



GLOBAL EDITION  
Jan :: Feb  
2005  
Number 3

Sipadan Sarawak Sepilok  
**Focus on Malaysia**

White Sea Russia  
**Ice-Diving**

IAHD  
**Diving Disabled**

Ecology  
**Fish Fashion**

Equipment King  
**Poseidon**

Portfolio

*PARENTAL WARNING: Essick's fine art photography contains some nudity*

**Todd Essick**

New Column by

**Leigh Cunningham**



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## NEWS ASSOCIATE



## COVER PHOTO

Strong current at Barracuda Point,  
Sipadan Island, Malaysia  
Photo by Peter Symes

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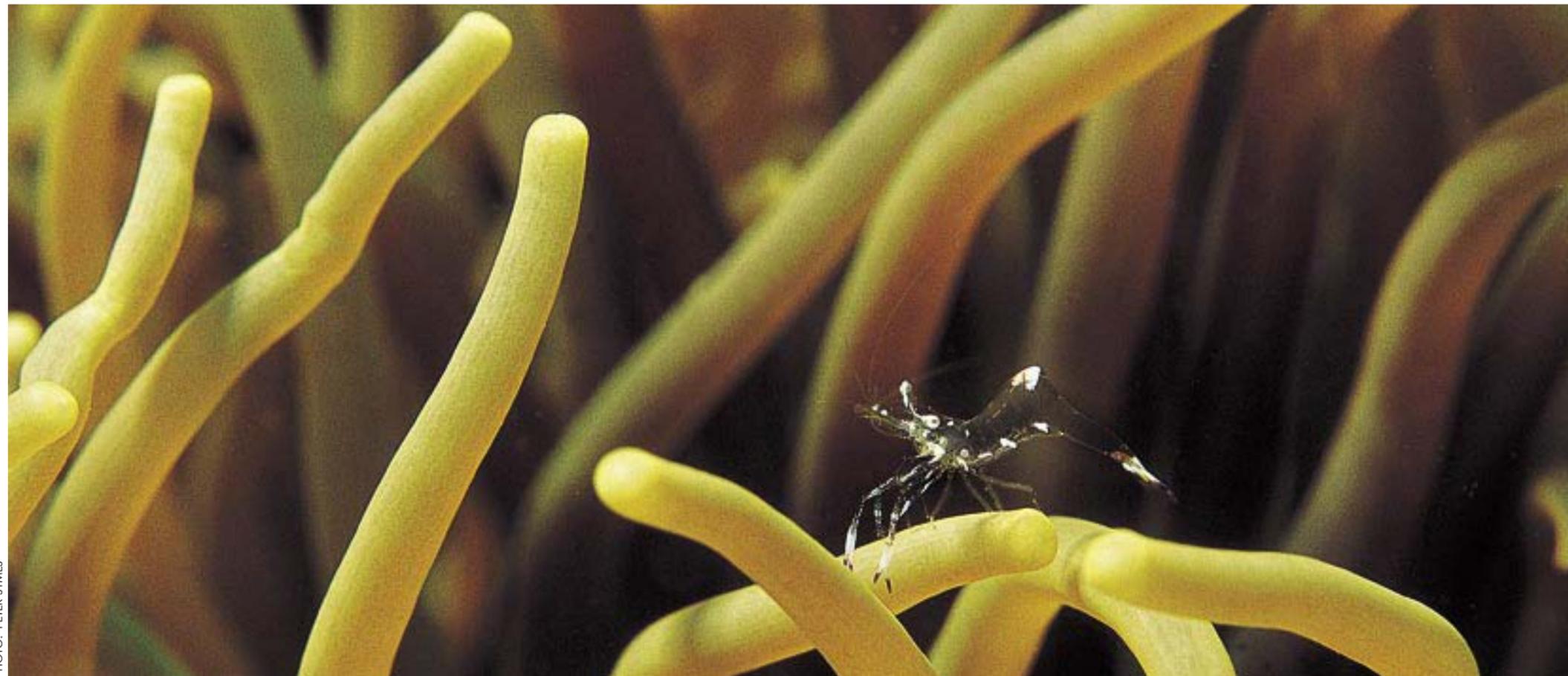


PHOTO: PETER SYMES

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# Revisit them asap

Sea lovers.

On the date of publication of this issue, more than a month has passed since the tsunami hit Asia. Yet, the numbers of human lives lost are still climbing, and the daily increments in the official body count just never seem to end. Numerous editorials have already been written about the tragedy, and the blanket coverage given by the media has been comprehensive 24/7. There doesn't seem to be much more to say, but the magnitude of this colossal disaster still fills our minds and souls with trepidation, making the significance of all other subjects pale in comparison. Henceforth, this editorial is also about the tsunami, and it also embraces a plea for help on behalf of the many victims and survivors of the disaster.

Help is not just the act of giving to charities. It is also about helping survivors regain their livelihoods, helping them get their businesses back. In the immediate aftermath of the catastrophe, most travel agencies cancelled packages to Asia, flights were cut, and for a while, tourist interest fell sharply. While this may be a natural response to the tragedy, we must not stay away too long.

As the events unfolded and flashed

before us on our TV screens world wide, the media did indeed give us an impression that much of the hardest hit coastlines around the Indian Ocean had experienced total destruction. However, the truth of the matter is that in many areas such as Thailand, with which we as divers are much more familiar than the other hard hit regions of Indonesia and Sri Lanka, the majority of infrastructure and business activities remain intact... not to mention the dive areas are still very dive-able.

Contrary to what most media state, surveyors in Thailand and other areas are discovering that most reefs beyond a kilometer from shorelines experienced very little destruction. Most of these dive sites are in good condition. And in some cases, there are actually improvements in clarity of the water and there are more fish!

Just a few days after the great waves hit the popular beaches around Phuket, the resort areas were cleaned of debris, hotels reopened,

streets were cleared and merchants completed the rebuilding of their shops. It was truly fast work.

Many in our industry have stressed the need to push on with trading with the businesses in the affected areas, and encouraging tourists and divers to return as soon as possible. The locals say that recovering tourism is the best medicine, not only for their own businesses, but for the local population as well. They all depend on tourism for their livelihoods.

But with tourism down to barely a trickle, many operators in the area are not doing well. So, we ask: Divers, please go back there asap, and postpone buying that new stereo for another year. You don't really need it, do you? But someone on the other side of the world really needs your business just to survive. At this point, tourism is the best aid you can give.

Thailand has a very big tourism industry. It's economic health depends on this very important sector. To avoid diving in Thailand based on incorrect

*Give a man a fish and he will eat for a day. Teach a man to fish and he will eat for a lifetime.*

Old Proverb (Confucius)

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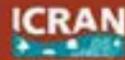


Together, we can save a life





Dive In To Earth Day the week of April 18 - 24. Grab some friends and install a mooring, do a reef survey, or organize an underwater cleanup. For more information, visit [www.coral.org](http://www.coral.org) or call (415) 834-0900.



West Marine



information from the media is a big mistake. The best thing you can do to help the tsunami victims is to come, enjoy a vacation and spend your money.

It is tragic that the tsunami took so many lives, and the world grieves their loss, but there are also so many who survived, who are struggling to rebuild their devastated lives, and who need our help now. Without income from tourism, more lives and livelihoods in the affected areas are at stake.

The Thai people are not the only ones to ask tourists and divers to come back to visit. Mustafa Lutfi, the Minister of Tourism in the Maldives

said, "We had 17,000 tourists in the country when this happened, but today those numbers have dropped by half. Our message to the tourists is, that it is time for them to contribute to the recovery of the Maldives," he said. "The best way to do this is to visit us again. Enjoy yourself and help us in the process."

Indeed, some divers are going pro-active. Dive Aid was formed recently by a group of dive instructors in the U.K. who met in Thailand and became friends. They have organized this non-profit organization to raise support for some of the communities in Thailand that had previously earned their liveli-

hoods from the dive industry as well as financial aid and equipment for expatriate dive instructors and dive centres who lost everything in the disaster. Now, Dive Aid is joining with the Disaster Emergency Committee and Diving Leisure of London to run an unique fund-raising event — a 24 hour dive-a-thon. See [www.diveaid.org.uk](http://www.diveaid.org.uk)

So, get involved, dive in Asia, help some people, get some sun and have some fun in the process.

Gunild & Peter Symes  
Editors  
X-RAY MAG



# Dive Aid



## Participate in the Biggest Event of the Sea in 2005

Celebrate the Sea is now in its fourth year, after a successful beginning in 2002, the festival has grown to the largest of its kind in the Asia Pacific. After two great festivals in Kuala Lumpur in 2003 and 2004, we return to Singapore and the Suntec City Convention Centre in 2005. Continuing from our previous years we have as special guests some of the world's greatest underwater luminaries. Already confirmed for Celebrate the Sea 2005 are National Geographic Explorer in Residence, Dr. Sylvia Earle, National Geographic Photographer David Doubilet and Australia's own marine adventurer Neville Coleman. We will hold a series of workshops and lectures on underwater photography, exploration, marine science and the latest digital techniques. Celebrate the Sea exhibitors will include resorts and dive operators in the Asia Pacific, photographic equipment manufacturers, environmental groups and more. Award winning underwater documentaries from Antibes and previous winners of Celebrate the Sea will be shown during the festival. Our international photographic and video competitions attract entries from all over the world, finalists will be on display at Celebrate the Sea in our galleries.

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**Venue:** Suntec City Convention Centre Level 3, Gallery.

**Date:** Friday June 3 to Sunday June 5 2005

**Opening times:** 10:00-20:00 (Friday); 10:00-18:00 (Saturday & Sunday)

**Visitors:** 10,000 expected over three days; 250 masterpass holders in our workshop track.

**Exhibitors:** Dive resorts, Liveaboard operators, dive equipment manufacturers, environmental NGO's, photographic equipment and more.

# Tsunami!

Edited by  
Peter Symes

## Only small parts of the coral reefs affected

After a month of various investigations into the effect of the Tsunami on the coral reefs, the emerging picture is that the tidal waves that devastated so many human lives only had a limited and very localized effect on the coral reefs.

On the other hand, marine experts have called for a prompt clean-up to save coral reefs and other marine lives. The worst damage seems to have been caused by silt, debris and objects deposited on the reefs.

text by Peter Symes



While attention is clearly focused on the human tragedy caused by the tsunami in December, some dive operators and marine biologists are reporting that from Sri Lanka to Thailand, corals could be suffocating under layers of mud and heaps of rotten fish. They report that beach fronts are clogged, and rare turtle nesting sites have been washed out to sea. Both countries were hard hit by the tsunami setting off an environmental and economic setback that may take decades or longer to recover from.

"Some of the reefs around Sri Lanka and Phuket would likely be pretty severely damaged because big waves hit them pretty close into shore. It's going to depend on the size of the waves that hit," said Michael Keogh, professor of marine

ecology at the University of Melbourne, to Reuters.

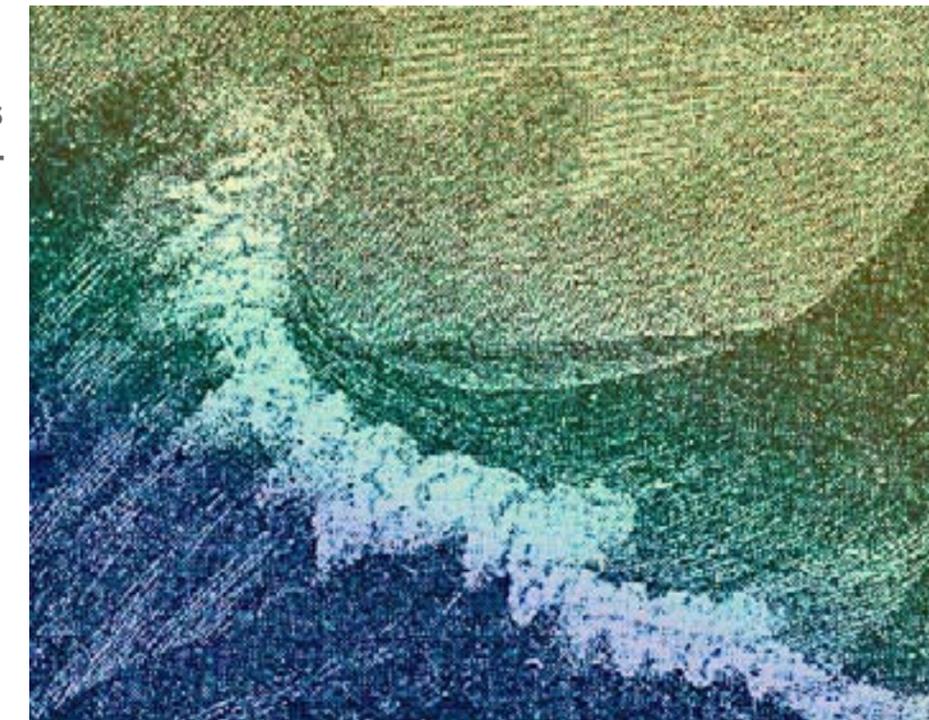
Deep-sea creatures are believed to have escaped unscathed from the massive quake, while marine life from shore to about a mile out to sea suffered the worst damage. Offshore environments were probably unaffected, and some biologists speculate that marine mammals such as whales and dolphins swimming near shore when the tsunami struck may have sensed the strange seas and headed for deeper waters, where the giant waves were barely noticeable.

**Damage** The worst marine damage is concentrated 100 meters to a kilometer from shore where the coastal ecosystems were exposed to the full force of the crushing wall

of water. "The big forces from these waves come when they get close to shore and into shallow water, and they build up, they start to break, and that's where the really severe energy is," added Michael Keogh.

"There is a huge natural cost, but what it is, is still to be determined," said Lynne Hale, director of the global marine initiative for the Nature Conservancy, who worked in Thailand's Phuket Island and Sri Lanka for many years. A UN task force based in Geneva will now assess how environmental damage threatens human health, and the toll on the ecological resources which support both tourism and the fishing industry.

Scientists don't have much historical data about the long and short term damage tsunamis can cause on marine ecosystems. What is known is that in 1883, when the Krakatoa volcano exploded and sent a giant tsunami washing over Indonesia,



DETAIL FROM 1913 ENGRAVING. SOURCE: FRESHWATER AND MARINE IMAGE BANK

coral heads that weighed hundreds of tons were thrown hundreds of feet inland. And after the 1964 tsunami in Alaska, (see sidebar), a few reports noted that baby salmon were killed, although it's unclear how many. But the recent quake was of immense magnitude, and the reefs were already stressed from fishing, tourism, pollution and global warming.

