long as 80 years.

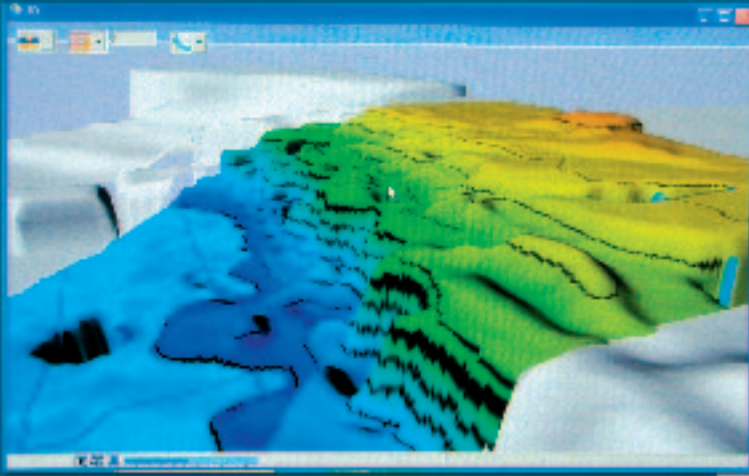
My obsession with this bizarre lobefin fish started in the early 1980s while reading an article about its fascinating first discovery, and the decades-long quest to find more specimens. Little did I know that after more than 20 years, I would actually get to see the ancient fish as a member of a deep diving expedition off the coast of Tanzania.

In May 2006, after almost a year of preparations, hours spent library and Internet crawling, I was finally seated on a transatlantic flight heading to Dar es Salaam, Tanzania. I didn't mind checking in with excessive baggage since my bulging expedition boxes contained my Megalodon closed circuit rebreather, dry suit, powerful underwater lights, reels and lift bags, and everything one can need on a far away deep diving expedition. My luggage also contained housing for my video camera, a still camera, and the few pieces of clothing needed to maintain decency in the foreign and fairly conservative land.

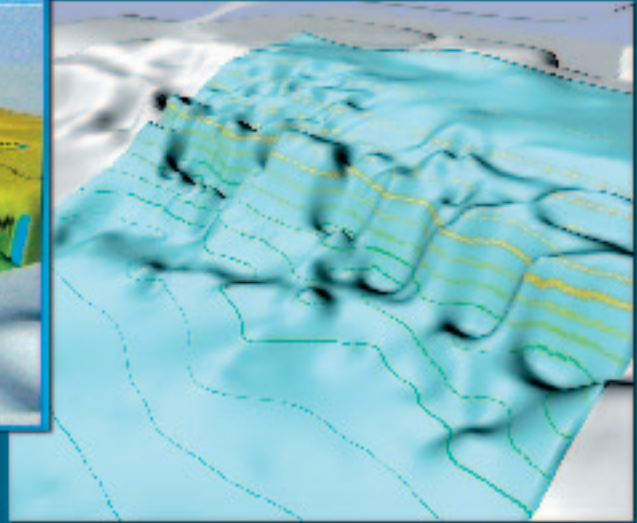
Above: The Kairos ship was originally built in Germany to spy on Russia during the Cold War. Photo: The Kairos Company.

Right: This Coelacanth (*Latimeria chalumnae*) was caught in the early spring 2006 off Tanzanian coast. Photo: Jitka Hyniova.





Above: Coelacanth habitat near Kigombe as captured by the Kairos sonar. The Indian Ocean bottom in that area falls rapidly from 90m (297ft) to 150m+ (500ft+). Photo: Jitka Hyniova.



Many hours into the flight, I dialed the info on that familiar little built-in screen map in the back of the seat in front of me, and leaned to the window just in time to see a foggy sunrise over Mount Kilimanjaro! I was officially in Africa!

With the numerous small islands and shallow reefs stretching as far I could see from 10 km high in the air over the coastline of Kenya and Tanzania, thoughts of unexplored wrecks crossed my mind. But my goal this time would be looking for something totally different – the Coelacanth fish!

Shortly after landing in Dar es Salaam, I passed the strict looking but very welcoming Tanzanian custom and immigration officers, and was greeted on the sidewalk by Monsieur Thierry Thevenet, the owner of The Kairos Company, and his land-based Tanzanian associate and driver, Pierre.

Right: Expedition divers from left to right: author Jitka Hyniova, Dr. Andre Grousset and TD Van Niekerk. Photo: Catherine Dulin.

The Ship

Out of Dar es Salaam, The Kairos Company operates their 36-meter (119 foot) state-of-the-art ship, which is not only comfortable but is literally a floating oceanographic laboratory and ideal diving platform. The *Kairos* was originally built in Germany to spy on Russia during the Cold War.

One of the newest and most impressive tools aboard *Kairos*, and one that every deep diver will appreciate, is the two-man hyperbaric chamber on deck. Along with Thierry, I had the privilege of helping to install and test the newly acquired chamber, under the supervision of French hyperbaric specialist and another member of our expedition – Dr. Andre Grousset.





Below: Tanzanian waters are tropical fish paradise and Lionfish is Indian Ocean's native. Photo: Matt Matthes.

Right Page Top: TD Van Niekerk after surfacing from video dive where he filmed the deep canyons assumed to be Coelacanth habitat. Photo: Matt Matthes.

Right Page Middle: The Kairos ship is equipped with two men hyperbaric chamber and our team ran drills to test it's operation. Photo: Jitka Hyniova.

Right Page Bottom: Dr. Andre Grousset is getting ready to dive and hopefully see the Coelacanth fish in it's habitat. Photo: Catherine Dulin.



The *Kairos* is equipped with two support chase boats, three cranes, compressor, Nitrox filtration system, scooters, and multiple Dolphin SCRs. For those hard to impress, they even have microlite aircraft that can be used for spotting whales, sharks, and for breathtaking aerial photography! Since our goal was to dive deep, the *Kairos* provided helium, oxygen, and scrubber material for our rebreathers.

The visiting photographers and filmmakers will appreciate the fully equipped editing suite, including a large plasma monitor for immediate viewing of their daily work. The *Kairos* holds 60 tons of fresh water and 40 tons of fuel. The comfort of the passengers is complemented by genuine French cuisine; the ship's French captain personally supervises the menu! Speak of the five star meal presentation!!! The *Kairos* is usually hired by various scientific and exploration projects with some spaces open for divers interested in serious expeditions. Also, several renowned underwater photographers come back repeatedly to work in the beautiful and unique waters of the Tanzanian coastline.

The Search

Our expedition wouldn't have been possible without Tanzanian scientific support, and we were lucky to be joined by Mr. Shelard Mukama from the University of Tanzania in Dar es Salaam. Mr. Mukama works directly on Coelacanth research and conservation, and was crucial for his firsthand knowledge of recent Coelacanth sightings and as a contact with local authorities and fishermen. Based on Mr. Mukama's information, we started by visiting the small fishing village of Kigombe, a day of sailing north of Dar es Salaam. We paid an official visit to the local fisheries office based in a small hut. We were greeted very warmly, and after signing our names in the guest book, our small delegation of divers was seated in hardwood straight-backed chairs facing the committee of Kigombe fishermen.

With Mr. Mukama acting as translator, we were able to borrow one fisherman for a day and take him aboard *Kairos*. Contrary to his slim and rather short physique, Said had recently caught and brought to the surface a 60kg (132 lb) Coelacanth fish — more than he weighs himself! The Coelacanth is really an unwanted bycatch — the fish is supposedly oily and of little market value. Kigombe fishermen use very narrow two-man dugout canoes, with weighted lines to catch grouper, snapper, tuna, sharks, etc. They bring nothing in their canoes but their fishing license hanging in a small plastic bag on their sun-bleached hats.

While the dive team was visiting the village, the *Kairos* crew was busy sailing along the coast and surveying the ocean bottom with the ship's sonar looking for deep walls with canyons and caves that Coelacanths use as their habitat. Despite having virtually no modern navigation systems (forget GPS), the Kigombe fishermen know their way along the coast. Said's location of ideal Coelacanth habitat was indeed confirmed by the ship's sonar, and also by water temperature sensors. Coelacanths prefer cooler deep water to very warm shallower water, and our temperature sensors indicated a thermocline at 90 meters.

The Diving

Based on our support system, the divers agreed on the necessity of diving as a four-man team and covering as much ground as possible. The currents in that part of the Indian Ocean are known to be treacherous with multiple changes in directions over depth. We were also well aware of the big sharks known to hang out in these waters — as well as the fact that the nearest medical help is days away. We utilized a chase boat; but with closed circuit rebreathers and no bubbles in sight, the spotter's role becomes difficult. CCR divers on deep two-hour long dives can travel some distance carried by the ocean currents. For safety and comfort during long decompression, we built and used a deco ladder hanging beneath our chase boat and loaded with extra decompression gas. Matt Matthes of ProTec Mexico was brilliant in his function as our Diving Safety Officer. He was able to moderate the often bilingual discussions about gases, decompression, and bailout strategies by divers from three different continents and a variety of technical diving backgrounds.

Our Classic Inspirations and Cave Megalodons performed flawlessly, and we dove on two different Coelacanth locations to 97m (320fsw) and 124m (409fsw), respectively. We did encounter perfect conditions, the currents were mild after all, and the thermocline was exactly where expected at 90m (297fsw). At 18C (70F), the deep-water temperature was ideal for Coelacanth habitat. We captured on HDV camera the deep caves and canyons described in literature as favored by Coelacanths. At 100 meters, we still had enough daylight to observe deep-water gorgonians and huge sponges — but it was not our time to see the Coelacanth fish yet!

To our great disappointment, and after only two days of deep diving, the hyperbaric chamber's high-pressure feed hose unexpectedly broke while standing by. The consensus on board was not to continue with the deep diving until we could get a replacement.

Nevertheless, we spent the following several days diving shallow but beautiful and absolutely pristine coral reefs around the island of Pemba and near the northern Tanzanian coast. The amount and diversity of marine life was amazing, and the *Kairos* was the only dive boat in the area.



While we anchored in the port of Tanga, some of the divers and crew got to the shore to visit the local Internet café. I didn't want to give up my search for Coelacanth. I talked Mr. Mukama into helping me find what I hoped could fulfill my dream of seeing the ancient fish. The Tanga Coastal Zone Conservation and Development Programme resides in a picturesque historical building on the main street in Tanga just 10 minutes from the port. We were lucky to get there just before the offices closed; after a brief introduction of our team and goals, we were taken to a small back room with a large freezer. And there was the fish. Not one but three Coelacanths ranging from 60 to 120 kilograms, deep-frozen on top of each other. It is not every day that you come face to face with a "dinosaur" dating back 400 million years. As we took pictures of the fish, I felt strangely sad for not being able to see the fish in its natural beauty and alive.

Coelacanths are not targeted by local fishermen; but, when caught as bycatch, they can be used for educational and research purposes. The Tanga Coastal Zone Conservation and Development Programme was established to help reduce some destructive fishing practices and, while working with the local fishermen, to monitor and manage Tanga coastal resources. They are interested in collaborating with research institutions, and getting some of the bycatch Coelacanths into exhibits and museums around the world.

The Kairos Company continues to work together with Tanzanian scientists and fishermen and interested divers from all over the world, and to organize another Coelacanth expedition in the spring of 2007.

The 2006 Coelacanth Expedition team: Thierry Thevenet, Jean Francois Arnefaux, Andre Grousset, Pascal Chauviere, Phung Truong, Catherine Dulin, Magali Assaly (all France), Matt Matthes (Mexico), TD Van Niekerk and Jitka Hyniova (Florida), and Shelard Mukama (Tanzania).