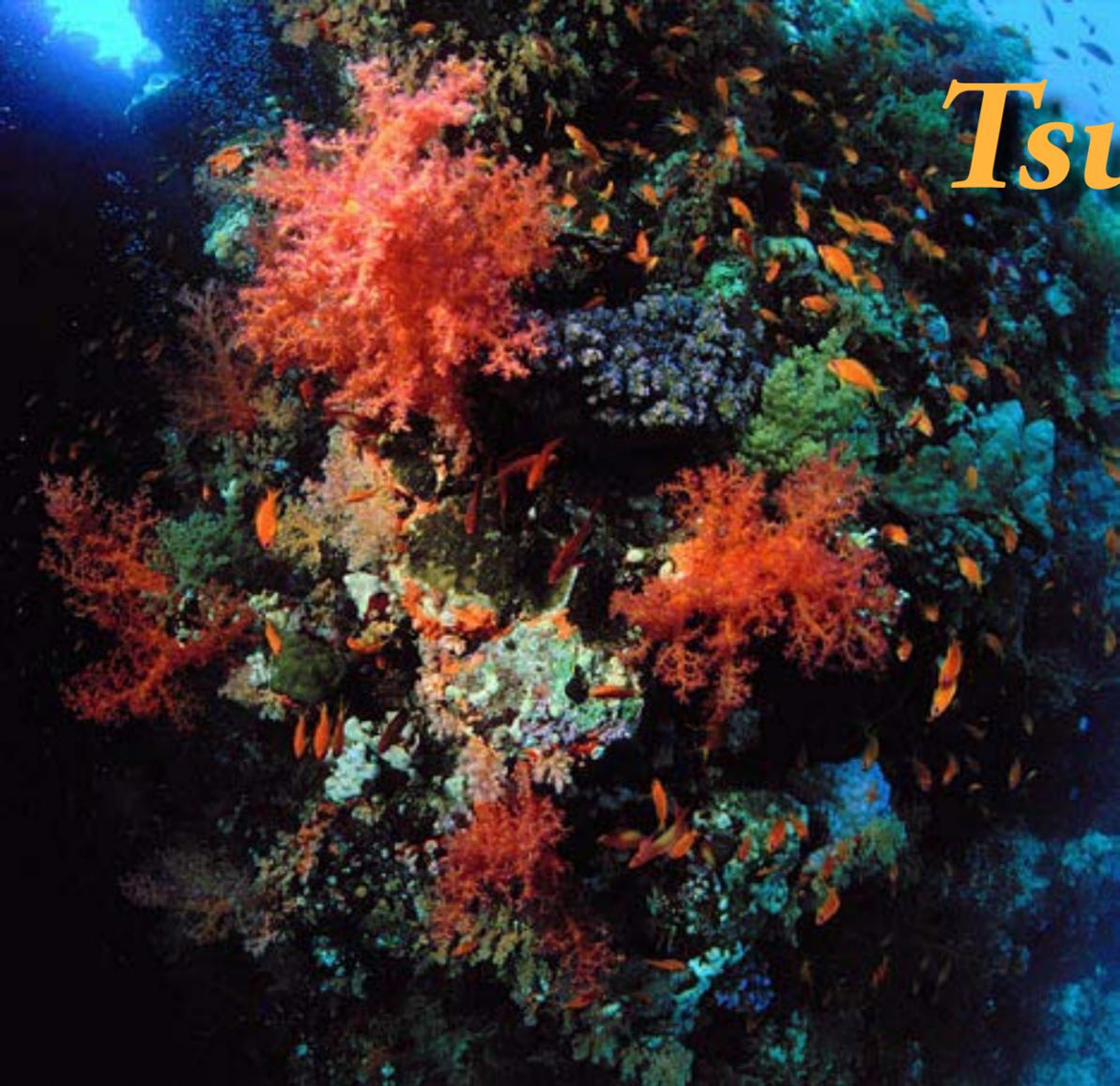
As dive operators and researchers began sending reports to the World Fish Center in Malaysia, an international fisheries research center, it was, at first, a bleak picture of the region's treasured coastal waters. In Sri Lanka and Thailand, coral damage is reported to be severe. Trees crashed down onto the reefs, ripping many of the corals, some hundreds of years old, apart. Many fish washed ashore. However, according to preliminary surveys, it seems that damage to the reefs have been very

localized and patchy.

At the same time, another effect has been observed. It seems that there are more fish on the reefs now than before. Whether this is an effect of the tsunami, or what the cause is, remains unclear, but it is known that many species stay closer to the reef when they feel threatened. It may also be an artifact of so many fishing boats being destroyed by the waves.

The United Nations Development Programme (UNDP) said a disaster assessment mission found that, on average, just five percent of the coral reefs along the coast and around the main tsunami affected islands had been damaged. UNDP said the reefs were littered with potentially deadly debris and needed to be cleaned. They said the reefs around the Phi Phi Islands and around the Similan, an archipelago with world-class dive sites, were particularly hard-hit.

# Tsunami!



FILEOTO BY PETER SYMES

**Aceh** Information is still very scant, but one coral reef researcher received information from a local newspaper that conditions of the coral reefs around Weh Island near northern Aceh, is the same as before the tsunami devastated the area. This is surprising considering the total devastation on land. Around Banda Aceh, where most of the tsunami's victims were found, a lot of deep sea fish were found on land. Other areas do not seem to have been surveyed yet.

**It seems that there are more fish on the reefs now than before**

**Thailand** The tsunami hit six provinces of Thailand along the coastline of the Andaman Sea, namely, Ranong, Phang Nga, Phuket, Krabi, Trang and Satun. The Department of Marine and Coastal Resources, seven Thai universities and the dive centres conducted a survey shortly after the disaster. (See sidebar) They employed experienced dive masters to estimate damage done to recognized dive sites. The areas surveyed were Surin Islands, Similan archipelago, and the southern Phangnga Bay, the sites closest to Phuket. (See also the letter from Jeroen Deknatel, managing direction of Ocean Rover Liveaboards) It seems that most of the underwater environment has been left largely undamaged by the tsunami. "Dive sites along the coast, including the

Similan Islands, Ko Bon, Ko Tachai, Surin and Richelieu Rock, and into the Mergui Archipelago are not damaged in any significant way," said Alistair Beveridge, DOCT President, on 4 January.

"Some sites were affected slightly, others not at all. There is absolutely no truth to rumours of heavy devastation and loss of marine life. We have had divers out diving since the waves and surge hit, and although there are some changes to dive sites, mostly around Island No. 9 in the Similans, all of the areas still offer world-class diving. "The dive sites in the Mergui Archipelago were completely unaffected by the waves or surges."

**Phuket** On Phuket Island, one popular beach was covered with dead staghorn coral, starfish, gulper eels, sea cucumbers and sea grasses. Many of the reefs, upon which fish and other organisms are dependent, may be covered in mud, and the corals which only grow about half a centimeter, or a fifth of an inch, a year, may be excreting mucus as a defensive mechanism against the mud, expending energy that weakens the coral, stated a researcher with the World Fish Center.

**Similan** Thai oceanographer, Sakanan Plathong, professor at the Prince of Songkhla University, said a preliminary survey showed 20% of the reefs examined around the Similan islands were destroyed, but about 60% of the reefs had fallen over and need to be turned upright.

Platong called for up to 200 volunteer divers to help save coral reefs damaged by the tsunami. If divers managed to move fallen reefs back into an upright position within a month, the coral should survive and keep growing, Sakanan said. Platong also called for at least a temporary ban on diving at three sites, including the Chinese Wall, Christmas Point and Snapper Alley — all located around the Similan islands. While many reefs have suffered extensive damage, it is also clear that the reefs will eventually repair themselves. "A tsunami is not a new phenomenon," said Plathong.

**Andamans** "We understand that serious damage has been caused to the coral reefs of the Andaman and Nicobar archipelago by the tsunami," said D.R.K Sastry, India's Zoological Survey's regional director in the Andamans. "Even strong cyclones or powerful currents can cause much damage to the reefs, so it is only to be expected that such high and fast wave action would ravage the reefs and cause extensive damage." He said that the "Andaman coral reefs are very rich in spread and diversity, second only to the Great Barrier Reef in Australia." Branching corals are the most

fragile and were likely to have been the worst hit by the tsunami waves. "Whether the coral reefs in the Andamans can recover would depend on the extent of the immediate damage caused by the fast and high waves and the inevitable post-tsunami siltation of the reefs," Sastry added. To confirm whether the topography of the Andaman and Nicobar Islands has changed after the large-scale devastation of its landmass due to the tsunami, a team of surveyors and ocean study experts will undertake a massive survey in the Union Territory.

*"Diving operations, both in terms of liveaboard boats, day trips and courses, remain unaffected and unchanged. "Dive sites along the coast, including the Similan Islands, Ko Bon, Ko Tachai, Surin and Richelieu Rock, and into the Mergui Archipelago are not damaged in any significant way."*

Alistair Beveridge, President, Dive Operators Club of Thailand, on January 4.

## The facts and numbers

Department of Marine and Coastal Resources, seven Thai universities and volunteer diving groups conducted a rapid assessment program from December 30, 2004, to January 15, 2005, by using a survey method developed by Thai researchers.

A total of 175 study sites were completely carried out, and the impacts of tsunami on coral reefs were categorized into five groups, i.e., no impact, very low impact (1-10% of corals damaged), low impact (11-30% of corals damaged), moderate impact (31-50% of corals damaged) and high impact (more than 50% of corals damaged).

Only 13% of the study sites were reported as "high impact." 40% of the sites had no impact. Percentage of study sites showing very low impact, low impact and moderate impact were 21%, 17% and 9%, respectively.

## The preliminary findings:

- Reef damage is considerably less than was expected and initially reported.
- Significant damage is patchy and very localized.
- Damage followed no obvious pattern.
- Fish stocks appear to be benefiting from reduced fishing effort.
- Exposed shallow fringing reefs sustained the most damage.
- Coral with delicate and intricate structures were most susceptible to impact.
- Similan Island no. 9 and Surin suffered most of the serious damage.
- Other parts of the heavily damaged sites are still considered diveable, with abundant fish life.
- Famous sites such as Shark Point, Richelieu Rock and Hin Daeng are untouched.
- The reefs of Myanmar appear completely unscathed.

# Tsunami!

It's called

Earth Day.

That's not to say

we need to treat it

like Dirt Day.



Surveyor General of India, Dr. Prithvis Nag, said that satellite pictures beamed recently had only shown the extent of damage on the settlement areas in the islands, but could not pinpoint the exact tilt or shift in landmass. "Satellite pictures have shown that many habitation areas have been devastated by the waves' fury. But they cannot reveal the tilt or shift in the topography. That needs in-depth survey and research to be verified," Nag said.

**Maldives** In the Maldives, the eastern part of the islands was worst hit, with dead coral and sand covering the runway at Hulule International Airport. Some scientists said human activity in the coastal zone contributed to the immense damage on shore, such as the building of tourist hotels too close to the water and tearing out mangrove forests to put in shrimp aquaculture farms throughout Asia. But others say that while the lack of mangrove forests probably exacerbated the destruction, it's unlikely that they would have slowed the tsunami's enormous volume of water. More on this discussion in "Mangroves and Man, page 8).

**Sri Lanka** Around the coast of Sri Lanka coral reefs seem to have

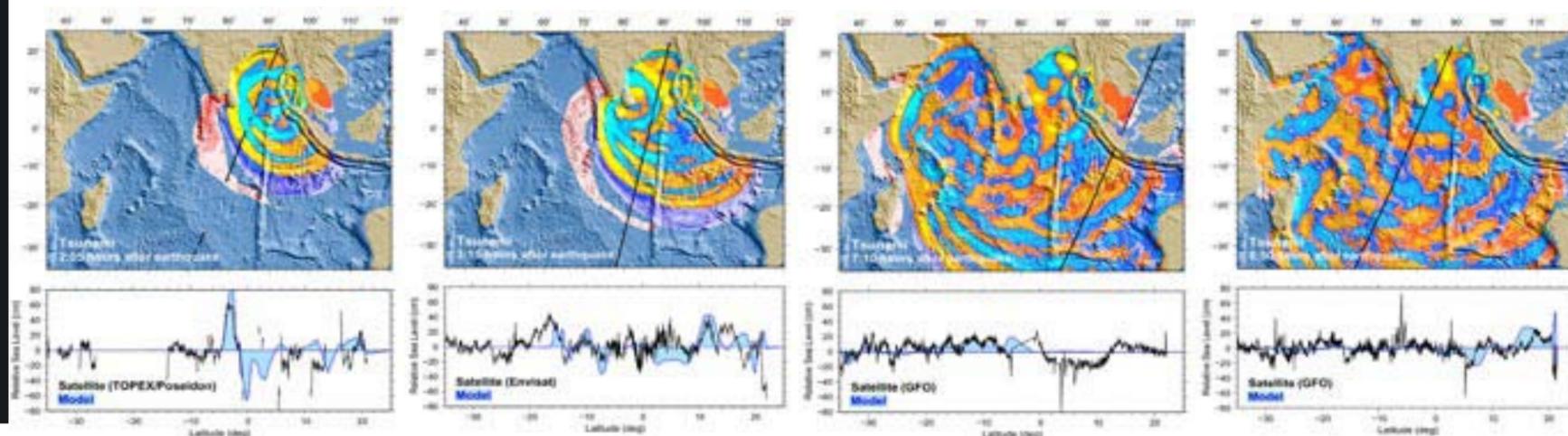
suffered much less damage from the Indian Ocean tsunami than was initially feared.

Jerker Tamelander, marine programme co-ordinator of the World Conservation Union in Sri Lanka, completed a survey of reefs of Sri Lanka's south-west coast, conducting a rapid assessment of environmental damage to coral reefs and sea-grass beds. He told BBC World Service's Science In Action programme that the damage is very patchy. It varies a lot, from one area to another, and it varies a lot within a given area.

In comparison with significant destruction of terrestrial ecosystems, the underwater coral has not been so badly affected. Tamelander explained that much of the damage had been caused by rubble depositing on the coral. A lot of the mechanical damage seems to have been caused by boats washing over coral reefs, and in turn pushing over large boulders. So, there is very site-specific damage — whereas on the broad scale, the mechanical damage is much less.

Some of the damage came from material washed out to sea from land, including motorcycles and TV sets, resulting in quite significant amounts of debris on several reefs.