To get to know more about The *Kairos*, its expeditions and programs, and how to participate, visit them at www.thekairoscompany.com



Above: We constructed and used decompression ladder hanging under our chase boat. Photo: Matt Matthes.

Below: The Coelacanth 2006 Expedition multinational team, from left: Pascal Chauviere, Shelard Mukama, Matt Matthes, Thierry Thevenet, TD Van Niekerk, Jitka Hyniova and Dr. Andre Grousset. Photo: Catherine Dulin.



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photo by William Graham



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THAT IS WHY THEY CALL IT EXPLORATION

ADM Yucatan 2007 Cave Expedition

Text by Jeff Toorish
Photography by Jeff Toorish, Curt Bowen,
Kim Smith, and Rusty Farst



Photo: The dry cavern of Cenote San Luis leads explorer Rusty Farst down through a small underwater side-mount passage, and into a virgin spiral cave passage. Above, cave biologists gather samples of cave-adapted animals for continued research on extreme animals that thrive in harsh conditions.

AND NOT DISCOVERY

ex·plore (verb)

1. to traverse or range over (a region, area, etc.) for the purpose of discovery.
2. to look into closely; scrutinize; examine.

dis·cov·er (verb)

1. to see, get knowledge of, learn of, find, or find out; gain sight or knowledge of (something previously unseen or unknown)
2. to notice or realize

Sometimes on an expedition, there is less *discovery* and more *exploration*, as in we are constantly exploring the remote Yucatan jungle to discover a cenote, well, or cave to explore. That can mean a lot of time spent bouncing around on dirt roads or barely distinguishable paths.

Our first actual day of exploration proves somewhat disappointing. Explorer Rusty Farst drew the best assignment of the day, diving a virgin, corkscrew cave. (see image on the left) This would prove to be one of the two most significant dives of the expedition, both initially explored by Rusty.

The cave is positioned in the far corner of a walk-in cavern. It does not have a name that we can determine. The cavern is fascinating for our team of biologists who contented themselves identifying several small cave shrimp and one very impressive eyeless cave eel.

Rusty accessed the underwater portion of the cave through a relatively narrow horizontal opening in the dry cavern. The cave itself twisted down revealing a central column, but very little in the way of archaeological relics. It was obvious that the cavern and pool of water were popular with local residents, but that the underwater cave itself was unexplored. Rusty saw only a single pot, a large urn that was cracked horizontally across the center but remained otherwise intact. He laid line on his 30-minute dive to a depth of 80 feet. From what he could see, the cave appeared to channel deeper, but as it is the first day and we have a great deal of ground to cover, we decide to leave it for further exploration at some future point.

We return to our home base in Homun where we are staying at the main Catholic Church, which we believe is around 400 years old. We spend the evening going over plans for the next day's work. Team leader Curt Bowen has spent many tireless hours poring over previous expeditionary data as well as satellite information. He has discovered several ranches and haciendas to the east of a town called Soltuta.

The Dogs Bark and the Rain Falls

We spent our first night in Homun serenaded by howling dogs. The fact is, dogs in Yucatan are not pets. There is no one to shush them, no animal control officer to phone; these feral dogs own the night, at least aurally. We sleep in hammocks inside the church. Some of us sling our hanging beds in rooms off the courtyard, others hang the hammocks in the roofed off area that is still essentially outside.



Axis Mundi

Caves played an important and spiritual role in Mayan culture according to team member and archaeologist Norma Garcia. She explains, "Axis Mundi translates roughly to 'center of the world.' The Mayans viewed caves in this way. "There were many rituals practiced in caves. For example, the men went into the cave, along with boys. The boys made sounds like frogs to ask the gods for water," Norma explains.

In early afternoon, we find a large sinkhole. I am the designated explorer, donning my gear I carefully make my way down toward the water, taking care not to slip on loose rocks or the muddy path. There is a somewhat harrowing traverse over a makeshift railing someone installed a long time ago. The rickety trees used as uprights for the railing have roots exposed on the sheer face of a mud cliff. This may be the most dangerous part of this dive, just getting to the water without tumbling 50 feet into a jungle well.

A final safety check at the water's edge, and I step into the dark water and begin my descent. The water is the color of coffee with a splash of cream. The muck continued to 45 feet. When it did clear up, there was still no visibility because of the dark water above. I went from coffee with cream to coffee black. But visibility and darkness were not really the problem, not by a long shot. After all, caves are always dark. The problem was that I was tangled in vines and the branches of fallen trees. The slightest touch and they release decades worth of fine particulate matter, quickly silting up the entire area and dramatically reducing the ability of my light to pierce the darkness. I quickly realize there is no chance of investigating this cenote.

We dubbed this hole "Jeff's Dive of Black Death," and headed back up the sheer cliffs to the waiting van.

Sometimes exploration and discovery can be exciting.

The most memorable event of the day was a cenote down a 70-foot cliff (see illustration on right page). It was Matt's turn to make the initial exploration. This particular sinkhole would require rigging climbing gear, and lowering Matt straight down in the water.

After rigging and safety instructions from Curt, Matt was lowered into the hole. Although relatively deep and pretty, it did not show much promise; but, with only a quick recon dive, one can easily miss something. So we marked this site for future exploration needed.

The Myth of the Horse

The morning is misty; we rise early and get underway quickly today. Curt's new strategy is to seek wells on haciendas and ranches. We have used various methods to find cenotes, including guides, satellite imagery, and ground level observation. Once we spot a likely candidate for exploration, the Quick Response Team jumps into action. The "team" is made up mostly of Rob Stewart who dashes through whatever jungle danger is present to drop a weighted line into a well, sometimes with a flashlight attached, to make the initial reconnaissance of the site. Rob, an open water diver, also swam some pools without scuba gear before Curt decided whether we would take the added time to send in an explorer.

In one very old town, we find a windmill high over a well on a farm. The farmer grants us permission to explore his well. Remarkably, most farmers and ranchers have never ventured into their wells, and they are often curious about what is inside.





Top Left: A small opening in the jungle leads the team of explorers to a large underground room containing a shallow water pool.

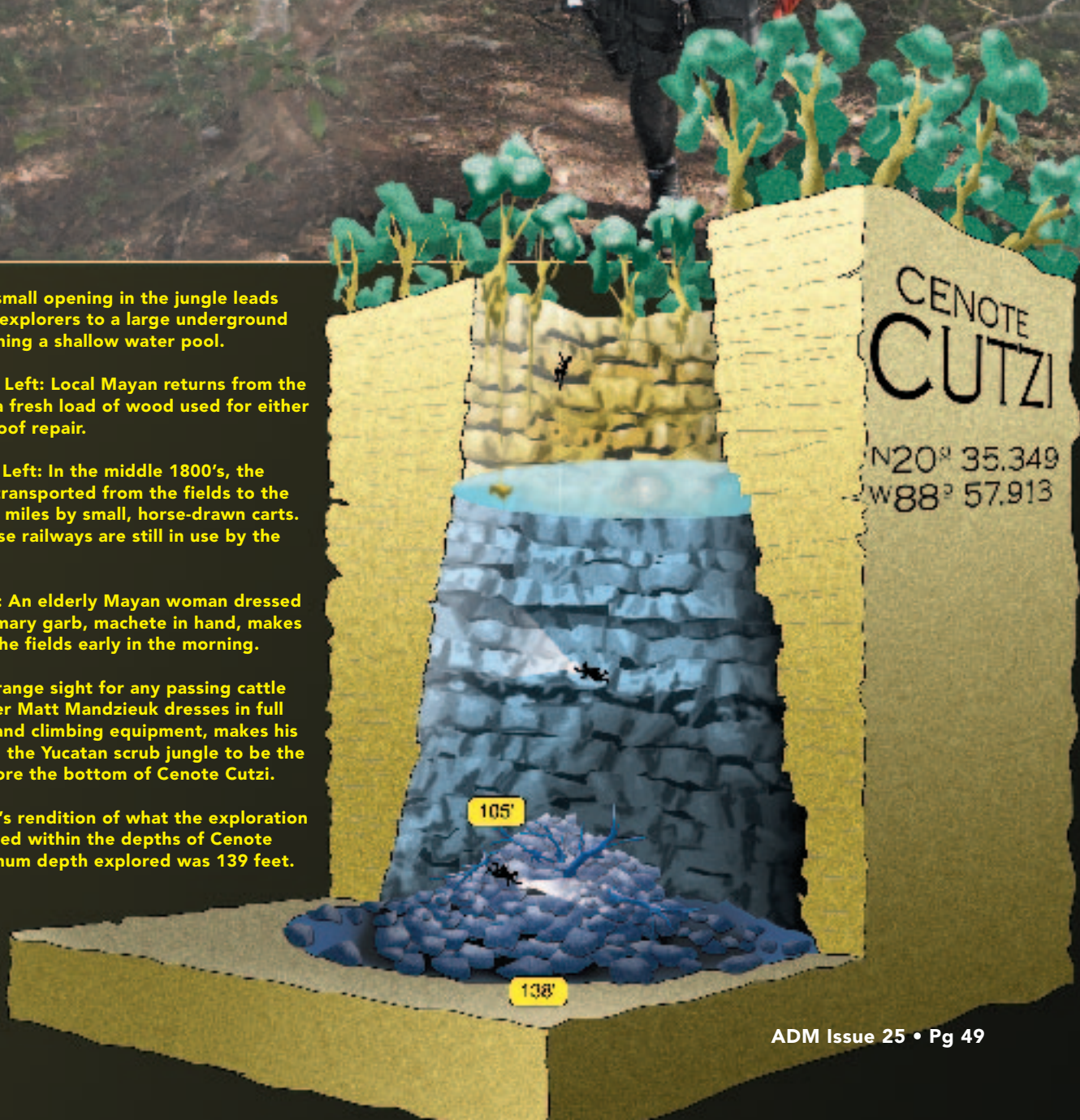
2nd Down on Left: Local Mayan returns from the jungle with a fresh load of wood used for either cooking or roof repair.

3rd Down on Left: In the middle 1800's, the crops were transported from the fields to the hacienda for miles by small, horse-drawn carts. Some of these railways are still in use by the local Maya.

Bottom Left: An elderly Mayan woman dressed in the customary garb, machete in hand, makes her way to the fields early in the morning.

Above: A strange sight for any passing cattle rancher, diver Matt Mandzieuk dresses in full side-mount and climbing equipment, makes his way through the Yucatan scrub jungle to be the first to explore the bottom of Cenote Cutzi.

Right: Artist's rendition of what the exploration team observed within the depths of Cenote Cutzi. Maximum depth explored was 139 feet.





Above: Curt Bowen controls the ropes as explorer Jeff Toorish is lowered into Cenote Lazaro Carderas in order to photograph some discovered human remains.