**India** The tsunami that wrought destruction in many coastal regions also caused damage to the marine ecology. To study the exact nature and extent of the devastation, India's most prestigious scientific research vessel, Sagar Sampada, is now on a 'tsunami expedition' to the country's east and west coasts, which were ravaged by the killer waves. Sagar Sampada is a multi-purpose fisheries and oceanographic research vessel. It left Kochi harbour in mid-January to make an on-the-spot assessment of how the tsunami impacted the marine wealth, the sea bottom and its living resources. The ship will also collect data on sea organisms, sediment samples and check hydrographic parameters at the tsunami-hit coasts. On board, is a team of 12 top researchers, oceanographers and scientists from across the country, headed by Dr. R. Damodaran. "It is the first major research project to understand how the sea behaved during the tsunami. We will study the current state of marine resources and hydrographic characters of the sea, including dissolved oxygen content, turbidity, salinity and nutrients." ■



SOURCE: GRAPHS FROM THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION/DEPARTMENT OF COMMERCE



After more than thirty years, we thought it was time that the other 72% of the planet got some attention. Which is why we're asking people to Dive In To Earth Day the week of April 18 to 24. So grab some friends and install a mooring, do a reef survey, or organize an underwater cleanup. Everybody into the water. For more information, visit [www.coral.org](http://www.coral.org) or call (415) 834-0900.



West Marine



*Are clearing of the mangroves to blame?*

# Man & mangroves

PHOTO BY GUNILD PAK SYMES

**Many communities on the Indian Ocean benefited when mangroves took the brunt of the massive waves, saving populations living further inland, but vast areas of the swampy coastal forests were destroyed and need replanting, according to the United Nations.**

Parts of India and Myanmar, where coral reefs and mangroves remained intact, fared much better when the waves hit than the denuded coastlines of Thailand and parts of Sri Lanka, where poor beach-dwelling fishing communities cleared mangroves and started shrimp farms to feed the huge Western demand for cheap prawns. Mangroves can help protect coastal areas from future tidal waves, and some governments now say they will step up mangrove planting and conservation to this end. Mangroves, trees whose tangled roots grow above ground in coastal swamps, are also a unique habitat for wildlife like migratory birds, monkeys, lizards and turtles. "Replanting would not only benefit the environ-

ment, but also help local communities economically by providing forest products, including timber, poles, fuel wood and thatch for houses," the United Nations Food and Agricultural Organization (FAO) said. The FAO said that, indirectly, replanting also provides spawning grounds and nutrients for fish and shellfish.

But mangroves should not be considered a panacea to the threat of tsunamis or typhoons warns Mette Loyche Wilkie, an FAO expert on mangroves. Governments should not be tempted to undertake massive new plantations in the hope of gaining better protection, as this could do more harm than good to humans and the environment. Narrow mangrove strips provide little protection and can easily be ripped up and hurled inland, adding to the hazards faced by nearby populations. The FAO also reflected the concerns of environmentalists who have criticized previous plantation projects that have damaged existing forest ecosystems in favour of a particular type of mangrove, which may not be right for the local environment. The UN organisation does not recommend massive planting of mangroves in areas where they would replace other valuable ecosystems, such as turtle nesting grounds and sea grass beds. ■

## Unsubstantiated news, manipulation and speculation in disaster stories

**Following the disaster, many members of the media were quick to paint a very glum picture of the impact the tsunami had on the reefs and underwater habitats. Too quick, too premature and worse still, also completely wrong. A leading member of the local dive industry has this scathing comment:**

Much to our dismay, there are many unsubstantiated news stories about the 'total destruction' of Phuket's coral reefs. Even our own effort to bring a CBS team to the Similans for a first hand look turned into a nightmare when they broke their promise and turned it into yet another "spectacular disaster" story. Our crew and passengers were quoted out of context, and our underwater video footage was used incorrectly. Never again!



Photo by Ocean Rover's in-house photo pro, Mark Strickland, of the reef at Similan Islands after the tsunami

Several statements about reef destruction were made by so-called experts within hours of the disaster, before anyone even had a chance to dive the islands and check out what was really going on. That started all the rumours we are now fighting.

A quote from one of many e-mails we received: "The coral around Thailand must have been blown to bits by the tsunami — how could it be otherwise?" The problem is, that many people do not understand the mechanics. Tsunamis wreak havoc on shore and in shallow water, not in the deep!

The Mergui Archipelago in Myanmar was largely unaffected. Ocean Rover was there when the tsunami hit Phuket and did not experience any large waves, only 'weird' currents. Based on our own dive-crew's observations as the Ocean Rover traveled south from Myanmar back to Phuket, these are the facts as we know them at this moment:

**The Burma Banks:** No damage. **Richelieu Rock:** No damage but the strong current moved some of the rubble at the base of the rock. **Surin Islands:** some of the shallow, hard coral fringe reefs show damage. **Ko Tachai:** Some damage in the shallows. Twin Peaks undamaged. **Ko Bon:** Minimal damage to The Ridge. **Similan Islands:** Damage appears to be limited to the shallow part of some fringe reefs. A few of the rock formations had soft coral removed by the

wild current. Highly popular divesites such as Fantasea Reef are in fine shape. As on Phuket's beaches, the tsunami, terrible as it was, seems to have had a 'cleansing effect' and water was clear and calm everywhere with abundant fish life.

As you can see, initial reports are encouraging and very different from what the media would have us believe. Surely, more damage will be recorded as data flows in but there is no reason for gloom. We will continue to update reef reports at the Divesite Reports page of our website as we learn more, and post dated pictures as soon as we have them. Meanwhile, please pass on to us any news, good or bad, that you hear about our area, so we can investigate any wild claims and get the truth out on the Internet.

**How you can help** We have received hundreds of messages of support, and we are touched by everyone's concern. Many of you have expressed a wish to contribute money, but worry that contributions will simply be absorbed into the machinery of some mega aid agency. People want to be certain that their donation reaches those who really need it. There are several reputable organizations in Phuket setting up relief funds. One such organization is the Rotary Club of Patong Beach. The fund aims to supply immediate, as well as long term financial aid (e.g. scholarships) for children who lost their parents in the tsunami. You can make a donation on-line at: [www.rotarypatong.org/tsunamirelief1.htm](http://www.rotarypatong.org/tsunamirelief1.htm). ■

*Jeroen Deknatel is the managing director of Fantasea / Ocean Rover live aboards.*



# Adieu Alvin

**After being in operation for 40 years, and carrying out outstanding work, this famous deep-sea research submersible is finally going into retirement.**

*Alvin*, which was owned and operated by Woods Hole Oceanographic Institution (WHOI), was named after WHOI engineer Allyn Vine, who first envisioned a deep-sea research vessel in the 1930s. As Allyn Vine said back in 1956 "If you are going to observe something, you can't do better than send real people to do it". So what better way to really observe deep submarine life than sending people down to the depths to do so.

Entering service in 1964, *Alvin* was the

first deep-sea submersible capable of carrying passengers, usually a pilot and two observers. Its first untethered dive was just 35 ft. After numerous upgrades and reconstructions, *Alvin* could eventually dive to a depth of 14764 ft i.e. nearly 5000 m.

Just as the space shuttle is built to withstand the near total vacuum of outer space, *Alvin* was built to withstand the high pressure of the ocean depths. It had three portholes and a

couple of mechanical arms which enabled samples to be gathered for later examination on land. The titanium-hulled submersible could remain below for 10 hours under normal conditions, although its life support system would allow the vessel and its occupants to remain underwater for 72 hours. A typical dive lasted about 6 hours, although a dive to the bottom of the Mid-Atlantic took only about 2½ hours.

The pressure sphere was slightly less than two meters in diameter, so there wasn't much room for high jinks of any sort. It was capable of maneuvering around rugged bottom areas and could hover in midwater to perform scientific tasks, or take still and video photography. For this purpose it was equipped with various light sources enabling observations to be made in the otherwise pitch-black waters. It also had a number of sophisticated electronic instruments for measuring magnetic fields, heat flows, etc.

**Claim to fame** But what made *Alvin* so famous? It has taken 12000 people on over 4000 dives, and it is said that *Alvin* featured in nearly 2000 scientific papers.

In cooperation with two French submers-

ibles, *Cyana* and *Archimede*, it helped confirm the theory of plate tectonics and continental drift. Using the *Alvin*, scientists found some 300 new species of animals. It discovered the first hydrothermal vents off the Galapagos Islands, and went on to discover many others. It was also one of the first submersibles to explore the Mid-Atlantic ridge.

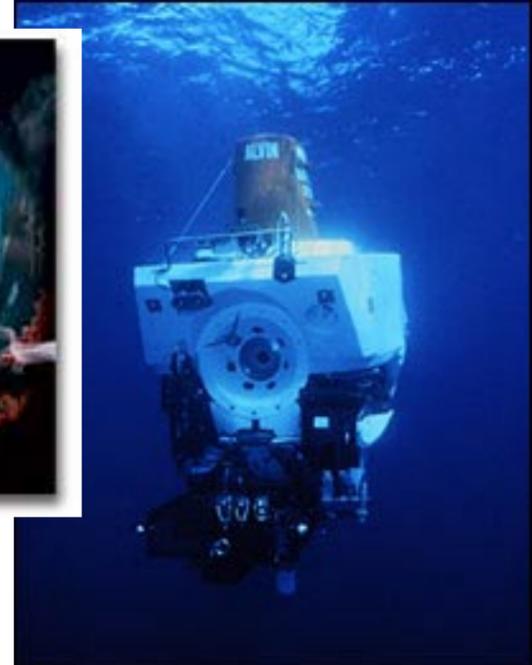
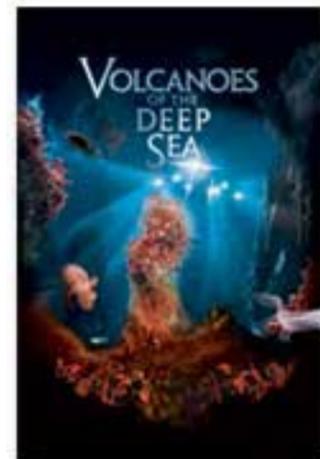
Among its non-scientific efforts, it explored the Titanic, and it retrieved a hydrogen bomb after it was accidentally dropped into the Mediterranean.

But it was not all been plain sailing, so-to-speak. In 1968 *Alvin* broke free of the cables used to lower it into the water, and it sank more than 5000 feet to the bottom. It remained there for 11 months before being recovered. Fortunately, due to the very low temperatures and anaerobic conditions, it was still in excellent condition, apart from some damage occurred during recovery.

**Replacement** All-in-all, then, *Alvin* was a superbly equipped vessel for oceanic research. But even the tremendous capabilities of *Alvin*, based as they were on older technologies, were being stretched in the search for new knowledge of the oceans and their depths. Russia, France and Japan now have more advanced vehicles. Therefore *Alvin* had to be replaced. The US National Science Foundation, NSF, has thus announced that it would fund a new vehicle to be operated, as was *Alvin*, by WHOI.

The replacement vehicle, to be completed in 2008, will be capable of reaching

Imax movie *Volcanoes of the Deep Sea* is a giant screen science adventure that follows a team of scientists on the submersible *Alvin* as they dive to research mysterious hydrothermal vents on the mid-ocean ridge.



Alvin being launched from her mothership  
SOURCE: [oceanexplorer.noaa.gov](http://oceanexplorer.noaa.gov)

Photo: Woods Hole Oceanographic Institution

more than 99% of the sea floor to depths of 6500 meters. Apart from being able to dive much deeper, WHOI state that it will have several major improvements over *Alvin*: Thus, the new submersible will provide a

- A faster descent speed, and faster submerged forward speed
- Better visibility and lighting for the pilot and two observers, with five view ports instead of the previous three
- A variable ballast system that will enable the vehicle to hover to conduct mid-water research at multiple depths anywhere in the water column on a single dive
- Improved ergonomics and more space in the 2.1-meter diameter personnel sphere for the pilot and two scientists
- The ability to carry heavier science payloads, and more storage space for samples
- Improved sensors, tools and data collection systems
- Improved maneuverability and manipulation, and upgraded navigation systems
- Higher speed data-communication with the surface ship, and via satellite to shore



Alvin being launched from her mothership

## Alvin

greatly expanded access for scientific research in areas of the ocean which are as yet unexplored. One wonders what exciting discoveries will be made.

**In the meantime** While we are awaiting with some impatience for *Alvin's* replacement, there are several other vessels available to carry out deep-sea research. Among these are *Pisces IV* and *Pisces V*. These three-person submersibles are operated by HURL, the Hawai'i Undersea Research Laboratory. They can operate down to a depth of 2000 meters. This operating depth is ideal for the waters around the Hawaiian Islands where *Pisces IV* and *V* conduct the vast majority of their operations.

The primary data that comes from the submersible dives are videos. Each sub is equipped with three digital cameras. At least one of the cameras is on at all times during a dive.

In addition to video capabilities, each submersible has two manipulator arms. A skilled pilot can use the arms to collect samples, biological or geological, and store them in a mounted sample basket. In addition to collecting samples, the arms can be used for many other tasks, including the placement of small temperature recorders into hydrothermal vents, or to gently push the submersibles backwards when the pilot wants to avoid stirring up sediments with the thrusters.

These two, like the *Alvin*, are very sophisticated machines, much of whose technology is used to support the lives of the operators in the oceanic depths. Despite Allyn Vine's dictum, however, much useful undersea work can be carried out

by more simple autonomous submersibles. An example of this is the *Serafina*.

**Serafina** This is a 40 cm-long, self-controlled submarine that can dive to around 5000 meters, and perform a range of scientific tasks. Designed by a team, led by *Dr. Zimmer Uwe*, at the Australian National University, it could also be used in shipwreck recovery, and in search and rescue missions. Although there are many advantages in being so small, for example, being easy to pressurise and handle, *Dr Zimmer* thought that there might be one problem. *It could*

*possibly be eaten by an aquatic predator.* ■



Back in those days

Photo: Woods Hole Oceanographic Institution



Hawai'i Undersea Research Lab's submersible *Pisces V* being launched from its support vessel R/V *Ka'imikai-o-Kanaloa*.

Photo: Woods Hole Oceanographic Institution

... the never ending substory

# New possibilities for sightseeing

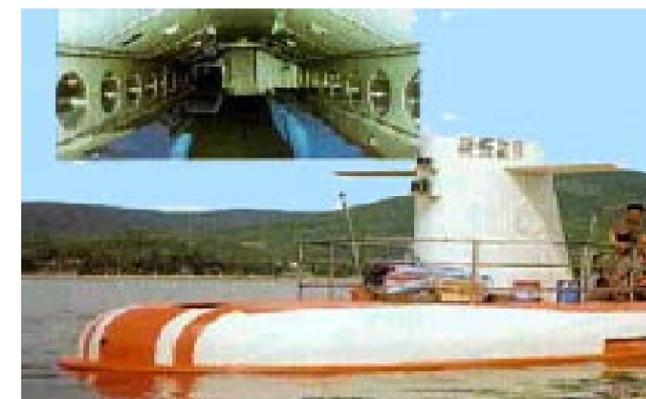
Both *Alvin* and the new *Pisces IV* and *V* are research vessels with very limited space for crew, and are certainly not intended for mere sightseeing. So, until now, subsurface sightseeing has mainly been a privilege of the few. However, it has now becoming possible for ordinary tourists to experience directly for themselves the wonders of the subsurface world.

Two submarines, nearing completion in China, have been built specifically for underwater tourism. The submarines, entitled *Haitai One* and *Haitai Two*, which can descend to a depth of 30 meters, can each hold 48 tourists, all of whom will have a window through which to view the underwater landscape. The vessels will be delivered to Thailand.

In a slightly more modest fashion, a mini-submarine, now under completion in Plymouth, UK, will enable six passengers to view the underwater world. It weighs 18 tonnes and is 11.2 metres long, and is capable of diving to 300 meters. Although

the craft will be available for hire by the public and corporations, it has been built to be used for serious research.

This six-seater submarine is being operated by Plymouth's National Maritime Museum, and it expects fairly soon to be able to take bookings for submarine



voyages out to Europe's first artificial diving reef. The museum created this artificial reef when it scuttled the decommissioned frigate *HMS Scylla* in Whitsand Bay, Cornwall. Many divers have already explored this new reef, but now non-divers will be able to take an hour-long trip around the wreck aboard the submarine. The first public tours will probably take place next year in the summer. Tickets have been seen announced at £260 on the internet. ■



An artists impression of the new tourist sub in Plymouth, called *Alicia*



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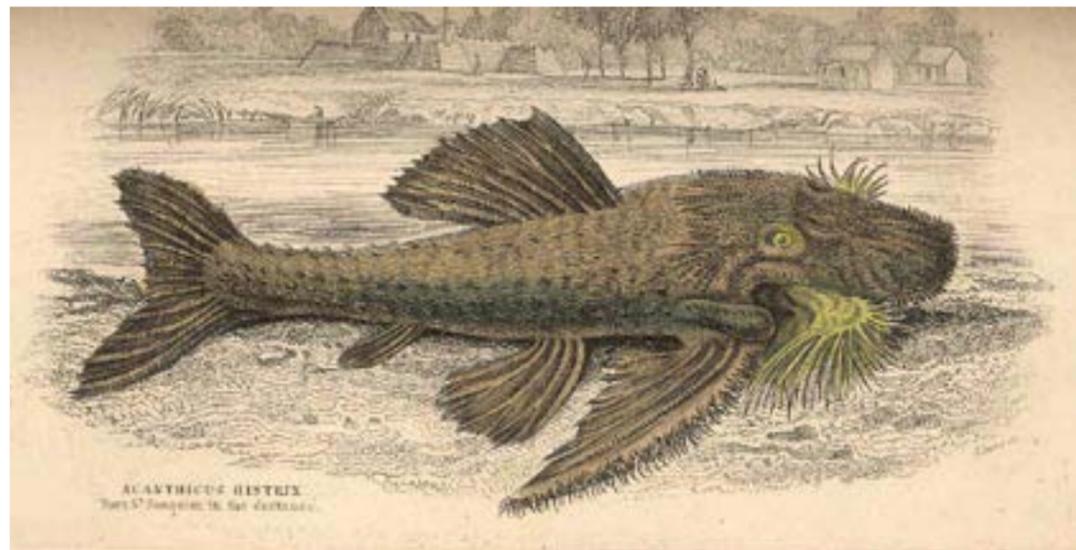


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TDI SDI ERDI PADI CMAS

Edited by  
Michael Symes



FRESHWATER AND MARINE IMAGE BANK

Acanthicus histrix.  
Fort St. Joaquim in  
the Distance. 1852

# Thousands of New Species

**Most of the Earth's teeming biodiversity is microbial in nature, particularly in the oceans where microorganisms account for more than 90 percent of the biomass. CoML, the Census of Marine Life, is a growing global network of researchers in more than 70 nations engaged in a ten-year initiative to assess and explain this diversity, distribution, and abundance of marine life in the oceans.**

The first systematic effort to map the marine biosphere had resulted in the discovery of a quarter of a million new species, and 50 new marine species are being localised every week, of which perhaps only two or three are fish.

Since CoML's last report a year ago, there has been a tremendous increase in our knowledge of life in the oceans. For example, 80000 specimens were recorded in just one survey over the relatively small area of the Mid-

Atlantic Ridge. However, enormous areas of the world's oceans have yet to be evaluated.

In CoML's latest progress report it is stated that some 13000 new marine species have been discovered in the past year. Most of our present knowledge comes from the first 100 m and we know relatively very little about what lies deeper. If a fish is caught below 2000 m the chance of it being a new species is 50 times more likely.

From information gathered by a number of

means, such as specimens catalogued and counted from trawls, or tagged and tracked organisms, some idea as to how life operates in the depths is now starting to emerge. Thousands of meters below the surface there appears to be a large scale circulation of concentrated life.

Our knowledge of life in the oceans seems set to be increased in a radical way in the next few years. We look forward to further reports from CoML. ■

## New life forms found in New Zealand deep sea volcanos

Scientists carrying out the first deep-sea exploration of underwater volcanos near New Zealand claim to have discovered new species of life-forms.

Scientists and marine biologists from Geological and Nuclear Sciences Ltd (GNS), led by Dr Cornel de Ronde, conducted the first ever probe of the Brothers volcano, situated at a depth of 1800 m some 400 km northeast of White Island.

The 18-day expedition was conducted in a Japanese-operated Shinkai 6500 submersible, in association with the Japan Agency for Marine-Earth Science and Technology. It involved four 8-hour dives at two sites, in which

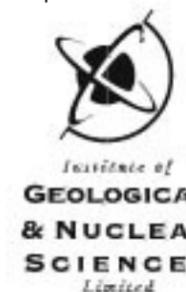
the scientists collected geological and marine life samples, including colonies of thermophile micro-organisms, for further analysis and study in New Zealand.

It was reported that scores of chimneys were seen, some of which were six metres tall, each containing thousands of tonnes of metal. Fluids at 300°C were flowing out of chimneys at one of the sites, forming dense black plumes. Iron, copper, lead and zinc were present among the minerals in the chimneys. Biological samples taken included shrimp, scale worms, crabs, eel-fish, limpets, and tube worms, the latter being the first time the species had been recorded in New Zealand territorial

waters.

Dr. de Ronde and his colleagues believe that up to 30 percent of the creatures they have collected for study are unknown, and that they may have future potential applications in pharmaceuticals, bio-remediation of contaminated sites, and biomining.

The Japan Agency for Marine-Earth Science and Technology, which is owned by the Japanese government, paid most of the costs of the expedition. ■



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PHOTOS: INSTITUTE OF GEOLOGICAL & NUCLEAR SCIENCES



Edited by  
Michael Symes

PHOTOS: NATIONAL MARINE SANCTUARY FOUNDATION



## New Museum to preserve Great Lakes' treasures

**Building has now commenced on a visitors' center at the Thunder Bay National Marine Sanctuary and Underwater Preserve, near Alpena, Michigan.**

The Thunder Bay National Marine Sanctuary and Underwater Preserve (NMS/UP) encompasses 448 square miles of northwest Lake Huron, off the northeast coast of Michigan's Lower Peninsula. The landward boundary of the sanctuary/preserve is marked by the northern and southern limits of Alpena County, and the sanctuary/preserve extends east from the lakeshore to longitude 83 degrees west. The largest city in the vicinity is Alpena.

The Thunder Bay National Marine Sanctuary and Underwater Preserve was established in 2000 to protect an estimated 200 historically significant shipwrecks, ranging from 19th-century wooden side-

wheelers to 20th-century steel-hulled steamers. It is one of 13 national marine sanctuaries that encompass more than 150,000 square miles of ocean and Great Lakes natural and cultural resources.

The center is located in a former paper mill undergoing renovations. The 20,000-square-foot facility will preserve and highlight the maritime heritage of the Great Lakes and the shipwrecks of Lake Huron's Thunder Bay, as well as doubling as a research site. It will feature a discovery center with more than 8,000 square feet of exhibits on the Great Lakes, shipwrecks, archaeology and maritime history. The center will also have an auditorium for showing films and live video feeds from Thunder Bay shipwrecks, an archaeological conservation laboratory and an education resource room. In addition, the laboratories, archives, dockage for research vessels, and a field station for visiting scientists will make the center a regional research facility, not just for historians and archaeologists, but also for other scientists working to ensure the health of the Great Lakes.

The center is expected to draw 70,000 visitors a year. ■

You can help further the mission of the Thunder Bay National Marine Sanctuary and Underwater Preserve and all our national marine sanctuaries by supporting the National Marine Sanctuary Foundation!

Click on the logo

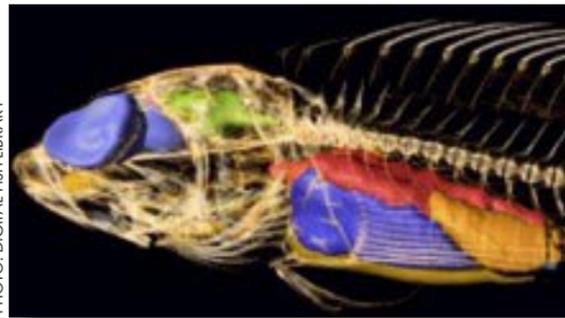


PHOTO: DIGITAL FISH LIBRARY

## Proposal for the first digital fish library

Many of the things that make sharks such efficient killers, their keen sense of smell, for example, are hidden from view. Studying the internal anatomy of sharks has meant opening the animal up in laborious and destructive dissections. However, many specimens are simply too valuable to dissect, and little is known about them beyond photographs and basic scientific information.

But in a newly proposed project, Jeffrey Graham and other marine biologists from Scripps Institute of Oceanography have teamed up with radiologists to scan fish with MRI machines, high-tech diagnostic tools typically used in medicine. While conventional CT scans are more effective at imaging bones, magnetic resonance imaging creates detailed computer images of soft tissue, blood flow and brain activity, providing an unparalleled view inside the body.

The beauty of MRI is, it gives a fairly rapid detailed structural analysis, and you still have the specimen intact when you're done. That is critical to Scripps' vast and irreplaceable collection of marine organisms, which holds more than 2 million preserved specimens amassed over a century of exploration.

This new project, called the Digital Fish Library, aims to scan representatives of every one of the 482 families of fish known to science. The Marine Vertebrates Collection at Scripps holds specimens from 455 families.

The project's initial goal is to scan 1,000 specimens and place the three-dimensional images on a Web site accessible to researchers and students alike.

A preliminary model for the site can be found at [www.digitalfishlibrary.org](http://www.digitalfishlibrary.org). ■

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Edited by  
Michael Symes

A piece of wood riddled with holes created by wood-boring bivalves called shipworms. These organisms cause a tremendous amount of damage to marine timbers such as docks, pilings and ship planks

ZOO.LAB: WWW.BIOWEB.UW.LAX.EDU/ZOO.LAB



## Baltic archeological remains threatened by shipworm

**Shipworm has entered the Baltic Sea, and if it continues to spread, it can destroy irreplaceable shipwrecks and other marine archeological remains along the coast of Sweden, according to professor of marine archeology Carl Olof Cederlund, Stockholm.**

Prof. Cederlund is the Swedish representative in an EU project that has now determined the spread of shipworm to the Baltic for the first time.

The three-year EU project is called Monitoring, Safeguarding and Visualizing North European Shipwreck Sites, abbreviated MoSS. It is organized and executed by partners in Finland, Sweden, Denmark, the Netherlands, the United Kingdom, and Germany.

The six project partners have now reported on the protection and preservation of

underwater cultural environments, primarily well-preserved shipwrecks in northern Europe. One of the wrecks is the Dutch snaubrigg Vrouw Maria, which sank in the Finnish archipelago in 1771. It is still fully preserved, with its rigging intact. Although it has not yet been attacked by shipworm, a kogg from the 13th century off the German Baltic coast has been. Scientists have established that the wreck has been extensively damaged by shipworm, *Teredo Navalis*.

Because the Baltic has previously been free of shipworm, it was possible to find the *Wasa* and other large wooden vessels in excellent condition after centuries at the bottom. It is not yet known how shipworm has managed to enter the Baltic.

In Sweden, the EU project has focused on the steam wheel-er *E. Nordevall*,

launched in 1837, which sank in 1856. It lies intact today, at the bottom of Lake Vättern. The *E. Nordevall* played a central role in the discussion about, and the development of, methods for bringing old shipwrecks back to life. One way of making a well-preserved shipwreck of advanced age available to the general public, is to build a full-scale model of it, and so a replica is now being built of the *E. Nordevall*. The aim is to ply the routes of the original ship with the replica, carrying passengers.

It might also be possible to display the vessel at the bottom of the lake to the public. Prof. Cederlund thought it possible that modern digital technology could be used to transmit direct images of the ship from the bottom of the lake to a nearby museum. ■

The project Web page is:  
[www.mossproject.com](http://www.mossproject.com)

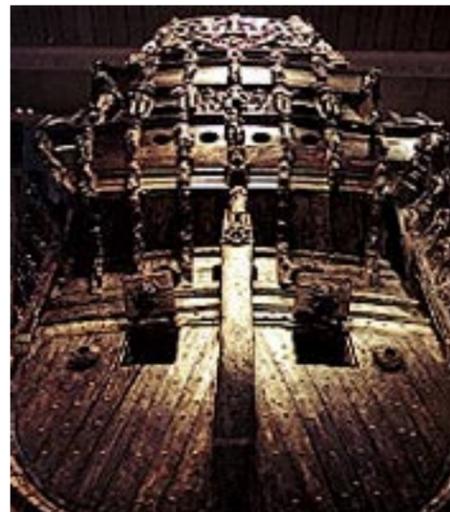


PHOTO: THE VASA MUSEUM

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# Do seismic tests and sonar affect whales?