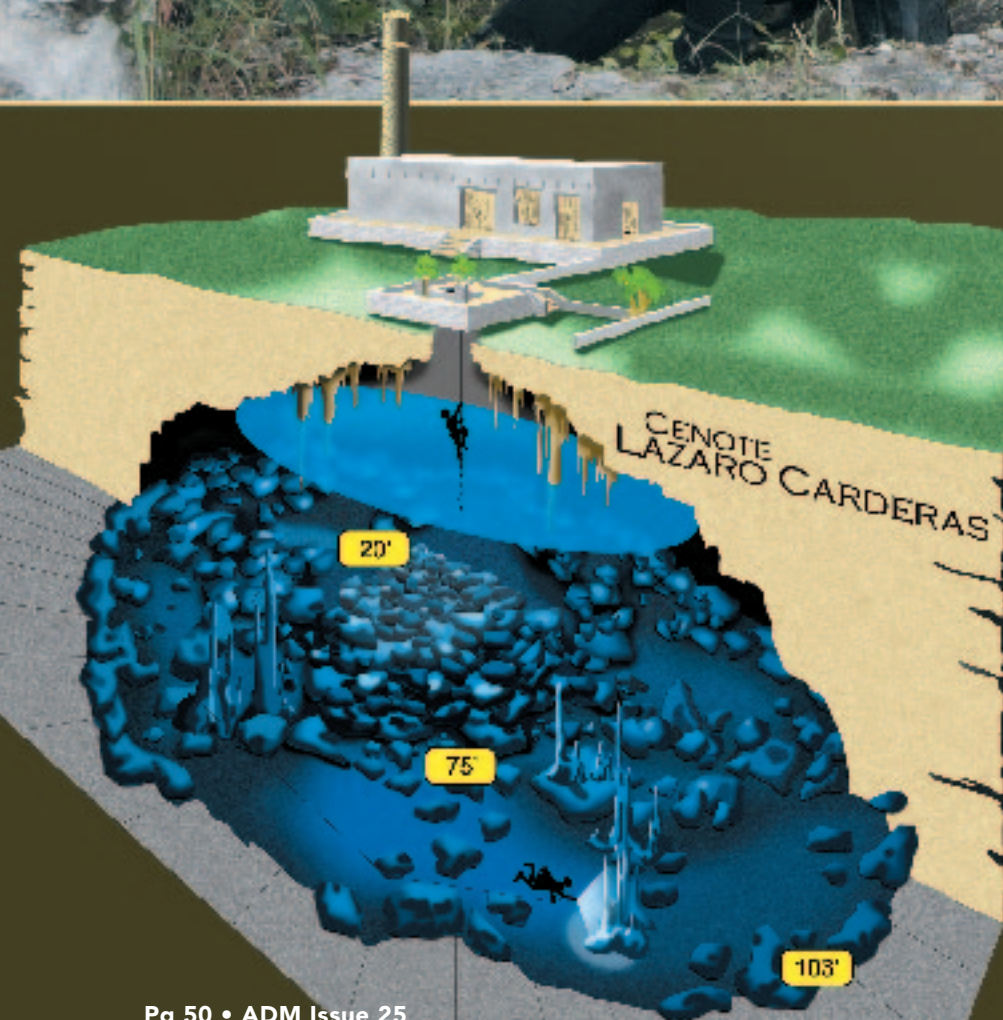
Left: Artist's rendition of Cenote Lazaro Carderas

Top Right: Excited by the possibility of discovery, diver Kim Smith prepares to be lowered 50 feet into the underground chamber.

2nd Down on Right: Many of the local Mayans plant crops and raise farm animals for food. One of their main sources of food is the common turkey.

3rd Down on Right: Explorer Rusty Farst humps a scuba cylinder on his shoulder. Exploration in these remote sections of the Yucatan requires the use of side-mounted cylinders.

Bottom Right: Inhabited by the Spanish in the 1500's, many old Catholic churches still contain the original bells brought to the Yucatan from Spain.



This farmer tells us a story about a beautiful horse that fell into the well. The ghost of that horse is still in the depths, and tries to lure passers-by to the well's edge. Once there, they will succumb to the siren song of the horse, causing them to fall into the well to their death. I'll soon find out whether this myth is true because I will be exploring this well.

After gearing up and rigging for climbing, the team slowly lowered me down a 60-foot vertical tunnel. About 35 feet down, I had to shimmy past a tight obstruction before continuing on the rope descent. Dropping free of the well shaft, I found myself dangling in a large room with large stalagmites, stalactites, and columns. There was a debris pile in the center of the room. A few minutes later, the team lowered a single tank. I clipped it on and explored a pumpkin-shaped cave that pinched off at about 55 feet at its deepest.

I lock onto the rope and holler "on rope," to the team above. Just as I feel the first tug of the line, I also hear what sounds like muted braying, a serenade of sorts, the myth of the horse? Stranger things have happened. It is becoming stronger now, more pronounced....

Just in time, I climb out of the well, Rusty appears with a video camera for my report. I remind Rusty about the farmer's warning, and tell him about the mysterious braying I heard while dangling on the rope. Could there be truth in the farmer's warning?

Diving the Distillery

In Lazaro Carderas, a hacienda town, we have discovered what appears to be one of the most promising wells of the trip. It is located on the grounds of an abandoned distillery that apparently made different types of liquor, including tequila. You can imagine the jokes flying about what might be down that well (see illustration on the left page).

Kim Smith will snorkel the well while explorer Matt Mandzieuk will make the initial dive. Matt discovers a large cave with human and animal remains at a depth of about 60 feet. The artifacts are mostly buried, and we strictly enforce the no-touch rule, but enough of the remains are visible to photograph. I gear up and head down the well, followed shortly by a tank and my underwater camera gear.

For this expedition, I am shooting with a Canon 20d camera with an Ikelite housing and Ikelite DS125 strobes attached with UltraLight arms. Behind the 8-inch dome port is a Canon 17-35 mm wide-angle zoom which gives me some flexibility.

The topside crew carefully lowers the housed camera down the 50-foot well. Matt deftly navigates us back to the artifacts. This is not the underwater equivalent of King Tut's tomb, but considering the slim pickings on this expedition, we are grateful to have some news to bring back to the archaeologists.

Later that night Mexican archaeologist Guillermo De Anda Alanis was extremely enthusiastic about our find. Guillermo, or Memo, as he prefers, had brought a couple of students along, and spent most days working alongside Tom Iliffe, Tamara Thompson, Ethan Brodsky, Brett Gonzalez, and Lara Hinderstein who made up our team of biologists. Their specific objective is the discovery of previously unknown species of cave animals. To date, Tom has identified more than 300 new species.





Left: Diver Robert Stewart assists with moving tanks down a rope for explorer Rusty Farst.

Below Left: Artistic rendition of Cenote Sabachen. Explorer Rusty Farst reports that the cave continues with a 100-foot wide passage at a depth of 140 feet. Continued exploration required!

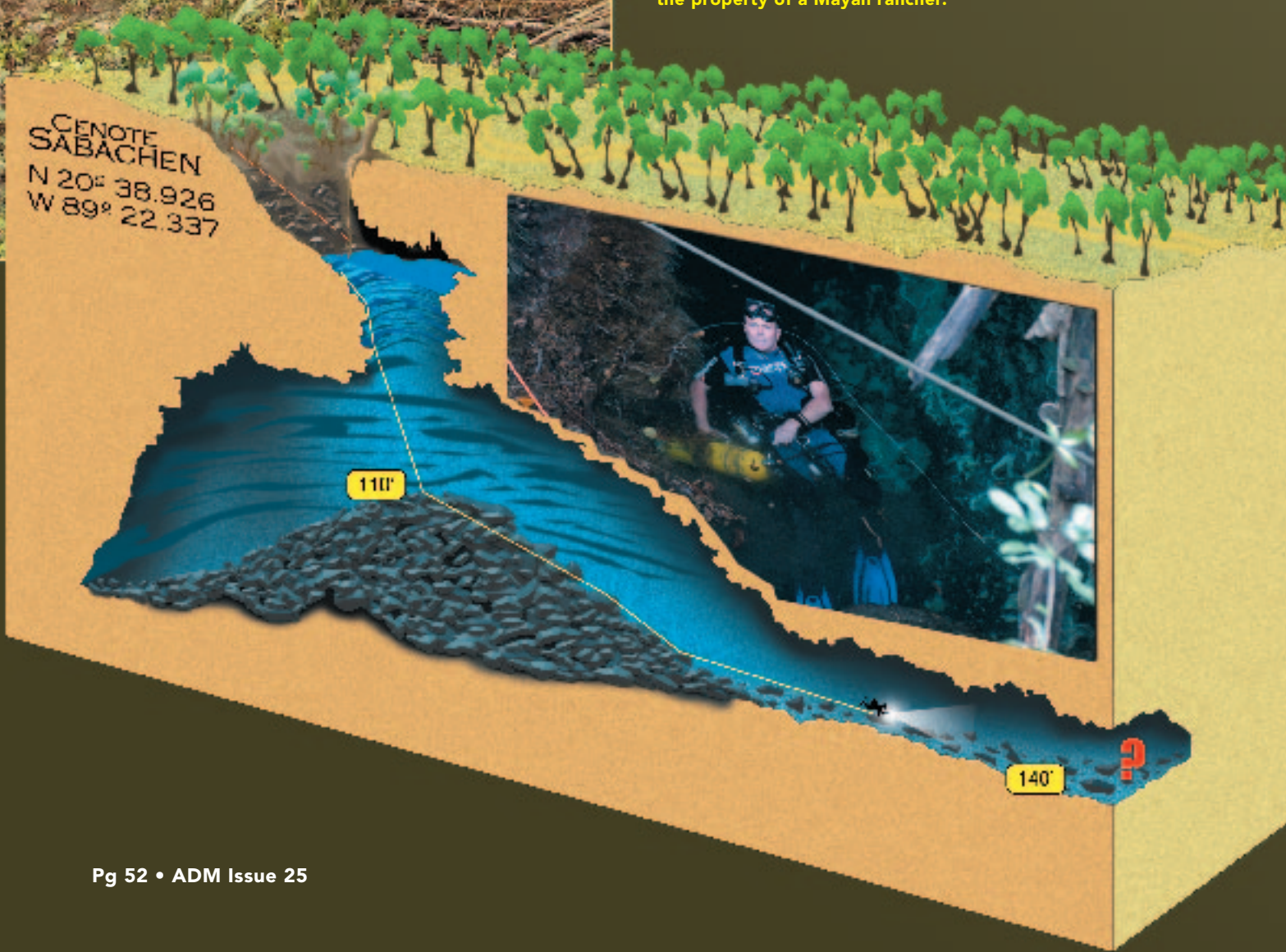
Top Right: ADM team member Norma Garcia prepares for another exploration dive into a virgin cenote.

2nd Down on Right: One of the many creatures you will discover roaming the Yucatan jungle floor.

3rd Down on Right: Explorer Matt Mandzieuk returns from another successful cenote exploration.

4th Down on Right: Photojournalist Jeff Toorish returns from the cenote haunted by the White Horse.

Bottom Right: A colorful Peacock roams the property of a Mayan rancher.



Barbed Wire and Bees

The first thing the team does when approaching a cenote, sinkhole, or well is to *listen*; specifically, listen for the distinctive buzzing of bees. More specifically, Africanized killer bees. The local Mayan residents call them *abejas*, pronounced bay'-haas. When they are present, the guides quietly say *abejas*, and everyone begins to leave quickly, making as little noise as possible. These bees are extremely aggressive, possess hunter instincts, and will swarm and attack in seconds. They post sentries at intervals from their hive and have elaborate communications apparatus.

At a hacienda in Lepam, we discovered several wells. Two were just holes in the ground, cordoned off with barbed wire fencing. We learned a young boy had fallen into one of the wells and drowned. His body had been recovered, but the residents had insisted that the well openings be blocked.

The caretaker of the abandoned hacienda grounds gave us permission to dive the two wells behind the barbed wire curtain. Norma, already geared up, was eager to climb down. The rigging operation took a bit of doing, and we managed to divert some of the barbed wire to facilitate Norma getting to the opening. She locked onto the rope and began her descent into a very dark well. Without warning, *abejas* swarmed. With her accent we thought we heard her yelling "slow," but in reality she was yelling "**GO!**" as in **GO!GO!GO!**

The swarm was stinging her, and Curt quickly dropped her the remaining distance to the water. His experience on rope allowed him to get her past the danger but still down safely. Normally, the bees will not follow someone into a well, and mercifully that was the case here. The well itself proved not worth the pain, and now we had the problem of getting her up and out, past a hive of angry, defensive bees.

The trick is to subdue them without incurring their wrath. After some consultation between the guides, a local man made an impromptu torch, set it alight and then used the smoke to neutralize the bees. It is an old method but effective. Of course, someone has to actually get up close and personal with the hive to smoke out the bees. In short order, Norma was out of the well, and we were packing up before the *abejas* realized we were gone.

Sometimes exploration and discovery can be painful.

The Diving Gods

We traveled about an hour to a town called Sivachee. Rusty is up for the first dive of the day, which requires special rigging to move the tanks into position. We use standard aluminum 80s, but the configuration of this cavern means rigging a nearly horizontal zip line to slide the tanks to the water (see illustration to the left).

Rusty Farst must have paid some special homage to the diving gods, because once again he is diving into a very promising cave. Rusty reported that this cave is an offset sink and probably continues much deeper (see illustration). This sink is definitely worth further exploration, and will prove to be one of the most significant discoveries of the expedition, more so than the cave at the distillery.

I have to find out which gods Rusty prayed to.





Not All Exploration Leads To Discovery

Several team members are sick, reducing our numbers and ability to explore. We realize this expedition is drawing to a close, and we have not yet discovered a truly stand-out cave. Nevertheless, the Yucatan 2007 Expedition was memorable for several reasons. We have found a few caves with some potential, and subsequent trips may well reveal their secrets. We can mark off this area as being explored to a reasonable extent. And perhaps most fulfilling, we see and photograph a part of Mexico that is not in the tourist guides, a mystery to most North Americans.

As with all Advanced Diver Magazine expeditions, one of our goals is to document the discoveries as well as the natural and man-made environments where they are located by recording data sheets, video, and thousands of still images.

For additional information and images from the Yucatan 2007 and previous Mexico expeditions visit ADM On-Line at www.AdvancedDiverMagazine.com and click on the Mayan Jaguar logo.



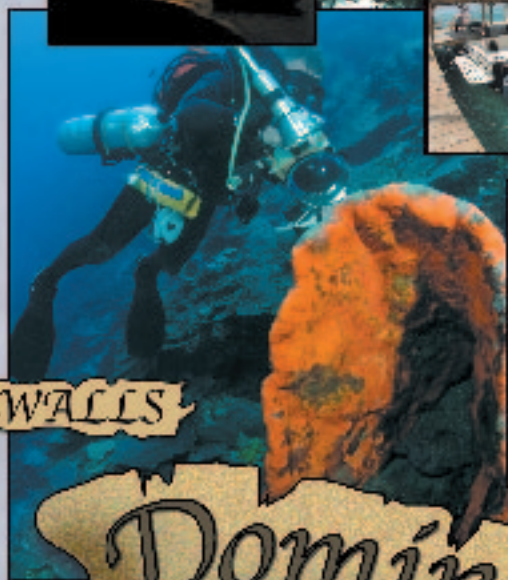
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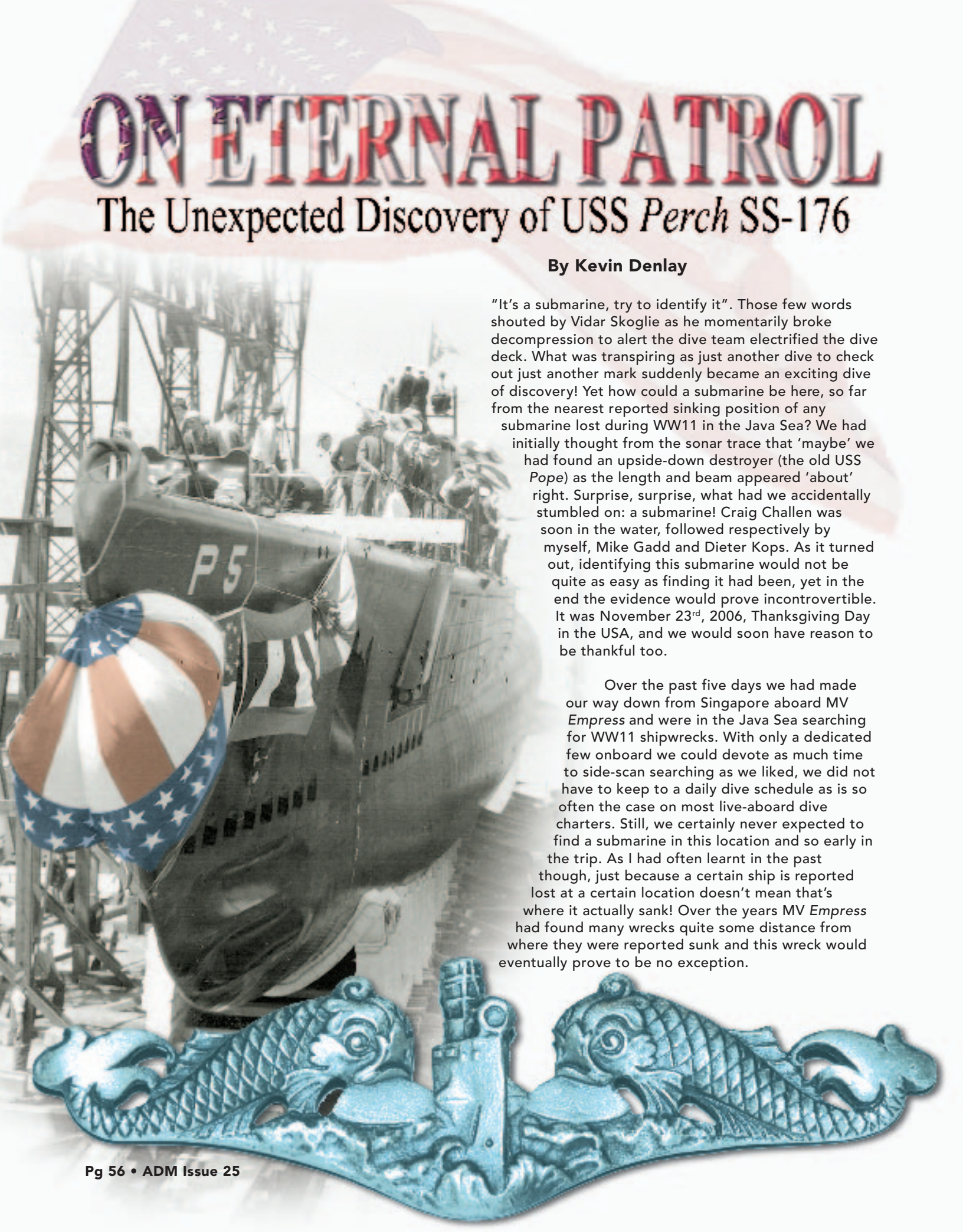
ON ETERNAL PATROL

The Unexpected Discovery of USS *Perch* SS-176

By Kevin Denlay

"It's a submarine, try to identify it". Those few words shouted by Vidar Skoglie as he momentarily broke decompression to alert the dive team electrified the dive deck. What was transpiring as just another dive to check out just another mark suddenly became an exciting dive of discovery! Yet how could a submarine be here, so far from the nearest reported sinking position of any submarine lost during WW11 in the Java Sea? We had initially thought from the sonar trace that 'maybe' we had found an upside-down destroyer (the old USS *Pope*) as the length and beam appeared 'about' right. Surprise, surprise, what had we accidentally stumbled on: a submarine! Craig Challen was soon in the water, followed respectively by myself, Mike Gadd and Dieter Kops. As it turned out, identifying this submarine would not be quite as easy as finding it had been, yet in the end the evidence would prove incontrovertible. It was November 23rd, 2006, Thanksgiving Day in the USA, and we would soon have reason to be thankful too.

Over the past five days we had made our way down from Singapore aboard MV *Empress* and were in the Java Sea searching for WW11 shipwrecks. With only a dedicated few onboard we could devote as much time to side-scan searching as we liked, we did not have to keep to a daily dive schedule as is so often the case on most live-aboard dive charters. Still, we certainly never expected to find a submarine in this location and so early in the trip. As I had often learnt in the past though, just because a certain ship is reported lost at a certain location doesn't mean that's where it actually sank! Over the years MV *Empress* had found many wrecks quite some distance from where they were reported sunk and this wreck would eventually prove to be no exception.





Descending down through exceptional visibility and a thick cloud of jellyfish to 100ft/30m, it was disappointing to find that the visibility soon deteriorated below the thermocline - as is often the case on many Java Sea wrecks - until on the bottom at approximately 190ft/58m visibility was only about 16ft/5m or less. Vidar had done exceptionally well on his first dive though, tying the downline to the top of the conning tower, right opposite the periscope shears on a perfectly upright wreck. From here divers could spread out fore and aft to explore and try to find something that would positively identify the wreck. It was a ghostly sight and an eerie feeling, fellow divers appeared as mere fleeting shadows in the low visibility and one could not help but wonder if what we had found was a tomb for the entire crew, a steel sarcophagus, as is the case with most submarines lost in action.

The first few dives proved inconsequential with regards identification though; a main gun aft of the fairwater (conning tower), a Radio Direction Finder antenna on the deck just forward of the fairwater and a flush deck (that is, level) from bow to stern were the predominate features, with lots of abandoned fishing trawler net ubiquitously snagged in several places. Now normally MV *Empress's* library is well stocked with photographic and historical reference material, but all of these books had been removed during a recent overhaul and had inadvertently not been placed back aboard prior to our departure, so we had to find something on the wreck itself for positive identification. From previous Java Sea search expeditions we knew that the nearest geographical position in the historical record for an undiscovered sunken submarine was a German sub (U-183, one of the so-called Monsoon Boats) sunk approximately 90 miles to the east, with a US submarine, USS *Perch*, sunk - seemingly - up to 75 miles to the south.

On the next dive Vidar, *Empress's* redoubtable owner/skipper, used a line to measure the overall length of the submarine while Mike took as many photos as he could from bow to stern in the low visibility conditions.

Vidar's measurement was 297ft (90.5m) and from prior research we knew this was substantially longer than the German submarine, so that ruled her out (U-183 was a Type IXC/40 boat at 252ft/77m overall), leaving it seemed only USS *Perch*. She was 300.6ft/91.5m overall, so allowing for a bend in the line due to the strong current on that dive, this was very close to what Vidar had measured. But what was the American submarine doing so far north when she was thought lost much nearer to the Java coast? The dive team had by now ascertained that the sub was basically intact, that is there was no discernable damage or catastrophic penetration to the pressure hull, and the only hatch found to be open was the one atop the conning tower, so how had she sunk? Unfortunately, although this was early days in the expedition - usually it seems that wrecks are found on the last day or so - our search mission in the Java Sea was for much bigger game than a submarine, so we had to move on. Hence the next couple of days were spent searching for our prime targets, but we were all tormented by not having been able to positively identify the sunken sub. So, of course, we decided to return to the site and try one more time! What else could we do?

Having flooded one of my digital camera strobes on the previous dive after only a few shots, I decided to use video on the next dive and document the wreck from bow to stern for historical reference, in the hope that if we couldn't positively identify it then some historian could. Alighting next to the stern gun I first swam aft, around the net encased stern and then back forward past the conning tower to the bow, videoing as I went. They say silence is golden and I would have to agree!

Above: A prewar photo of USS *Perch* SS-176. Her rear gun and the circular RDF antenna just forward of the conning tower are clearly visible.