**Royal Navy unveil new sonar system** The Royal Navy has unveiled a new low-frequency sonar which, it is stated, will not injure sea mammals. The sonar detects the frequency of near-

by objects rather than emitting sonar pulses. The new technology had thus been billed as being whale and dolphin-friendly, but tests have revealed it can still cause sea mammals to become disori-

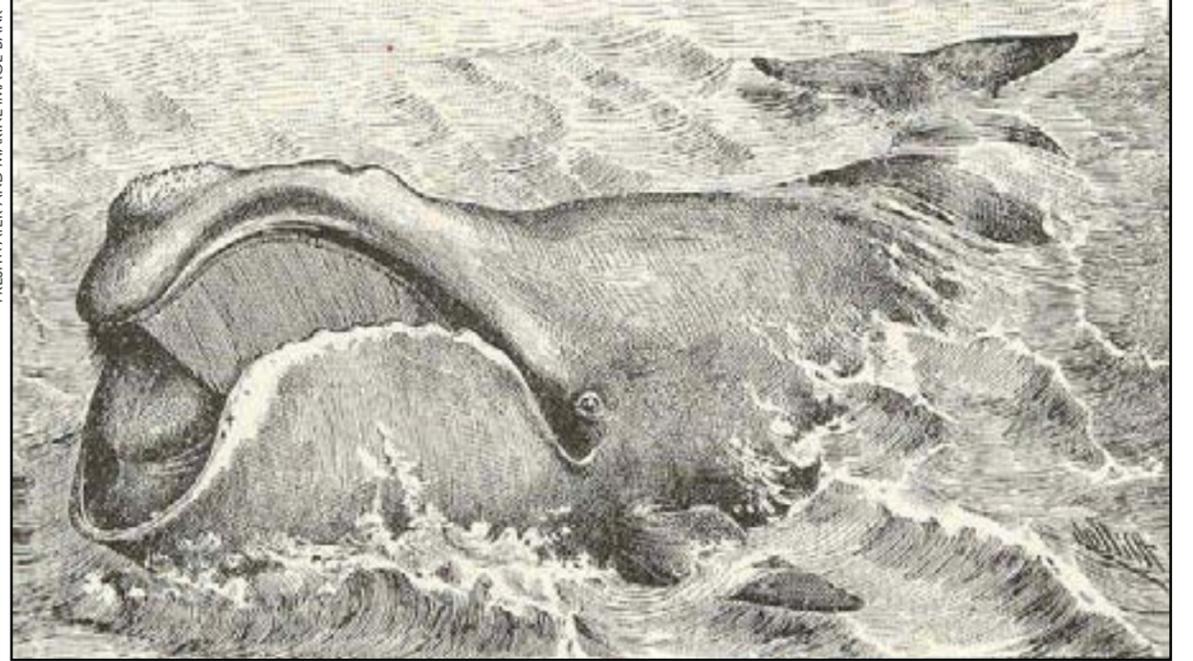
entated. It was stated by the Ministry of Defence that a full Environmental Impact Assessment had been carried out during the development of the new sonar, and that the initial results had not produced any evidence that the sonar caused an impact on marine wildlife. However, the tests had shown that permanent damage could be caused to the hearing of sea mammals such as whales if they remain within 500 metres of the ship for 30 minutes while the sonar was being used.

Defence Minister Lord Bach has admitted that tests had shown that the sonar has the potential to be harmful to marine mammal. He said the new system would have to be switched off when whales and dolphins were detected nearby, and areas known to be natural habitats for the animals would be avoided by the warships.

## Conservation groups' concern

Wildlife conservation groups, however, have expressed concerns that the use of sonar in general leads to sea mammals such as whales and dolphins becoming disorientated, causing them to become beached.

The Whale and Dolphin Conservation Society think that the risks from powerful sonars to marine wildlife are currently unclear, but marine noise pollution has



FRESHWATER AND MARINE IMAGE BANK

Baleen whale. Engraving by G. Clerc-Rampal, 1913

the capacity to disturb, displace or even directly physically harm animals. Low-frequency noise, because of its ability to travel great distances, could cause widespread impacts that are also likely to be difficult to detect. Recent correlations between naval activities and strandings of deep-diving beaked whales is a significant concern that should be reviewed.

## Europeans and the US push to halt sonar

A resolution has been approved by the European Parliament, which calls on its twenty-five member states to stop deploying high-intensity active naval sonar until more is known about the harm it inflicts on whales and other marine life. Although the resolution does not require member navies to stop using 'active' sonar, it concludes that a growing body of research suggests that the widespread use of loud sonar has caused some whales and other animals to beach themselves.

The US Senate has also passed a motion calling for the Federal Government to suspend any intense ocean noise in Australian waters which has the potential to damage marine animals. Democrats leader Lyn Allison thinks the mass strandings should create enough concern for the Government to ban the use of high-intensity naval sonar in Australian waters

until more research is completed. Senator Allison says her most immediate concern is the naval exercises that will soon be carried out close to the Great Barrier Reef.

In recent years mass whale strandings have followed naval sonar manoeuvres in Greece, the Virgin Islands, the Bahamas and the Canary Islands. And in July the International Whaling Commission found 'compelling evidence' that high-intensity sonar was harming whales and leading to some mass strandings.

## Seismic halt urged for whales

After several whale strandings near Australia recently, it was suggested that seismic tests carried out in oceans to search for gas and oil should also be stopped until the whale migration season had ended. Conservationists have raised concerns about the impact of underwater seismic testing on marine life after more than 150 whales and dolphins died in strandings in Tasmania and New Zealand this week. (but see 'Mass whale beachings in Tasmania'). Cetaceans may experience gross damage to ears, damage to body tissue, masking of communication, interference with their ability to acoustically interpret their environment, and also interference with food finding. ■



HMS Somerset, Type 23, Duke Class Frigate

WWW.ROYAL-NAVY.MOD.UK

PHOTO: PARKS AND WILDLIFE SERVICE



Mass Stranding of Pilot whales, Sandy Cape, Tasmania

## Mass whale beachings in Tasmania

Tasmania is notorious for whale mass strandings, with pilot whales and sperm whales regular victims. About a year ago, 110 long-finned pilot whales and 20 bottlenose dolphins died on a beach in Tasmania's far south-west. And in June, 2004, four sperm whales died on a beach near Strahan.

The biggest recorded mass stranding involved 1000 pilot whales on the Chatham Islands in 1918, and the biggest in more recent years affected 450 of the same species on Great Barrier Island in 1985. An average of 80 to 85 pilot whales are stranded on New Zealand coasts alone every year, and there was usually about one mass stranding a year.

More recently there have been two mass strandings of pilot whales at opposite ends of Tasmania when more than 116 whales and bottle-nosed dolphins became stranded at King Island, and the day after at Maria Island. And in New Zealand, 55 pilot whales from a pod of 73 have died on the Coromandel Peninsula.

### What causes mass strandings?

**Winds theory** An analysis of more than 300 strandings in the region over the past 80 years reveals that a disproportionate number of whales and dolphins beached themselves every 10 to 12 years. University of Tasmania scientists therefore predicted that whale strandings were more likely as the predominant west winds over the Southern Ocean increased in strength on a roughly decadal cycle, with the winds bringing colder, more nutrient-rich

waters. More fish came to waters around Tasmania, drawing deep ocean dwellers, such as pilot whales, closer to shore in search of prey. A noticeable peak in strandings is linked to the winds, so it is expected that that these events could occur for the next year or so.

### Man-made causes

The appearance of a naval fleet in nearby waters has also raised concerns about a possible man-made cause. A spokesman was unaware if high power active sonar was in use by any of the ships, but said that anyway no scientifically demonstrable link had been found between Australian sonar and stranding of whales. However, research into the effects of military sonar technology and seismic activity was important, because there was evidence that these activities affected marine life. Yet we have little idea on how whales use sound to navigate.

Mass strandings in Tasmania nearly always involved pilot whales who live off the continental shelf and rarely goes close to shore. Unlike baleen whales, such as humpbacks, pilot whales used echo location to navigate which would provide poor navigation on shallow, sloping beaches.

But do these theories miss the mark?

Records show that whales have been stranding in Tasmania for more than 100 years, long before plastics, pollution, seismic testing or military sonar technology. This would suggest that the current theories miss the mark, and that the strandings could be due to the whales themselves.

It several cases it has been found that

stranded whales form part of same family. Tissue samples from the pilot whales that died on the beach at Opoutere indicate that they may all have been members of a single family. Furthermore, samples taken from another mass stranding on Stewart Island last year, found that almost all the animals were related through the maternal line.

It is believed that the family groups might come ashore to help family members in distress. If an animal gets in trouble it will call for help and other animals will come round and support it. Therefore, a single pilot whale getting stuck in the sand might be enough to bring the whole family to its aid, stranding all of them. They could have been chasing prey when they became disoriented, or they might have been pursued by such predators as killer whales. Often whales are also trapped in the hooked corners of long beaches by falling tides.

So, it seems that, until we have a much better understanding of how whales navigate, we cannot really resolve the question of why mass whale strandings occur. To help, visit: [www.wild-caretas.org.au](http://www.wild-caretas.org.au) ■

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WHALE SHARK

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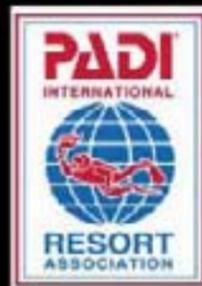
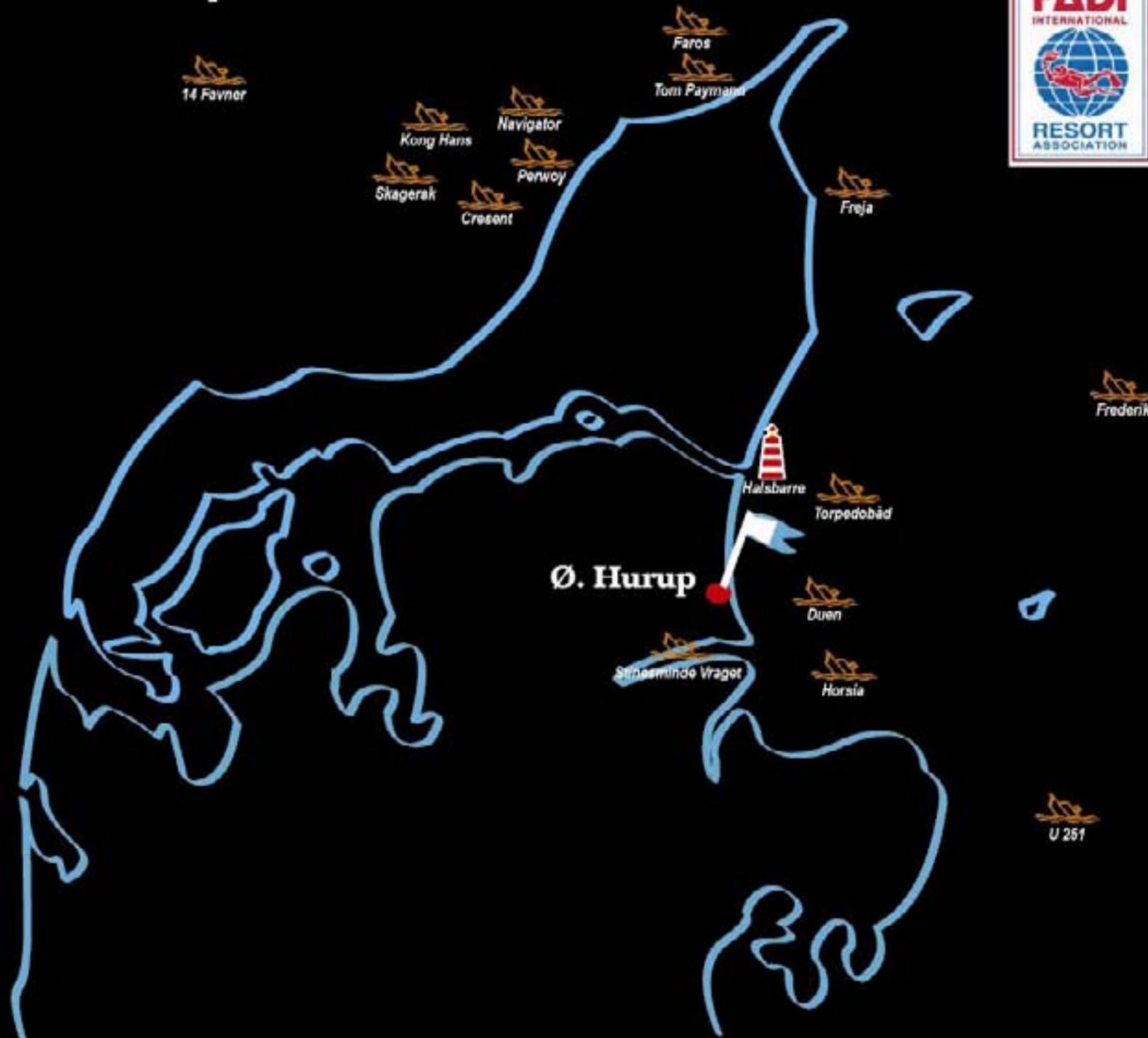


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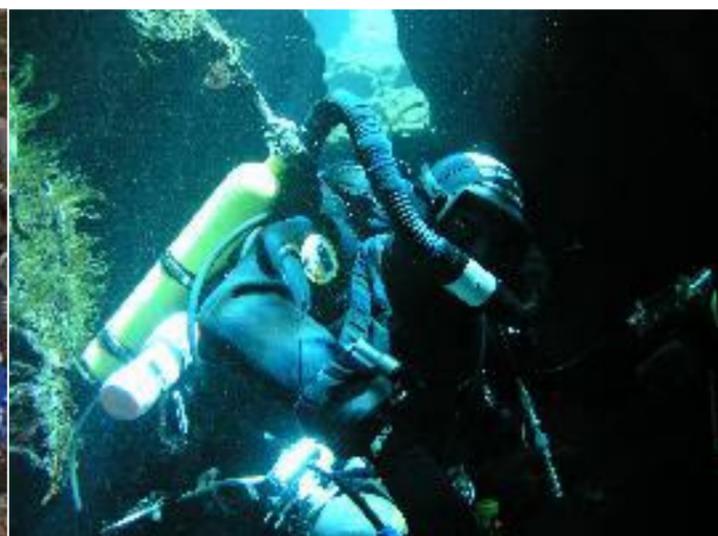
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# Triumph & Tragedy at Boesmansgat

Record-breaking diver dies under recovery attempt at 271m



January 2005, tragedy: David Shaw dies under attempt to recover body of another diver

October 2004, triumph: Verna van Schaik, first woman to dive 221 m on open circuit

Boesmansgat in Northern Cape province, South Africa, is the largest natural cavern of its kind in the Southern Hemisphere. It is an ancient watering hole for Bushmen roaming the Kalahari Desert. It is one of the most famous inland diving spots, attracting divers from far and wide, where many dive records have been made. But the many record attempts have not been without their victims, for

Boesmansgat poses the ultimate challenge to scuba divers. At Boesmansgat in October 2004, Verna van Schaik, from Gauteng, became the first woman to dive 221 meters on an open circuit scuba. She established a world record in speleological diving for women as well as altitude dive. The long ascent back to the surface required 40 decompression stops that totalled five hours and 27 minutes.