Photo US Naval Historical Center

Left Page: USS *Perch* going down the ways on May 9th 1936 at the Electric Boat Company, Groton, Connecticut. Photo Groton Submarine Museum.

Being alone and in complete silence in the gloomy darkness - I was diving a closed circuit rebreather, as were several other members of the dive team – it almost felt as if I were viewing what was in front of me in a detached sense. However, upon reaching the bow the current suddenly picked up and I struggled somewhat to hold the camera steady as I worked my way back along the wreck past the foredeck hatch and the RDF antenna forward of the conning tower. Looking up at the face of the fairwater itself I could see a freshly 'cleaned' area. Swimming up close to it I could hardly believe my eyes.

There in front of me was the builder's plaque! Across the top in bold letters were the words 'USS *Perch*', the second line stating 'submarine' and the following lines revealing details relevant to her launching by the Electric Boat Company of Groton, Connecticut. Unbeknownst to me, whilst I was videoing the rest of the wreck, our intrepid skipper Vidar Skoglie had located and cleaned the plaque for all to see. Positive identification? I would think so! While some wrecks can take years to positively

identify we had been fortunate enough to do so in just several days of diving. With time for just one more dive I again took in my still camera to document the plaque and other pertinent objects, but as luck - or lack-there-of would have it – once more after only a few shots my remaining strobe shorted out and that was the end of my photographic endeavors. As the old adage goes, and proves correct time and time again "If you can't take a joke, don't take up underwater photography". Nevertheless, MV *Empress* had done it again and amended the historical record, adding *Perch* to the hundreds of virgin wrecks she has discovered in the past ten years. A submarine that had been thought lost well to the south of where we had found her was now positively identified and documented. Disappointingly however, although spending another five days specifically side-scanning other areas, the 'bigger game' our expedition originally set out to find when we unexpectedly discovered USS *Perch* remained illusive. Never mind, *Perch* was a welcome consolation.

On return to shore information, images and video regarding the discovery were forwarded to the US Naval Historical Center in Washington, D.C., and the USS Bowfin Submarine Museum at Pearl Harbor, Hawaii. (See more images at www.oneternalpatrol.com) As it transpired USS *Perch* was only the second US submarine lost to surface action during WW11 (three others having been lost up to that date due to other circumstances)

and although her crew safely abandoned ship they were all taken prisoner by the Japanese and sent to their brutal Prisoner Of War camps. When eighty five year old *Perch* survivor Robert Lents was contacted in his Arkansas home, he expressed great interest in the discovery and was looking forward to seeing what his boat looked like after all these years. "There are only five of us survivors left now." he said, and then added, "I left \$35 in my locker on the boat. It's probably still there."

The last fateful days of USS *Perch* SS-176

Launched May 9th 1936 by the Electric Boat Company of Groton, Connecticut, USS *Perch* was one of a new breed of American submarines, the precursor to the 'fleet' boat of WW11. She had many modifications over the old S Class subs, or 'Pig boats' as they were affectionately known, being the first submarine to incorporate an early form of air conditioning, a big plus given that many of the boats would soon be operating in

Left: Looking like he could be going for a moonwalk, with full face mask and a 'Boris' CCR on his back, Mike Gadd prepares for another dive on USS *Perch*. Photo Kevin Denlay





the tropics. When war with the Japanese commenced in December 1941 USS *Perch* was under the command of Lieutenant Commander David Hurt and operating as part of the US Asiatic Fleet based out of Manila, the capital of the Philippines. After her first war patrol, with one ship sunk to her credit, and the subsequent loss of Manila to the Japanese, *Perch* was directed to Darwin - Australia - for repairs. She left there on her second, and as it turned out last war patrol in early February 1942. Towards the end of February, while patrolling in the eastern Dutch East Indies (Indonesia) she was directed to immediately leave her patrol area and attack an unopposed Japanese invasion force then approaching the coast of Java, north west of Surabaya. At the time *Perch* was one of less than a handful of allied vessels - all submarines - remaining in the entire Java Sea, as all allied surface forces had been thoroughly decimated in several naval engagements over the last few days of February and the morning of March 1st.

Maneuvering to attack this invasion force on the night of March 1st, *Perch* was detected by two Japanese destroyers - *Amatsukaze* and *Hatsukaze* - and subsequently subjected to a series of depth charge attacks. Attempting to escape by diving deeper, disaster nearly struck as *Perch* grounded on the bottom due to faulty navigational charts! However, after some time and with the area smelling heavily of fuel oil, the destroyer's retired thinking they had sunk the sub. *Perch* however, although badly shaken, had survived and surfaced in the early hours of March 2nd hoping to continue her convoy attack. Suddenly another Japanese destroyer, *Ushio*, appeared and forced *Perch* to 'crash dive'! This opponent proved tenacious and delivered

what would prove to be a devastating series of depth charge attacks, repeated again and again over several hours while *Perch* once more lay immobile on the bottom. Fortunately yet again the tell-tale smell of escaping fuel oil eventually deceived the Japanese into thinking they had sunk the sub and the destroyer left the area sometime after dawn.

However *Perch* was not finished, but now gravely wounded, and this time, no matter what the crew tried, remained stuck fast on the bottom for the rest of the day. Using this time to affect what repairs they could whilst submerged, the crew eventually managed to surface the sub after dark that night. Damage was severe; her deck gun was jammed and inoperable, several torpedoes had made 'hot runs' and were jammed in the tubes, studs holding down one of the main engines had snapped, many batteries had shorted, the steering gear was badly damaged and rudder stuck fast, ballast tanks were leaking air, oil was profusely leaking into the water column and much of her pressure hull was dimpled in from the near misses of the numerous depth charge attacks. Even toilet bowls had been completely shattered! Worst of all two of her main hatches were buckled beyond repair and would not reseal properly and her maximum surface speed would prove to be only five knots.

Above Left: Vidar Skoglie, wreck finder extraordinaire, steps in with the downline for the very first visit to USS *Perch* in over sixty four years! Photo Kevin Denlay

Above Right: A close up of the builder's plaque clearly shows the name USS *Perch*. Photo Kevin Denlay

Lt Cmdr Hurt decided that his only option now was to exit the area and put as much distance between *Perch* and the Japanese as possible, all the while attempting running repairs while surfaced. Sometime before dawn on March 3rd the crew attempted a trim dive that almost proved fatal. Water quickly flooded the sub through the warped hatches and by the time the diving officer had regained control and surfaced the boat water in the engine room bilges was up to the generators. After eventually 'stabilizing' on the surface it was found that only the front half of the sub could be exposed above the waves while the stern remained well underwater, and *Perch* could now only struggle forward like a wounded whale. As the crew tried desperately to rectify the damage, if this wasn't enough to contend with, *Ushio* again suddenly materialized out of the darkness, accompanied this time by another destroyer, *Sazanami*, and started shelling *Perch*.

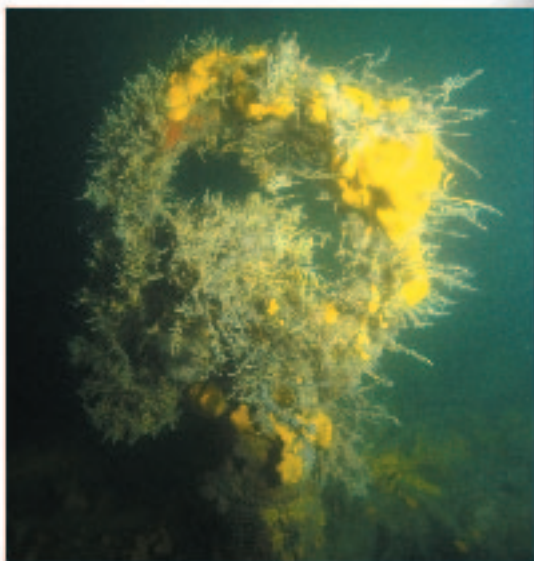
With a crippled boat and no prospect for retaliation and realizing that discretion was the better part of valor with regards saving his crew, Lt Cmdr Hurt ordered "Abandon ship, scuttle the boat." Fortunately all the crew managed to safely abandon ship and all were picked up by the circling Japanese destroyers. However six men were later to die in the merciless Japanese POW Camps, while Cmdr Hurt died tragically in a hunting accident only a couple of months after being repatriated to the USA at the end of the war. *Perch* of course slowly descended, unmanned, one last time beneath the waves of the Java Sea, where we found her proudly sitting upright some sixty four years later. One of fifty two US submarines lost during WW11, she remains forever 'on eternal patrol'.

www.sschallengecoins.com

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The author (altdive@ozemail.com.au) is a regular visitor to the Java and South China Sea wrecks aboard MV Empress (vidar@octa4.net.au) and when using Singapore as his stepping off point travels there on Singapore Airlines. (www.singaporair.com)



Above: Explorer Mike Gadd in full flight with his Ouroboros CCR.
Photo Kevin Denlay

Left: The Radio Direction Finder antenna on the foredeck of USS *Perch* is now encrusted with soft coral.
Photo Kevin Denlay





TOBAGO

An Endless Sea of Color and Culture

By ADM Staff Photojournalist Tom Isgar

If sleeping in a room on a tranquil beach, having two-minute walks from breakfast to the dive boat, and taking five-minute boat rides to the dive site appeal to you, then Blue Waters Inn and AquaMarine Dive on Tobago should be your next trip.

Brief History of Tobago

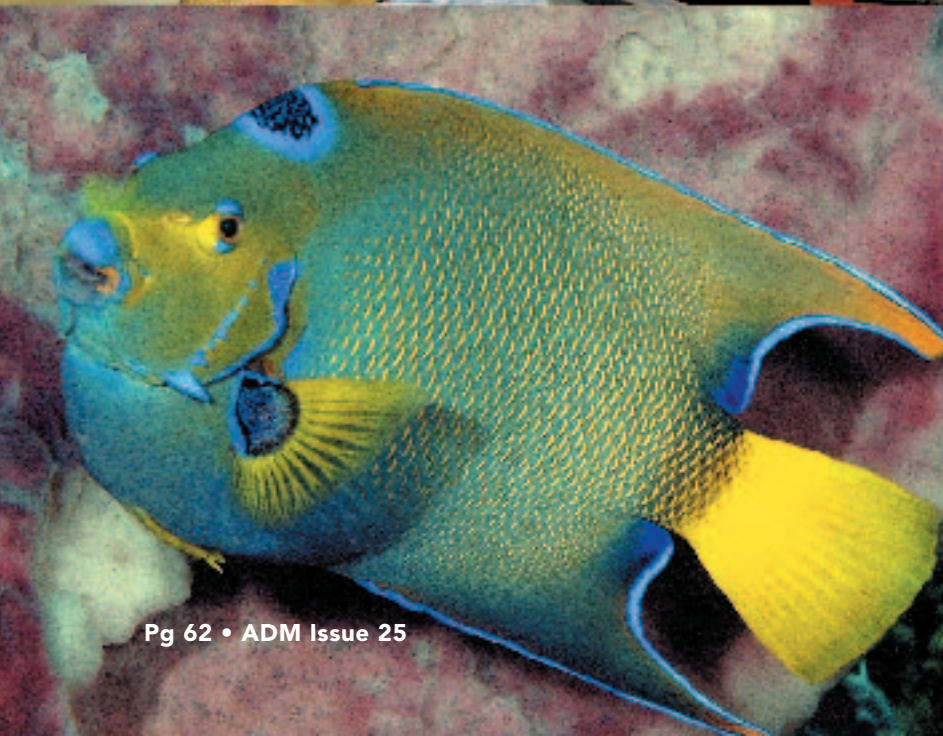
Tobago was settled over 2,500 years ago by Amerindians from South America. Columbus stopped in on his third voyage in 1498. This small Caribbean island was fought over by the Dutch, Spanish, English, French, and Latvians until the English won and decreed it a Crown Colony in 1814. In 1962, both Trinidad and Tobago gained independence, and became the Republic of Trinidad and Tobago in 1976. There are currently thirty-six governmental representatives; two represent Tobago.