**Macabre find** Three days later, Dave Shaw, an Australian deep-water diver, set a new deep water record at the same place. He reached a depth of 271 meters in a nine-and-a-half hour dive, using rebreather equipment. The previous world record for a dive of this nature, using rebreather equipment, was 242 meters. The depth reached would have been greater, but Shaw

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Aluminium Compact tech diving lightpack: rechargeable



*Compact and easy to connect on your tank*

*Burn time 2.7 H*

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### Technical data:

Tension (volts):	6 Volt
Current (Amp/h):	9 Amp
Power (Watt):	20 W
Burn Time:	2,70 H
Reflector Dia:	51 mm
Bulb (Degrees):	12
Color Temp.(Kelvin)	3200
Weight in air:	2300 gr
Weight in water:	1900 gr
Lamp dimensions:	
Pack dim:	ø42 x 320 mm
Light on/off in light head	
Batteri type:	NIMH
Charging time(min)	10H

### Description:

Lamp head made of aluminium machined in high precision, and double coated, oring sealed in front of lamp, and double sealed in back on the plug, light turn on/off just turn plug. charging of batteripack, on end of lamphead plug.

Batteri pack, made of aluminium double coated, and all plug ends are double sealed. Light system are waterprove to 220 meter.

Charger and plastic box included.



Charging in end of lamp plug

*Compact long burn time Optlow Extra bulb head easy maintenance*

Turn on/off on lamp head

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Verna van Schaik and Dave Shaw were members of the same group, . [www.xtremedream.org](http://www.xtremedream.org)

abandoned his attempt to dive deeper when he apparently found the skeletal remains of Deon Dreyer, a diver who died in the cavern in 1994. The remains were lying on the uneven bottom of the cave, with the diving mask and fins still in place. The cylinders had been trapped in the mud, so he could not lift the skeleton in the diving suit. As he was already one minute over his maximum bottom time, he tied off his reel to the remains so that they could be found again, and began his ascent.

Dreyer disappeared in December 1994 while being part of a support crew for SA Cave Diving Association divers whose target was to dive 150 meters. On the way back up, at between 50

to 60 meters, Dreyer is thought to have experienced deep-water blackout, and thereafter, dropped fast to the bottom without any chance of rescue.

### Recovery of Dreyer's remains

A recovery of the remains of Deon Dreyer was to be carried out in January by Dave Shaw himself – an intimidating and dangerous task under any circumstance. A special block-and-tackle had been constructed to bring Dreyer's remains and cylinders to the surface. Shaw would have only five minutes at the bottom to cut the two cylinders and heavy battery pack from Dreyer's diving suit. These would then be recovered by attaching them to a steel cable and hoisting them to the surface. A team of eight technical divers and two police officers would assist in bringing Dreyer's body to the surface. It was intended that Shaw would bring the skeleton in the diving suit to a depth of 150 meters where three other divers would then bring it to the entrance of the cave.

After a meticulous planning of safety measures, Shaw began his descent at 6:15 am on the 8th of January. To provide a record of the recovery mission, Shaw mounted a video camera on his helmet. He took only ten minutes, half the planned time, to descend the 271 metres, to reach Dreyer's remains.

A second diver, Don Shirley, followed some 13 minutes later, having expected that Shaw would have cut Dreyer from his tanks, placed his remains in a body bag and started his ascent. However, there appeared to be no indication that Shaw had

### IANTD, South Africa writes:

David successfully reached his objective, but was unable to recover the body of Deon Dreyer at the bottom of Bushman's Gat due to a number of unforeseen practical factors. He appropriately aborted the attempt at 6 minutes – as planned – but sub-



Dave Shaw, the diver  
Photo from his own homepage

commenced his ascent, and there were no indications, either, that he was in any trouble. So, Shirley continued down to 250 metres to look for Shaw. At around 20 metres from Shaw's lights, the computers controlling Shirley's breathing equipment appear to have imploded. Beginning to suffer from decompression sickness, he had to return to the surface and was placed in a decompression chamber.

A body bag should have appeared after about 80 minutes. After waiting a further ten minutes, a second support diver, Peter Herbst, who had not found Shirley at the pre-arranged 80 meter mark, descended to the 120 meter mark, where Shirley informed him that Shaw was not coming back up.

Later, divers retrieved equipment

sequently became entangled in the line previously used to mark the body. In the ensuing effort to free himself, he succumbed to the combined effects of carbon dioxide build-up and nitrogen narcosis. It is certain that David died due to drowning after a loss of consciousness underwater, approximately 22 minutes after leaving the

left behind by Shaw, and when the line attached to Dreyer was pulled up, both bodies appeared some 20 metres beneath the surface. It seems that Shaw had become entangled in the nylon line he had attached to Dreyer's remains. Under normal circumstances, an experienced diver could easily have cut himself free, but the effort required to do so at 271 meters may have proved too much.

The video footage shot by Dave Shaw indicates that he was dead about 25 minutes after he had entered the cave.

### Postmortems on divers' bodies

The bodies of Dave Shaw and Deon Dreyer have been taken to the state mortuary in Bloemfontein for postmortem examinations. It was stated that the results of these postmortems could be available in a week to ten days.

In addition to the postmortems, the cylinders and battery of Dreyer's equipment will be examined to establish if he died due to equipment failure.

### Post Scriptum:

The post mortem concluded that an excessive build-up of carbon dioxide caused the black-out and death of Dave Shaw. Shaw's equipment was also inspected, and his gas mixtures analysed. Footage from Shaw's video camera showed that Shaw started work to free Dreyer's body, but aborted the effort when he had not succeeded after six minutes. During ascent he became entangled in the line used to mark the body, and while attempting to free himself, his breathing became increasingly laboured before stopping about 22 minutes into the dive. ■

surface, at a depth of 264 meters. As he had enough gas reserves, the question is – why? The evidence suggests that David suffocated. Overfilling of his rebreather appears to have prevented him from exhaling properly.

The statement in its entirety can be read at <http://www.iantd.co.za/home.html>.

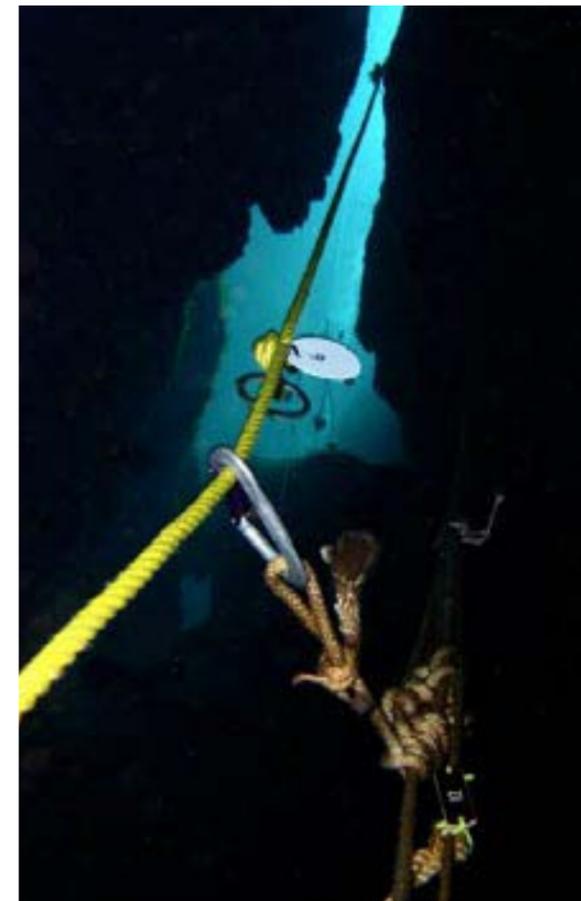


PHOTO: XTREME DREAM UNDERWATER EXPEDITIONS

### THE STORY OF BUSHMAN'S CAVE

Boesmansgat, or Bushman's Cave, is a natural dolomite freshwater sink hole of magnificent proportions. It lies on Mount Carmel farm, 55 km south of Kuruman, on the road to Daniëlskuil and Kimberley, in Northern Cape Province, South Africa.

Upon arrival for the first time, visitors are impressed by the spectacular sight of the sink hole from approximately 70 metres above. The top of the sink hole is about 100 metres in diameter. From the top, the water appears to be green and not very diveable, but when one reaches the water's edge, the water turns out to be crystal clear under the canopy of green weed. Aquatic cave amphipods and other interesting creatures are found both in and out of the water. No light penetrates its mysterious depths.

The sink hole is potentially dangerous, and should only be dived by experienced divers with some caving and sink hole experience.



Dave Shaw, the pilot  
Photo from his own homepage

*From Langkawi to Sipadan*

# Glimpses of Malaysia

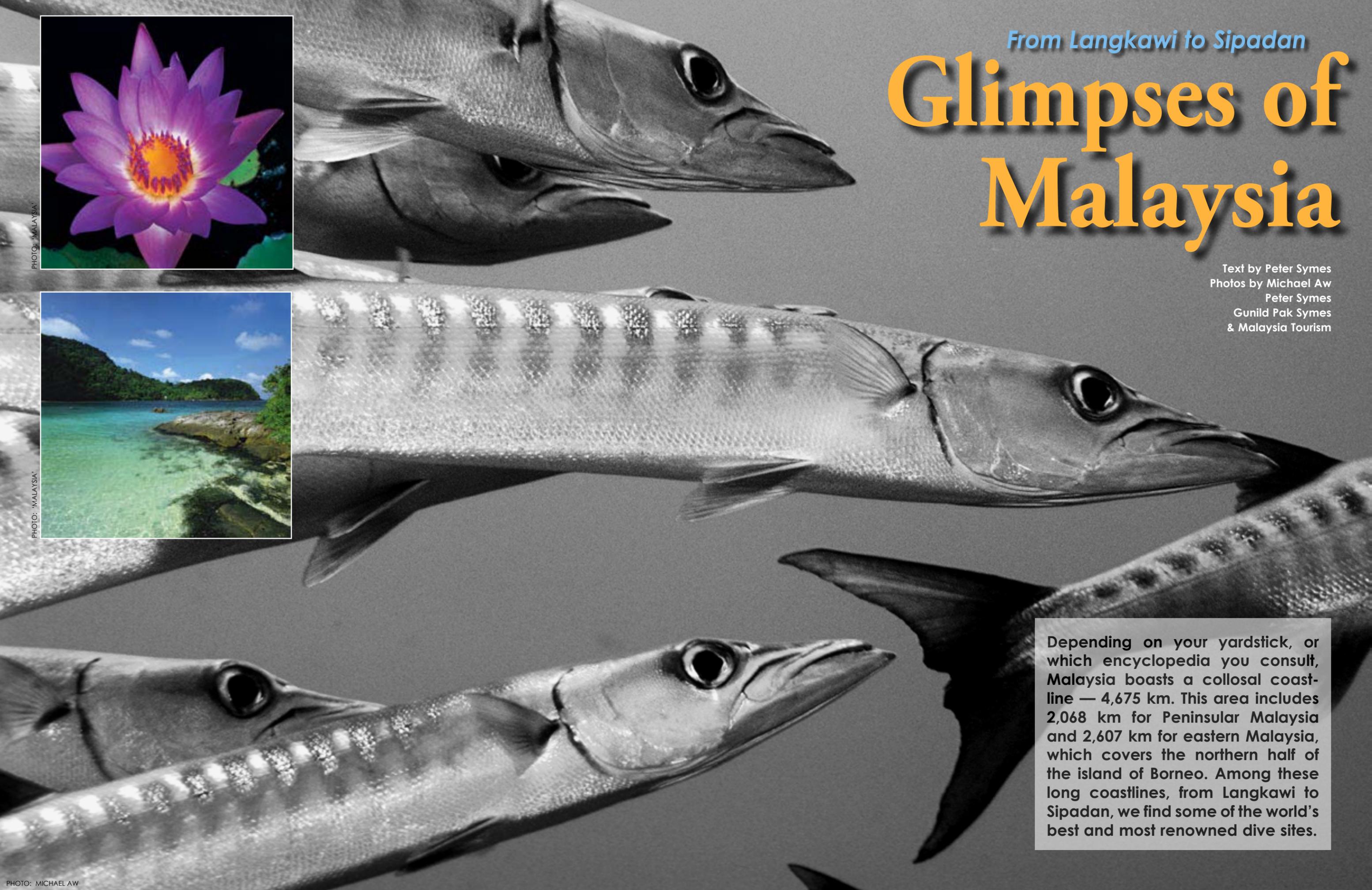
Text by Peter Symes  
Photos by Michael Aw  
Peter Symes  
Gunild Pak Symes  
& Malaysia Tourism



PHOTO: 'MALAYSIA'



PHOTO: 'MALAYSIA'



Depending on your yardstick, or which encyclopedia you consult, Malaysia boasts a colossal coastline — 4,675 km. This area includes 2,068 km for Peninsular Malaysia and 2,607 km for eastern Malaysia, which covers the northern half of the island of Borneo. Among these long coastlines, from Langkawi to Sipadan, we find some of the world's best and most renowned dive sites.