Trinidad and Tobago

Trinidad-Tobago is one country comprised of two separate islands. T&T, as the locals call it, is the most southern of the Caribbean islands, just north of Venezuela. Tobago is 20 miles from Trinidad.

Trinidad is a successful Caribbean country with manufacturing, agriculture, oil processing, and modern amenities along with traffic jams. Its economy does not revolve around tourism. It is a major transportation hub for the southern Caribbean, so getting there is easy. Several major airlines provide regular service. Delta Air Lines has a new non-stop flight from Atlanta to Port-of-Spain, Trinidad. Tobago is two hours from Port-of-Spain by ferry, or fifteen minutes by air travel.

Tobago, on the other hand, is a real Caribbean hide-away. Several Caribbean islands advertise themselves as being like the old Caribbean – implying deserted beaches, clean water, and silence. Tobago's Speyside area delivers it. Tobago is 26 miles long and 7 wide. The island is heavily wooded, with steep mountains and winding roads. While



there is tourist development and some diving near the airport at Crown Point, locals had very little good to say about the condition of those reefs and dive sites. It is best to head for the end of the road at Speyside.

U.S. citizens visiting T&T need only a passport - valid for 3 months longer than your intended stay – plus tickets for return or onward travel. Residents of some EU countries are now required to have a visa for entering the Caribbean. Currency in 2006 was roughly six T&T dollars for one US dollar. English is the official language, although the locals use their own version.

AquaMarine Dive Ltd.

AquaMarine was started 20 years ago by Keith and Alice Darwent. It was the second shop on Tobago, and is a PADI Gold Palm Five Star IDC training center. AquaMarine is also a certified BSAC dive center. When I asked why divers should come to AquaMarine, it was clear that both Keith and Alice thought this was the dumbest question of the day. But they quickly provided answers:

- personal service with a ratio of one guide for every four divers
- 5-minute boat rides to healthy reefs
- rare species unique to Speyside - Giraffe Garden Eels, Black and Yellow Damselfish, and Saddled Parrotfish.
- nice drift dives
- a strong commitment to conservation and maintaining the local reefs:

I would add that the diving at Speyside is some of the nicest I have done in the Caribbean. You can ride the currents all day, but still tuck in and get photos without a struggle. The variety of fish is terrific, and the coral – soft and hard - may be the best in the Caribbean. The Orinoco river flow brought green water, but it cleared the next day.

There is diving available for any level of diver, but Speyside is especially attractive to new divers and divers wanting to just kick back. I saw hardcore divers deciding to skip a dive in order to hang out on their patio by the beach and have an island drink. For the adventure diver there are deep sites, sites with flying currents, and sites with hammerheads.

The REEF (Reef Environmental Education Foundation) database shows that nearly 280 species of fish have been observed in Tobago waters. I photographed several new species as well as photographing a blenny that hadn't been reported in Tobago. I also photographed another blenny that is newly discovered and at this time not named. I saw nurse sharks, hawksbill turtles, lesser electric ray, southern stingrays, and morays on nearly every dive. There are regular sightings of hammerheads at a site called Sisters, and mantas are around in springtime.

AquaMarine has two boats that provided comfortable diving. Gear rinse and storage are available in the shop, making the transition from breakfast to diving very easy. There is plenty of rental gear and a limited amount for purchase.

Some of the sites we dove:

Angle Reef: (10-82 ft) is very close to the dock and a wonderful coral-covered wall ending in sand at about 80 ft. We had great visibility, and I photographed a very cooperative Lesser Electric Ray. Angle Reef is also the shop's favorite night dive.

Black Jack Hole: (20-86 ft) is named for its Black Jacks, yet the number of other fish species is large and populations are abundant. I saw a chestnut moray at 10 ft; however, the sponges were the highlight of this dive.

Book Ends: (23-80 ft) is a dive around and through a pair of rocks with a channel between them. We dove it like two pinnacles. I photographed a barracuda large enough to ride.

Cathedral: (6-66 ft) is a nice site. One of the attractions is a large field of Giraffe Garden Eels. Cathedral is also a site where mantas come in springtime.

Japanese Gardens (10-60 ft) is another beautiful coral and sponge covered site - perfect for all skill levels. Although the current was moving near the surface and I needed to hang on, the crystal clear water provided ideal conditions for seeing and photographing colonies of a newly identified blenny.

We also dove Back Garden, Coral Garden, Innerspace, Runway, Special, and Spiny Colony.



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A hyperbaric chamber is located at Roxborough Medical Clinic, 20 minutes from Speyside and 40 minutes from Scarborough.

Blue Waters Inn

Blue Waters Inn and AquaMarine Dive are on the same property. Blue Waters is not luxurious but is totally appropriate for the "Old Caribbean" flavor mentioned above. The rooms are plain but comfortable, the restaurant's food is good, and the drinks are wonderful. There are also other restaurants within walking distance.

Although all beaches in Tobago are public, the beach at Blue Waters is private since it is at the end of the road. I visited with European guests who were staying for a month. My fear was that if I stayed for more than a week that the place would capture me, and I would never leave! I mentioned hardcore divers skipping dives to hang out, but I didn't mention sampling great rum drinks made with local fruit at 10 a.m. The beach is very enticing as it has shade trees with hammocks when you need to get out of the sun.

Blue Waters attracts bird watchers as well as divers. There are lots of birds on the property, and a short boat ride deposits you on the beach of Little Tobago Island — a world renowned bird sanctuary.

For your decompression day it is a short ride to the Tobago Forest Reserve, the oldest reserve in the Western Hemisphere (1776). Drivers or hire cars are available at the dive shop. Argyle Falls, the island's highest waterfall, is nearby as is Flagstaff Hill, an American observation post from World War II. A longer drive gets you to the Grafton Bird and Wildlife Sanctuary on the other side of the island. If you are on the island between March and July, you can see the green, hawksbill, and leatherback turtles that come ashore to build nests. There are beaches, bays, and rocky points all around the island. Get a recommendation from the hotel or dive shop, ask the hotel to pack a picnic basket, and spend the day. But be careful, this could be the dive trip where you become a beach bum.

www.aquamarinedive.com

www.bluewatersinn.com



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TRANSITION TO REBREATHER DIVING

By Howard Packer

After years of open circuit scuba diving, I decided to become a closed circuit rebreather (CCR) diver. While this might seem a radical transformation, my conversion was far from an impulsive whim. In fact, it was years in the making.

History Lessons

In high school, I learned about the early use of closed circuit rebreathers by the military. Later, during my early scuba training, I studied the basic operations of these silent systems. For a long time after, I never thought much about CCR diving, and I was content using my open circuit scuba gear.

In the early 1990's, I read a dive magazine article about divers using rebreathers for long cave explorations. While these closed circuit systems were expensive, big, and heavy, I definitely perked up when I read about the long times that CCRs enabled these divers to remain underwater. I pictured myself using these machines for long, deep wreck dives, and for cave penetrations into previously undiscovered systems.

First Rebreather Experience

By 1995, compact rebreather units were on the market for about the price of an automobile. While I could not afford a CCR at the time, I took advantage of the opportunity to test one out at a technical diving seminar.

The best way that I can explain my experience is to note that this unit required frequent poolside stops for adjustments using pliers and wrenches! I certainly did not have confidence in this equipment for deep diving or cave diving.

Igniting the Spark

After 2000, I was routinely using expensive helium-based breathing gases on deep dives. Using the largest, heaviest scuba tanks available, I still carried only enough gas to spend just a few minutes at depth. Even worse, every time I exhaled underwater, it seemed that dollar-sign shaped bubbles of wasted helium floated from my regulator's exhaust to the surface. I felt as though I were diving beyond the practical limits of open circuit scuba systems.

At this point, I had some CCR diver acquaintances, and I would occasionally see rebreather divers sharing commercial boats with me during my scuba outings. When I would ask them about their CCR adventures, their answers made me start to think that these systems might finally have come of age.

Then one day, while filling my tanks at a local dive shop, I saw some books for sale about rebreather diving. The shop owner said that they would be great CCR primers. I could not help but buy them, and I started reading the minute I got home.

Researching CCR

After digesting these materials, I searched the Internet for more information. Reading posts in a CCR forum, I learned of an upcoming free conference where participants could try out up to four different rebreathers. I immediately signed up to attend.

In preparation for the seminar, I posted questions on the forum, corresponded via email with every CCR diver I knew, and sought guidance from my intended instructor. I filled a notebook with questions to ask the conference presenters.

By "Demo Day," the field had narrowed to just two units. Nevertheless, I was not going to have my common sense overpowered by the desire to use this exciting technology. If rebreathers were not yet reliable, I would wait until the right time to make the switch. I tried to approach the situation with a level head.

During the seminar, presenters reviewed the features of each CCR. They answered my questions. By the end of the impressive test dive demonstrations, I felt comfortable in deciding that a closed circuit system would be right for me. Within a few days of the conference, I placed the order to purchase my unit.

Preparing for Training

After the arrival of my new CCR, I met with my instructor to go over my equipment. Doing this well before the start of our first class allowed plenty of time to purchase suggested additional gear. Should you have a chance to do this with your instructor, I highly recommend it.

Pool Sessions

Completing my required classroom sessions, it was time to get in the water. Since I was already a proficient and experienced scuba diver, I entered the swimming pool with high expectations of performing like a seasoned veteran on this first dive.

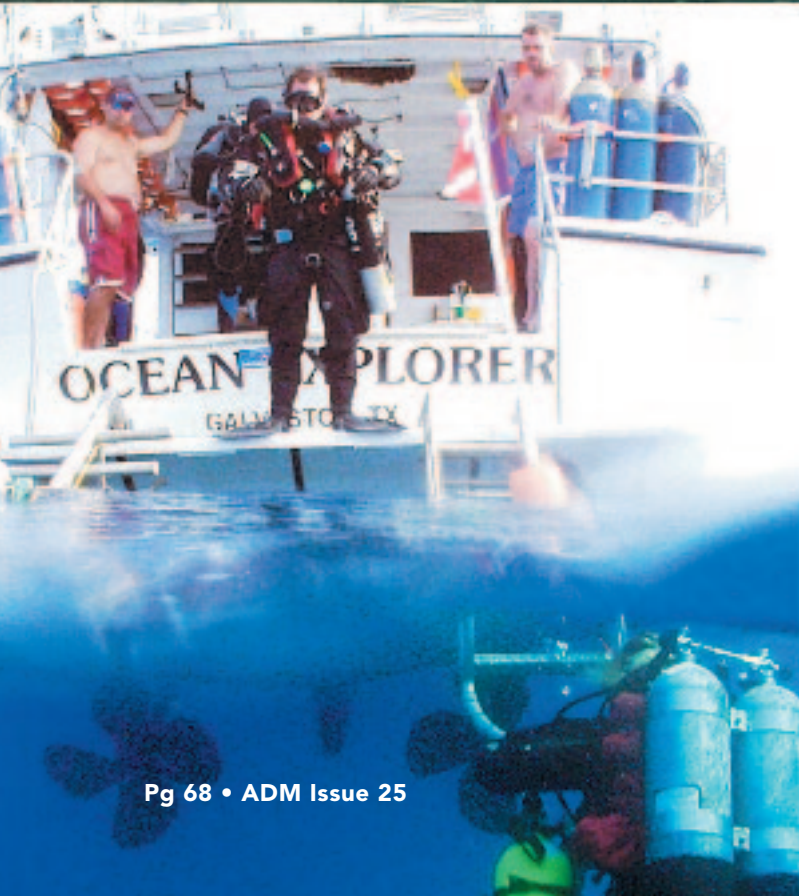
What a humbling experience! The moment I donned this new rig, my top-notch form suddenly disappeared. My hands searched for the controls on this foreign behemoth. I struggled to maintain neutral buoyancy as I ineptly contended with gas in the CCR counterlungs. When called upon to perform a drill, it seemed that I could not do anything right. It was almost as if I had never dived before.