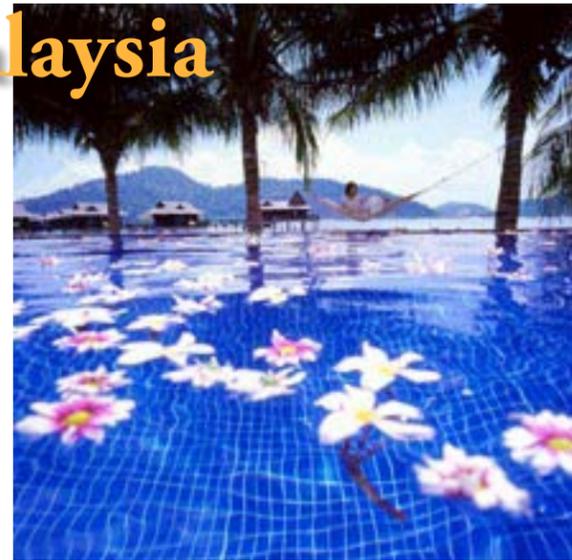
PHOTO: MICHAEL AW

# Glimpses of Malaysia

For most divers, Malaysian diving means the island of Sipadan off Sabah in Borneo — even novices tend to get that glazed look on their faces when the word “Sipadan” is uttered. Sipadan is still a true gem, but the environmental restraints, which always meant that the island had limited space to offer, have recently been increased. Authorities have forced a number of dive operators to vacate their structures on the island. Sipadan, Mabul and Layang Layang are all famous names, but maybe the time has come to take a further look at what Malaysia has to offer? Aside from so many new dive sites just waiting to be discovered, there are also an incredible amount of exciting adventures above water. This country boasts cultural and natural riches like few other territories.

While this magazine may be primarily for divers by divers, diving is not just diving anymore. It would be gross negligence not to take at least a brief look at a few of the cultural and land excursions that can be conveniently and easily included in a dive trip to the region. Be it her dense, mysterious rainforests once haunted by head-hunters and now the home of proboscis monkeys, hornbills and of course orang-utans, or the exciting, dynamic capital of Kuala Lumpur, where modernity rubs shoulders with tradition and where you can shop till you drop before exploring the vibrant restaurant scene, or the white sand-fringed resort islands of Penang, Langkawi and Pangkor, with villas built on stilts over the water in the manner of a traditional Malay fishing village — all over Malaysia you'll find coral reefs, tropical jungles and friendly locals who speak English as well as Malay. Borneo is also home to Mount Kinabulu, the region's highest summit.

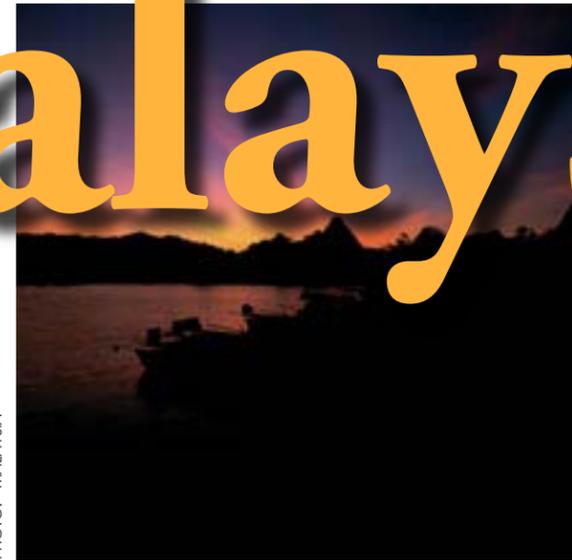
In this way, Malaysia can be likened to a treasure trove of adventures. Some gems are already found and polished while others are still waiting to be discovered. It is so hard to choose — there are so many good dive operators in the area that it is impossible to be equally fair to everyone who deserves an overview here.



Spa at Pangkor Laut Resort



Pitcher Plants



Sunset at Tanjung Rhu River, Langkawi



Details of decoration on fishing boat

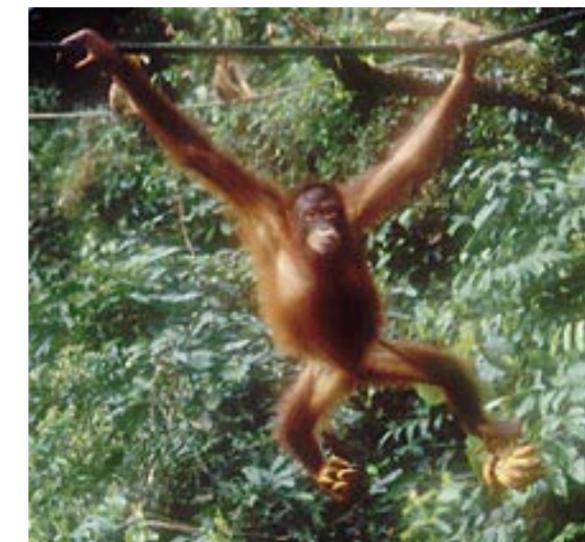
# Malaysia!



Overview of the main dive destinations within Malaysia and the sites described in this article



Kuala Lumpur at night



Orang-Utan in the Sepilok reserve



PHOTO: 'MALAYSIA'

# Glimpses of Malaysia

*Malaysia has a tropical climate with an average of 32°C and water temperature 28-30°C all year round. The best diving season on the west coast is from October-November to January-February, exactly the opposite to the east coast where the season starts again in March.*

## The West Coast



- 1. Langkawi & Pulau Payar
- 2. Pulau Penang
- 3. Sembilan Islands and Pulau Jarak

TOP: Ghost pipefish  
 INSET: Langkawi village shops  
 RIGHT: Diving in Malaysia

### Langkawi & Pulau Payar

Langkawi, a cluster of 99 islands separated from mainland Malaysia by the Straits of Malacca, is a district of the state of Kedah in Northern Malaysia and lies approximately 51 km west of Kedah. Only four of the 99 islands are inhabited — Pulau Langkawi (the main island), Pulau Tuba, Pulau Rebak and Pulau Dayang Bunting.

Langkawi is a duty-free shopping haven offering an attractive range of local and imported goods for those with a yen, dollar or euro for shopping. Since Langkawi is an island, it is surrounded by beautiful beaches and also

many other smaller islands. And you can guess that the beaches are a huge attraction. The most popular beach hangouts in Langkawi are Pantai Cenang, Burau Bay and Pantai Tanjung Rhu. Pantai Cenang is the more happening place where you can swim, water ski, jet ski, do some sailing, boating and other water activities. Burau Bay and Pantai Tanjung Rhu have a more relaxed pace.

Dive-wise, however, it is the nearby Pulau Payar Marine Park, about 19 nautical miles south of Langkawi Island and 32 nautical miles north of Pulau Pinang, that holds the greatest attractions. These islands, famous for the varied and colourful marine life that they support, offer the best diving on Peninsular Malaysia's west coast.

The park is comprised of four uninhabited islands: Payar, Lembu, Kaca and Segantang, which make

up Malaysia's oldest Marine Park sanctuary, have been protected since 1985. The park has been called a shining example of how proper conservation, good management and the promotion of eco-tourism can safeguard a healthy environment for future generations.

At Pulau Payar, the largest of the four islands, you will find the Marine Park Centre which was set up and operated by the Fisheries Department. If you are not into water activities, check out the two hiking trails that have been constructed to enable visitors to explore and enjoy breathtaking views of the surrounding sea and beyond.

The waters of Pulau Payar have an additional attraction: artificial reefs built from tires, concrete blocks and old boats, which over the years have developed into mature reefs that are teeming with

marine life. Studies by the 'World Wide Fund for Nature' (WWF) showed diverse marine life including 36 genera of hard corals, 92 other marine invertebrates and 45 genera of fish.

PHOTO: 'MALAYSIA'

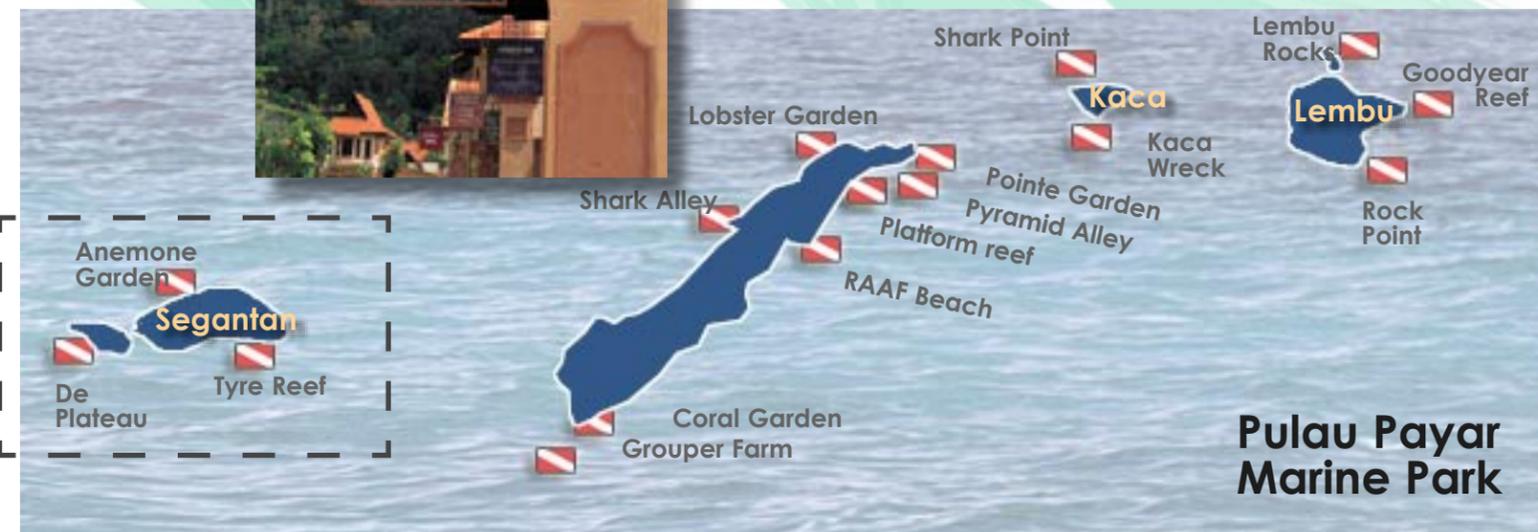
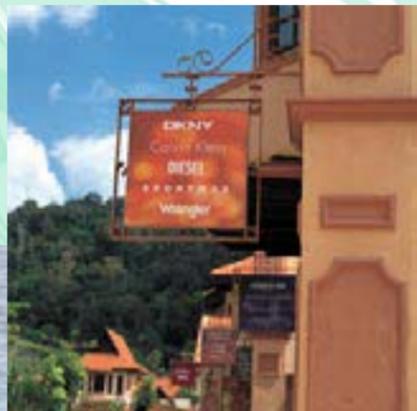


PHOTO: 'MALAYSIA'



# Glimpses of Malaysia

The northern section of the Straits of Malacca, which is one of the world's busiest shipping channels, may have had its draught altered significantly due to the tsunami that hit Asia on the 26th of December 2004, according to a report in the shipping journal, *Portsworld*. Water depths in parts of the Straits of Malacca could have dropped from 4000 feet (1333 m) before the quake to as low as 100 feet (33 m) and thousands of navigational aides, such as buoys held in place by mushroom-shaped anchors have been carried off to new locations. Old shipwrecks marked on charts had been relocated, joined by new wrecks that would have to be salvaged, moved or charted.



## Sembilan Islands & Pulau Jarak

Further south, near Lumut lies Pulau Sembilan. The dive sites here are generally more challenging due to the currents and sometimes the visibility is not more than 2-3 metres. Diving depth ranges from 5 m to 40 m. White Rock, which is characterised by a lighthouse, has steep walls to 40 m, where groupers and snappers sleep in the crevices and under overhangs. In the open water, it is not unusual to see barracuda, jacks and other big pelagic species.

Around Saga, Lalang, Rumbia and Buluh, one finds nice reefs with lots of table corals and brain corals as well as tentacle corals. Around the orange daisy

corals, it is common to see big schools of damselfish. It is also a good site for coral scallops and nudibranches. Among the prevalent species of fish, we find parrotfish, angelfish, pufferfish, lionfish and moray eels.



PHOTO: PETER SYMES

Right in the middle of the straits, 40 miles (64 km) off Pulau Pangkor, lies Pulau Jarak, a small uninhabited island that has bet-

ter underwater visibility due to its remoteness. Dolphins and sailfish have been sighted here, but beyond that there are probably well-kept secrets unknown to everyone but the most hardcore divers.

Divers would do well to exploring this archipelago. The dive season is busy from November through March, since one can't dive at all on the east coast during that time. The diving is easy with a maximum depth of 15-20 m in the interesting areas, whereas in the deeper parts, there is mostly sandy bottom. There is one submerged reef off Jarak at about 25 m depth, however the currents can be quite strong there.



PHOTO: MALAYSIA

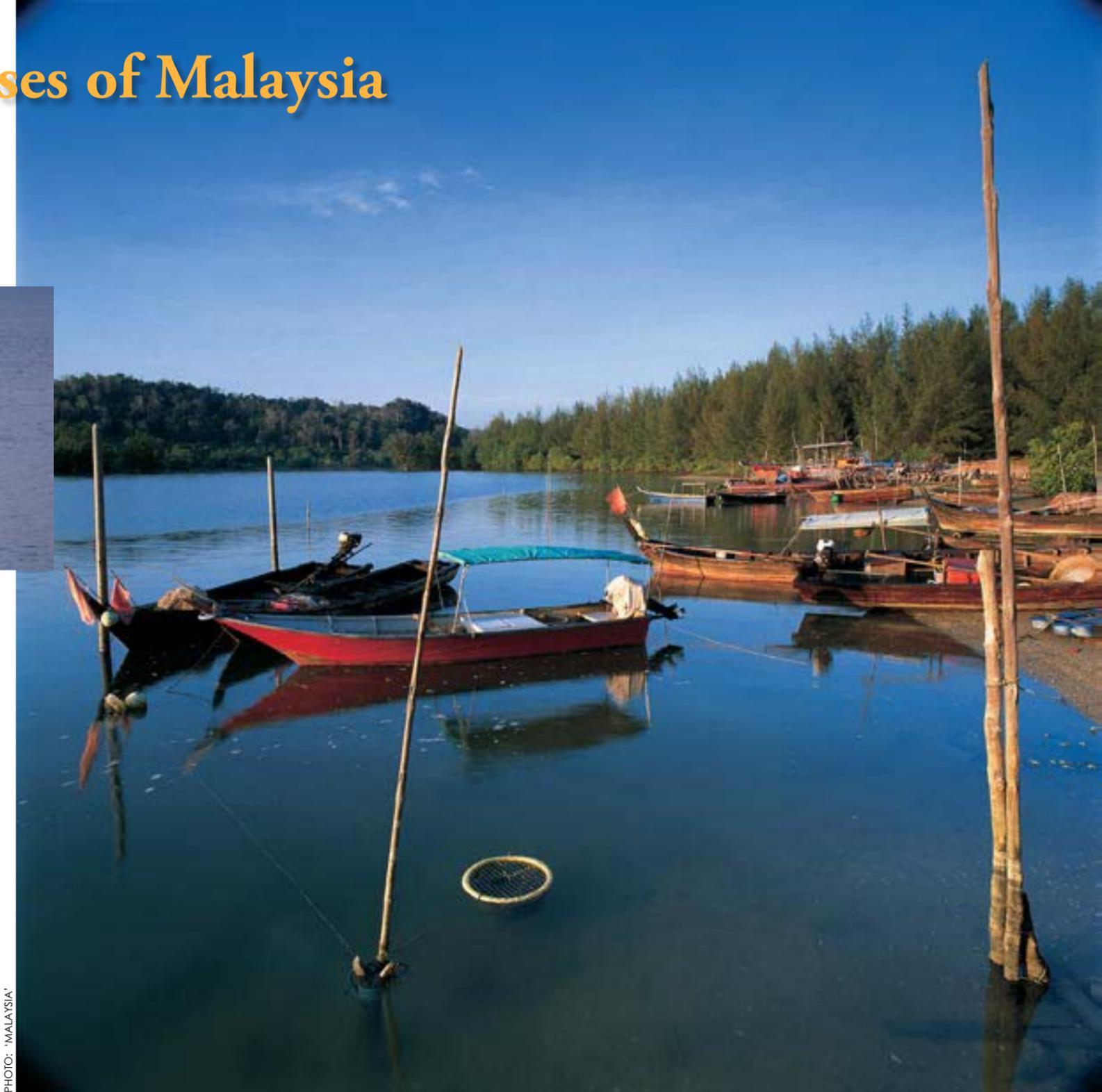


PHOTO: MALAYSIA

ABOVE: Fishing boats at Taryung Rhu River, Langkawi. INSET: Fishing boat, Georgetown, Penang. LEFT: Nudibranch