Needless to say, this first water session was a big challenge to my ego. I exited the swimming pool feeling like I must have been the worst student my instructor ever had. Thank goodness nobody that I know saw me in the water that day!





Photo by Jill Heinerth



By the time of my second pool session, things went a little better. Minor equipment adjustments made after the first session helped me remain more stable underwater. My hands began to find my gear components without having to search around first. While I still lacked the refined skills of the experienced rebreather diver, my instructor told me that this would come with time and practice. We made plans to move on to open water.

Open Water Diving

During my first ocean dive, I continued working on CCR skills while trying to maintain neutral buoyancy. My instructor was right next to me, observing every mistake I made. He clearly orated his displeasure through his dive-surface valve (DSV) mouthpiece chamber, which transmits the spoken word more clearly than does a scuba regulator's second stage.

After this misadventure, I set only one goal for myself: I would improve on every dive. Somehow, I was going to overcome the challenge of becoming a CCR diver.

Almost Ready for Prime Time

By the time of my sixth open water outing, I could easily find my gear components with my eyes closed. I was meeting my goal of advancing on every dive. Most important, I knew what to do in case of an emergency. While not yet the most graceful or efficient CCR diver, I was starting to have fun. Things were finally headed in the right direction.

Another Rebreather Diver Created

On my final certification dives, my instructor put me through all of the paces. After practicing equipment failure drills, we breathed from open circuit bailout tanks, passing them back and forth to each other while simulating emergency exits from overhead environments. It felt great to enjoy CCR dives with my newly developed skills and confidence. I became a rebreather diver at last!

Though I have completed my initial training, I know that this is not the end of my transition but just the beginning. After gaining some practical CCR experience, I will take additional training before resuming deep diving. I look forward to a lifetime of silent diving fun.

About the Author

Howard Packer became a certified scuba diver in 1979. Since then he has held professional designations with NAUI, PADI, IANTD, and DAN, becoming a NAUI Course Director in 1997. A licensed attorney in Florida since 1984, he has written on the subject of risk management for the diving professional and those engaged in related medical practices. He recently completed IANTD Dive Rite Optima Rebreather Training and CCR trimix and CCR cave.

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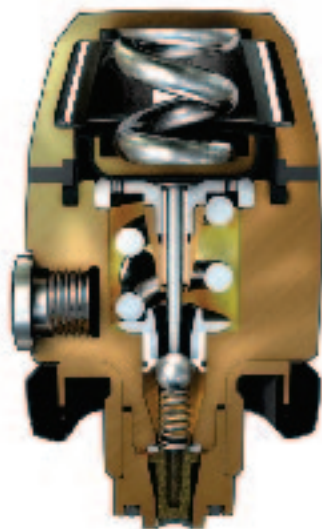
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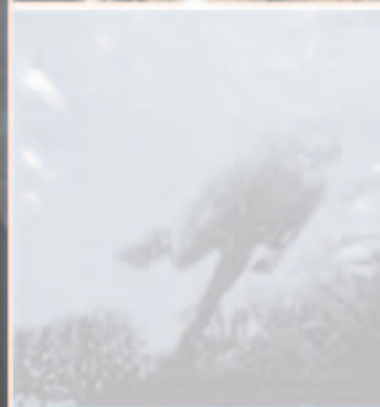
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IN SEARCH FOR INCA GOLD

By Erik Foreman

On September 24, 1532, Francisco Pizarro began his march into the interior of the Inca Empire with the force of merely one hundred sixty-eight men and sixty-two horses. The Incan emperor, Atahualpa, was captured by Pizarro, and held for the ransom of one room full of gold and several rooms full of silver. Agreeing to this, Atahualpa fulfilled his promise, but Pizarro broke his word to release Atahualpa and had him executed on July 26, 1533.

In the summer of 2005, my diving buddy, Ron Jacobsen, a veteran technical diver and fellow treasure hunter, suggested we make our way down to Lake Titicaca and the Isla del Sol in Bolivia. Both of us had grown up hearing incredible tales of lost Inca treasure, Spanish conquest, and previous explorers' attempts. Now it was our turn to investigate the legends, and challenge the lake.

Titicaca, the world's highest navigable lake, lies at 12,500 feet above sea level in the Andes Mountains, South America, astride the border between Peru to the west and Bolivia to the east. With snow-capped peaks along its far shores, the vast blue lake holds many ancient secrets.

The island Isla del Sol lies just off the tip of the Copacabana Peninsula in Bolivia. Ruins on the shore and on the island attest to the previous existence of one of the oldest civilizations known in the Americas.

Descending from the Andes around 1100 A.D., the Incas first settled Cuzco, their capital. The legends surrounding Lake Titicaca and the Isla del Sol report a fantastic story of the origin of the Inca people. In Inca mythology, Manco Capac and Mama Ocllo, children of the sun, emerged from the depths of the lake at the sacred rock gate on Isla del Sol to found the Inca Empire. A temple still marks this location. Incan religious rituals included everything from pilgrimage to blood sacrifice. One ritual included sculpted gold effigies in carved stone boxes. Placing these in the waters around Isla del Sol as an offering to the sun god ensured another prosperous harvest. At the height of their reign in the 15th century, they came to a brutal end in 1535 when the Spanish Conquistadors took over their territory, enslaving the native population to feed Spain's lust for gold. According to legend, when the Spanish forces reached Cuzco, the Incas took the two-ton gold chain of the Inca Huascar from the temple at Koricancha, and threw it into the lake. It has never been found. With no written record, we are left to wonder how they controlled such a vast empire for nearly 400 years.

LAKE TITICACA, BOLIVIA

Two airline tickets and eighteen hours later, Ron and I were in Lima, Peru, just in time for Christmas 2005. We had brought all our own dive gear, even two aluminum 80's, hoping to get fills and rent two more tanks at Peru's only dive shop, Aqua Sport. Jose, the owner, considered us crazy to want to dive Titicaca. Scuba cylinders are a precious commodity in that part of the world, so a large deposit would be required before Jose would let these out of his sight. The only way to get filled compressed air cylinders to the lake from Lima is by courier. Their destination and ours was Puno. That would be our first glimpse of the lake and our first taste of altitude. We escaped from Lima with everything that we would need to search the lake for Inca gold. Puno, the largest Peruvian city on Lake Titicaca, is either a twenty-four hour bus ride or a forty-five minute plane ride. We bought plane tickets, giving us more time to acclimate to the altitude.

We would have two days to explore the area and wait for our cylinders to show up. The waterfront in Puno held several surprises. Many modern tour boats crowded the small harbor that is still protected by an ancient Incan wall and floating islands made of reeds.

Puno is built on the steep hillsides above the lake. Narrow crowded streets lined with shops and restaurants comprise much of the city. A large central square and church are built on top of an ancient Incan temple.

The church is an interesting mix of old- and new-world religion. Many Indian symbols still adorn the church today. I imagined a scene of thousands of chanting natives gathered on this spot to participate in bloody rituals, perhaps to appease the sun god and ensure a prosperous harvest or a swift victory over their enemies.

As soon as our gear showed up, we arranged for passage to the Peru-Bolivia border. After a full day's drive along the lake through many army checkpoints, we reached the border. You can't drive over, but many people with carts line the street for hire; they will carry whatever you have to Bolivia. Once through immigration, another driver was hired to take us to Copacobana, the largest Bolivian city on the lake, and our last stop before the road ends in Yumpupata, a small fishing village and our jumping-off point for Isla del Sol.





The road to Yampupata is very treacherous, winding its way along a steep cliff above the lake. Finally, a small brightly painted village came into view. The road runs down the middle of the village and straight into the lake. Our driver, Ysidro, stopped, turned around, and spoke to us. We realized he was telling us "This is it." After struggling to communicate, he finally understood we needed a place to stay. The driver spoke to an old man walking by. A house by the lake was pointed out where we soon met Lucia who welcomed us and treated us like family. We dropped our gear and set out to find a boat. Heading down to the marina, we saw a young man painting a rowboat about 14 or 15 feet long. He introduced himself as Juan Carlos, the proud owner. Somehow, Ron and I negotiated the rental of his boat for the next two days, and agreed to meet back at the dock at 6:00 a.m. the next morning.

As with all technical diving, diving at altitude has its own set of problems. 12,500 feet is 2,500 feet higher than standard tables go. A limited air supply of only 160 cubic feet each, cold water, and uncertain conditions, the remoteness of the dive site, no chambers, and no rescue or support within hundreds of miles - these were just a few of the logistical nightmares we faced.

In the morning, Ron and I got all our gear down to the lake. There was Juan Carlos, with several other people, waiting for us. Juan had painted the name *TITANIC* on the bow, and everyone had a good laugh. We were off. The oars were nothing more than round poles with flat planks of wood nailed to the ends. Trading rowing shifts every fifteen minutes, it took us over four hours to reach the first dive site - a protected

bay overlooked by a large ruined stone city. We beached the boat, and climbed the cliff to explore the ruins. Small fresh water springs gurgled up in several of the rooms inside the city, demonstrating how people could have settled here in this harsh, arid climate.

A large flat stone altar at the top of the hill may have provided a platform for ritual human sacrifice. Several guards would hold the victim down while the priest cut the still-beating heart from the victim's chest to complete the macabre scene.

It was time to get our gear on and make our first serious attempt to find treasure. Dropping into the lake was like stepping back in time. From the beach to about 20 feet of water, thick weeds obscure the bottom. From there, the bottom is composed of a thick layer of tiny gleaming white shells. Giant frogs are a common sight in the lake as well as large rainbow trout. We split up, each of us following the 25-foot contour in opposite directions. I immediately began seeing many large carved stone blocks scattered across the bottom. The visibility was amazing. Was this a part of the sunken city that Cousteau had searched for? I saw a smaller rectangular stone ahead of me, and swam towards it. Could this be one of the fabled stone boxes of gold? Reaching it, I fanned away centuries of sediment, and quickly checked its orientation with my compass. Carefully, I dug my hand under the object and pulled it from the bottom. Turning it over and seeing the other side, I knew it was solid and not a box. I made several more passes until my air was gone. Shortly after I surfaced, Ron appeared 75 to 100 hundred yards away.



We packed up and began rowing. The wind was with us for the first couple of hours until we came to the end of the island. Ready to make the hop from there back to the village, Ron started to row, and then I took over. The wind was now hitting us broadside and really whipping the boat. It became apparent that one person at a time rowing was not going to keep us from being swept away. Sitting side by side, with winds still increasing, and rowing in unison, we were able to hold ground long enough for the wind to die down. At dusk, tired and sunburned, the *TITANIC* and crew made it back to Yumpupata where several relieved faces, including Juan Carlos, greeted us. I could hardly make it back to our room. Though we were exhausted, we needed to be back at the dock at 6:00 am.

I fell asleep fast, but awoke right on time. I quickly glanced in the mirror and saw just how sunburned I had gotten the day before. This was going to be a long day of diving. Being back in the boat and rowing out of the harbor already seemed routine after only one day. Even after seven days at altitude, I was still short of breath, and couldn't wait to get in the water. This time we rowed to an area of the island delineated by steep cliffs with large boulders that seemed to drop off quickly. A tiny scrap of beach came into view, just enough to tie up and gear up.

Our plan for this dive was to follow the edge of the large rocks for a while, and then move down the slope trying to keep our depth above 50 or 60 feet max. Once again, thick weeds blocked our view from 10 to about 25 feet, and then a gleaming white layer of tiny shells came into view. Occasionally, rocks the size of my hand or

larger dotted the top layer. We turned over every one we could reach, and continued deeper. At 86 feet, we turned and slowly started to head up the slope. We made it to 20 feet, and began to work our way back along the base of the rocks.

The scenery was spectacular. Ron came across a small portable gas stove, and stuffed it in his goodie bag. I saw a glint of gold out of the corner of my eye. I reached for it only to discover it was a scrap of tin foil. As my air supply began to run out, I surfaced to find we were very close to our entry point. Ron had been better on air consumption, and wanted to continue a bit further. About twenty minutes later, Ron was back with, of course, the best find of the trip - a small ceramic cup with a faintly painted geometric design. Not the treasure we had come for, but an extremely satisfying culmination to a couple of the longest days of diving in my life.



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Manufacturer's Products

JETSAM TECHNOLOGIES TRIPLE PPO² HANDSET

Jetsam Technologies Ltd. is now shipping the Classic KISS CCR with a new triple PPO² display; it has been designed and built by Closed Circuit Research Ltd.

For those divers who truly want to keep it simple, this display is ideal! It has 3 PPO² readouts which read 3 individual oxygen sensors, an independent battery compartment, and 3 calibration potentiometers, one for each sensor.

This display is extremely easy to use. To turn it on, simply push the top button. To display the sensors millivolts, push the bottom button and hold. This should be done while exposing the sensors to air.

Another feature is the low battery light. When the battery needs to be changed, a red LED light will stay on permanently, while a button is pressed.

The calibration potentiometers are located on the back of the display. To calibrate, simply turn the cap. A great feature of this display is that calibration does not break the seal of the case.

All of these features are enclosed in a heavy duty machined case. This case is similar to the VR dive computers and is extremely durable and is a proven and tested design.

The display attaches to the Classic KISS sensor block via a Fischer connector. It can be routed to the divers left or right side. The cable can also be run down the inside of the counterlung case for added protection.

This new display is available now as part of a new Classic KISS CCR and also as an upgrade for older Classic's. It will be available soon for the Sport KISS CCR. For further information please contact Jetsam Technologies for an informational package.

www.Jetsam.ca
info@jetsam.ca



MANTA INDUSTRIE'S PUBLIC SAFETY REELS

Manta introduces a Public Safety version of their popular Sr. and Jr. reels.

Over the past decade, Manta has built an outstanding reputation for constructing high quality, durable, and exceptionally reliable reels. In use all over the world, both recreational and technical divers have come to depend on Manta's quality for expeditions to technical wrecks like the Andrea Doria or Britannic, deep unexplored cave systems of the Yucatan, or even on a nice easy family drift dive in West Palm Beach. Over all, Manta reels have seen the action. So when the public safety divers had a request, Manta provided the answer.

The Manta Public Safety reels come standard with all of Manta's unique features like; uni-body construction, solid one-piece spool, wave washer tension control and the AFS (anti-free spool) system. What makes this version of the Sr. and Jr. reels appealing to the Public Safety divers is a new, #60 nylon braided, heavy-duty, 600 lbs line. This line is as tough as nails; it is made to withstand sharp edges and high tension. Manta provides line lengths of 230 ft. on the Sr. and 100 ft. on the Jr. reel.

www.mantaindustries.com
mantasales@comcast.net



DIVERITE'S NEW O2PTIMA FX FLEXES TO ALLOW FOR DIFFERENT SIZE TANKS

The O2ptima FX is the newest version of the Dive Rite O2ptima rebreather. This updated design has a flexible foot that allows divers to choose between 27 cu ft steel tanks, 13 cu ft steel tanks or 13 cu ft aluminum tanks. Divers of varying statures will appreciate this flexibility as they can customize their O2ptima FX to fit their body type as well as adjust the weight of the unit by selecting tanks that are lighter or heavier. With 13 cu ft tanks, the O2ptima FX is 3 1/2-inches shorter than the O2ptima with 27 cu ft tanks.

The O2ptima FX uses Dive Rite's Remora tank mount system to easily install and remove tanks. Divers simply unscrew a wing nut and then lift the retaining pin on the Remora tank mount to detach the tanks.

The O2ptima FX has a new cover that allows for easy access to both the scrubber canister and tanks. Quick release clips have replaced the Velcro allowing divers to get into the top only or bottom only rather than having to remove the entire cover. New pockets on the canister-portion of the cover can now handle 5-lbs of weight versus 4-lbs with the previous O2ptima unit.

The O2ptima FX comes with the same electronics, breathing loop, counterlungs, Micropore canister, regulators and hoses as the former O2ptima. The O2ptima FX also includes oxygen sensors, the Remora Tank Mount system and both right and left tank valves. Because of the flexibility in tank options, the O2ptima FX does not come with tanks, but tanks can be ordered separately.

MSRP: \$7,000

www.diverite.com



SALVO 15.6 Amp Li-Ion 35 Watt Remote Head HID

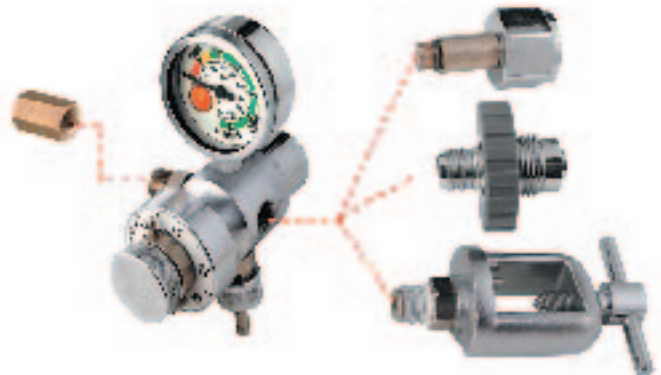
A different design than other HID's. The Salvo 35 watt HID has the main ballast in the canister with the ignitor in a small housing at the head

Features Include:

- Power switch is recessed into the lid
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DIVE XTRAS X-VIEW CAMERA SYSTEM

A new add on for the X-Scooter is the X-View Camera system. We fondly call this an X-Scooter CSI, as we originally developed this for Crime Scene Investigators (CSI) in Hawaii. We have ported this over nicely to the recreational/technical/cave diving market as this idea is perfect for the diver who wants to conduct underwater video or survey, easily and hassle free while still scootering.

The all new X-Scooter and X-View Camera is a combination of our one of our existing X-Scooter models (long or standard) with our new X-View Camera accessory (The X-View camera system can also be retrofitted to any of our existing standard or long bodies X-Scooters).

The X-Scooter CSI is the perfect tool to scooter around the reefs, caves, wrecks or structures while capturing the entire dive from start to finish, in high-resolution low light color video or ultra low light (night vision) black and white.

www.dive-xtras.com



DIVE RITE NOMAD SIDEMOUNT SYSTEM

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The Dive Rite Nomad Sidemount System touts 50-pounds of lift, allowing divers to dive any size tanks using a wetsuit or a drysuit. The Nomad wing provides excellent streamlining by integrating the harness through wing keepers that hold the wing low across the diver's back and reduces drag. Proper trim is achieved with a longer wing and a gusset control cord that forces the lower portion of the wing to inflate preferentially, keeping lift around the divers hips where it is needed. This new design makes the Nomad harness and aircell a tight, easy-to-don single unit and the aircell is not able to move around under the harness which would create additional drag.

Utilizing the innovative TransPac harness, the Nomad can be customized to fit divers of all sizes. Tanks are attached with an all-new bungee and butt-plate system that allows the tanks to ride closely at the diver's side.

Dive Rite's product development team tested the Nomad in the harshest of environments prior to release on the market.

www.diverite.com



JETSAM TECHNOLOGIES BABY CCR GAS BOOSTER



The Baby Booster is intended for the traveling rebreather diver and allows both oxygen and diluent tanks to be filled when compressed air is the only source of power available. It will fill rebreather size dive tanks to 200 bar (3000 psi) when the supply tanks are as low as 34 bar (500 psi). With a weight of only 3.2 kg (7 pounds) it is light enough to be conveniently transported by air.

The pumping rate is a bit complicated with a pneumatic booster. The ratio between the drive piston and the output piston is 23:1. In theory a 147 psi (10 bar) drive gas will yield a 3381 psi (230 bar) output. In fact the seal friction and the gas compressibility reduces the output to around 3100 to 3230 psi (210-220 bar). The effective boost ratio between the supply tank and the output tank can be as much as 5:1 (3:1 with helium). So you could pressurize a tank to 3000 psi (200 bar) from a supply tank at 588 psi (40 bar). In practice you would use far too much drive gas to make it practical. In reality, a 3:1 ratio is more realistic. When the supply tank pressure drops below 1100 psi (75 bar) the drive gas consumption becomes excessive if you are using a scuba tank to drive the booster. Other variables are the relative size of the supply and fill tanks.

www.Jetsam.ca



NEW Armadillo Sidemount Exploration Harness A2

For years the Armadillo Sidemount Exploration Harness was the ultimate tool for top-notch explorers around the world. The new A2 model has several improvements based on user feedback:

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- The heavy-duty inflation assembly was moved to the left side and is now interchangeable with the top dump valve. The divers can configure armadillo as a standard wing with inflator on top and dump valve on the bottom.
- The bottom part of the wing can be folded in half. That feature can provide better fit for thinner and smaller divers. The waist belt is removable so Armadillo A2 can also be attached to climbing harness to create more streamlined rappelling/climbing system. The light canister can be worn on the waist belt under the wing.
- Pair of removable D-rings was added on the lower back to carry reels, cameras, lights and scientific equipment.

Initially designed mainly for sidemount cave exploration, the Armadillo has evolved into a streamlined rugged system that can be used for all types of diving.

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"Get your butt off the beach and DIVE!"

CAVE EXCURSIONS



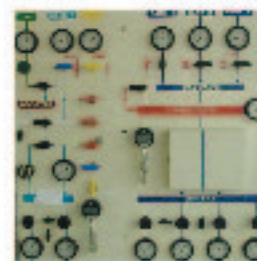

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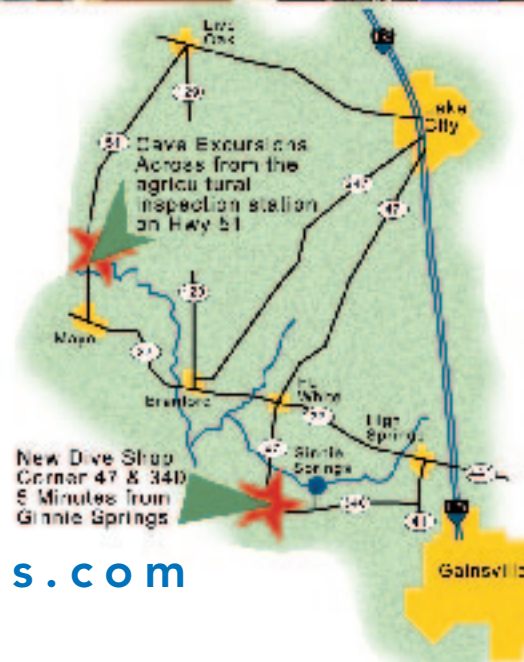
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