## Western Malaysia & the Tsunami

Langkawi, the Malaysian area closest to the epicentre and the hardest hit towns in Thailand, reported on

January 2, 2005, that the wave that hit Langkawi was not a tsunami, but a 'shadow wave' - a normal wave caused by the tsunami that passed to the north and hit the coast of Thailand hundreds of kilometers away. The Indonesian mainland stood between

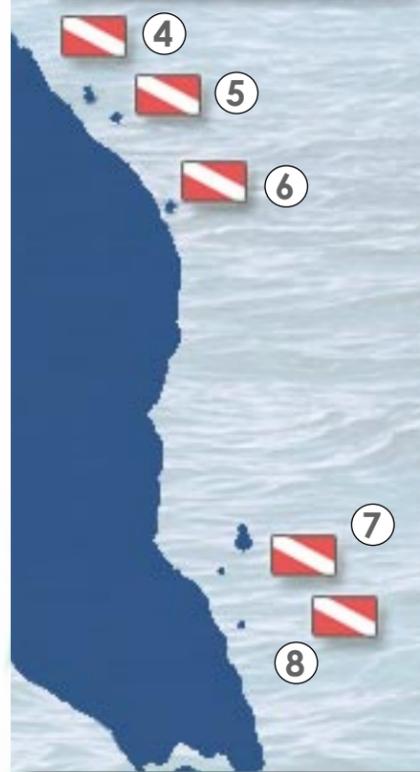
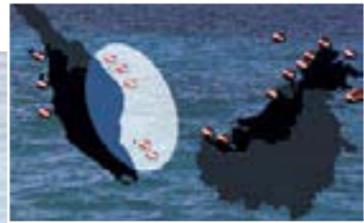
the quake center and Langkawi, effectively providing shelter from the huge waves that caused havoc in Thailand and other countries. The wave that reached Langkawi was very weak. The impact of the tsunami that struck Penang was also minimal.

However, official records showed that 31 people in Penang drowned after tidal waves hit the coastal areas.

The Malaysian Association of Hotels reported that there was no damage to the hotels and their surrounding areas and facilities, except to the

beach front, which needed cleaning of debris. There were no casualties of foreign tourists reported. The situation is back to normal as all hotels are operating as usual. Tourist attractions are not affected. Fortunately, it's business as usual in Penang.

## The East Coast



- 4. Perhentian Islands
- 5. Redang Islands
- 6. Pulau Tangol
- 7. Pulau Tioman
- 8. Pulau Aur

*The three most popular destinations of the East Coast are the Perhentian Islands, the Redang Archipelago and Tioman Island.*

**The East Coast** Peninsular Malaysia's east coast is often quoted as the real Malaysia. A collection of fishing villages, beaches and picturesque islands and, with little industry to pollute its waters, it offers great diving. For a long time, these islands were a secret of divers.

Later, the exclusive resorts moved into the area. As a result, a 45 km stretch of the Terengganu coastline — including Pulau Redang and its neighbouring islands, Pulau Pinang, Pulau Lima, Pulau Ekor Tebu, Pulau Lang Tengah, Pulau Perhentian Besar, Pulau Perhentian Kecil, Pulau Susu Dara and Pulau Kapas — was declared a Marine National Park in 1991 in order to protect the area.

The reserve is an attempt to preserve the wonders that are found here, and to reverse some of the damage wrought by resort construction and over fishing. Snorkelling is restricted to certain areas, and the Malaysian Department of Fisheries is busy building artificial reefs.

**The Perhentian Islands** have a relaxed diving atmosphere in an idyllic, laid-back setting. They consist of two main islands — Perhentian Besar (Big Stopover Island) and Perhentian Kecil (Small Stopover Island) plus several small rocks and islets to the north-west, the latter giving the best diving. Most tourist accommodation is on Perhentian Besar. Due to the annual monsoon, the islands are

## Glimpses of Malaysia

virtually inaccessible from November to January. Dive sites are very varied, from current-swept rocks close to the Perhentians and Bidong, to gentle slopes covered with sea anemones around Redang, to underwater mounds in Lang Tengah. All these places also have excellent house reefs that are good for night dives or snorkeling.

The underwater topography usually consists of jumbles of boulders that form caves, crevices and tunnels carpeted with soft corals. In this shallow, warm water, the growth of marine life is prolific. While the visibility in these waters is generally excellent, extending up to 30 metres in fine weather conditions, a combination of tides and an overnight rainstorm may stir up the sea floor resulting in less than optimal visibility.

Among the many varieties of marine life, regular encounters include Jacks, Yellowtail, Giant Clams, Triggerfish, Puffers, Spotted Porcupinefish, Blue and Yellow Fusiliers, Pencilfish, and huge Lionfish — that's not forgetting the myriads of tiny silver cardinalfish that jet around

in an amazing display of synchronicity. But even when less than ideal visibility is encountered, the unspoiled table coral formations are spectacular and the abundance of hydrozoans, anthozoans, brain coral, sea fans, sea whips and sea cucumbers is breathtaking. Dolphins and pilot whales can be seen in the area during July and August. Whalesharks are spotted a few times every year.

**Pulau Kerengga Besar**, a steep volcanic island that rises sharply out of the sea, appears to be home to various species of rays. Stingrays can be found resting on the ocean bottom or winging gracefully past with manta Rays hovering overhead. Harp corals, nudibranchs and featherstars are common. Deeper down, there are fields of stony corals and barrel sponges covered with alabaster sea cucumbers. Where the boulders meet the sand, there are many fish species, including stingrays, parrotfish and pufferfish.

Pulau Lang Tengah Island lies in the middle of the Marine Park sanctuary. Here, we find crystal-clear water, pristine beaches and untouched tropical jungle as well as a coastline of arresting beauty with white sandy beaches.

A map of a few of the many dive sites around the Perhentians

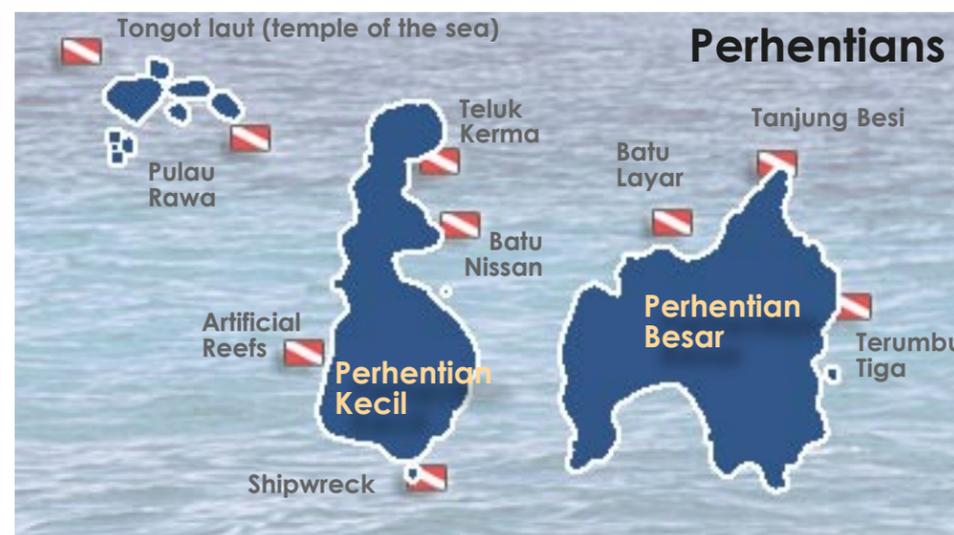
LEFT: Soft coral and seashell



PHOTO: 'MALAYSIA'



Giant clam



# Glimpses of Malaysia



shrimps and occasional Spanish dancers. Green and hawksbill turtles are common. Reef fish are plentiful, and pelagic species, including manta rays and whalesharks, are frequently encountered.

The Redang Archipelago's Big Seamount is considered by many to be the most spectacular dive site in peninsular Malaysia. Lying 50 m north of the island of Lima, it rises from 30 m to within 10 m of the surface and is covered in anemones, gorgonians, tunicates, hard encrusting corals and soft tree corals, with boulder coral, lettuce coral, staghorn coral and acropora table corals.

Pulau Kapas (Kapas Island) and its neighbouring island, Pulau Gemia, are two popular

**The Redang Archipelago** consists of the island of Redang, the much smaller island of Pinang and seven tiny islets.\* This group of islands and a marine park established in 1985 boasts white sandy beaches, crystal-clear water and spectacular coral reefs, which are among the richest in the country, making the area one of the best dive spots in the world.

The reefs of the Redang Archipelago are home to over 55 genera of corals, 100 species of fish as well as 52 genera of stony corals, including the largest boulder coral in this half of the country.

Fish to look out for are snappers, jacks, rabbitfish, silver barracudas, clownfish, triggerfish and parrotfish. Turtles are a common sight and you may also spot the occasional cuttlefish, squid and eagle ray. Featherstars, hydroids, black coral, anemones, sea fans and sponges dominate the reefs of Redang. For macro-lovers, there are also nudibranchs, mantis

day excursion and overnight destinations for locals and foreign tourists seeking a quick gateway, as the island is just four nautical miles from Marang. Kapas also seems to have become the refuge of those who want to avoid the Perhentian crowd. Places to stay range from camping sites to dormitories to island resorts with en suite facilities. The only thing that never changes on this island is the constant number of backpackers arriving and departing each day. The key attraction for diving at Pulau Kapas is the

World War II shipwreck located five nautical miles offshore. The outer reefs on her seaward side has good dive sites as well. Its shallow water makes it an ideal training ground for divers. Thai fishing boats caught on illegal entry in Terengganu waters are also sunk here as artificial reefs. It has good marine life and coral despite being located so close to the mainland. Fish that populate the area include snappers, rabbitfish,

jacks, silver barracudas, triggerfish, clownfish and parrotfish. You may also spot sea turtles, squid, cuttlefish and rays. The reefs here are home to featherstars, hydroids, black coral, anemones, sea fans and sponges as well as manta shrimp, nudibranchs and the occasional Spanish dancer. During the months of April to August, green and hawksbill turtles come onshore to lay eggs. Pulau Kapas has also become a popular place for squid fishing especially in the month of June.



ABOVE: Malaysian seafood. RIGHT: Diving in Malaysia



PHOTO: 'MALAYSIA'

**The Tenggol group of islands** is the most southerly of Terengganu's Marine Parks. It consists of Pulau Tenggol, Pulau Nyireh, Tokong Timur, Tokong Talang, Tokong Burung and Tokong Kemudi. The main island, Pulau Tenggol, is about 50 hectares in size and is one of the most beautiful and serene islands off peninsular Malaysia's east coast. It is also famous for its spectacular rocky cliffs that offer many excellent dive sites of pris-

tine coral formations and a number of submerged rocks with excellent coral growths. The deep waters surrounding the island offer good visibility especially during the months of April until June. Marine life that can be seen here includes sharks, rays, nudibranch and a wide variety of hard and soft coral. Before being declared a marine park, Pulau Tenggol was a favourite hunting ground for spear-fishermen, particularly for snappers and groupers.



\* PULAU REDANG, PULAU PINANG, PULAU LING, PULAU EKOR TEBU, PULAU KERENGGGA BESAR, PULAU KERENGGGA KECIL, PULAU PAKU BESAR, PULAU PAKU KECIL AND PULAU LIMA.

# Glimpses of Malaysia

**Tioman** is the largest and most developed of the 64 volcanic islands in the Seri Buat archipelago that make up the Pahang Marine Parks. In 1958, Pulau Tioman was chosen to be James Michener's fictitious Bali Hai for the filming of the Hollywood classic, "South Pacific." Since then, Pulau Tioman, which is easily accessible by air or boat, became a popular tourist attraction especially among underwater explorers.

The Tioman Marine Park is zoned as a sanctuary for the coral reef community and the shallow, still waters near Tioman, such as at the sites of Pirate Reef and Renggis Island, are perfect for training the less experienced diver. Further out to sea, the Tioman Island dive sites such as Chebeh and Tiger Reef, are set in deeper waters where you may encounter challenging currents and also the chance to see larger species.

There is plenty of coral circling most of the island including alyconarian soft corals and multi-colored staghorn coral. You will most likely run into all the usual reef life, the most numerous of which being parrotfish and butterflyfish. The best diving is around the small islets and rocks to the west and north-west where an incredible variety of angelfish and butterflyfish can be found. The water is clear to a depth of about 30 metres. Turtles and cuttlefish laying eggs are common in July and August.

There are some other islands off the east coast that have good diving but are less visited. Dive sites also include over a dozen wrecks — mainly scuttled wooden-hulled fishing trawlers. Even

big wreck fans and technical divers will enjoy Tioman as there are several South China Sea wrecks in the area. These Second World War treasures — including the Prince of Wales, the Repulse, Varella and various submarines and battleships — lie all around Tioman, normally at a depth of 40 m or more.

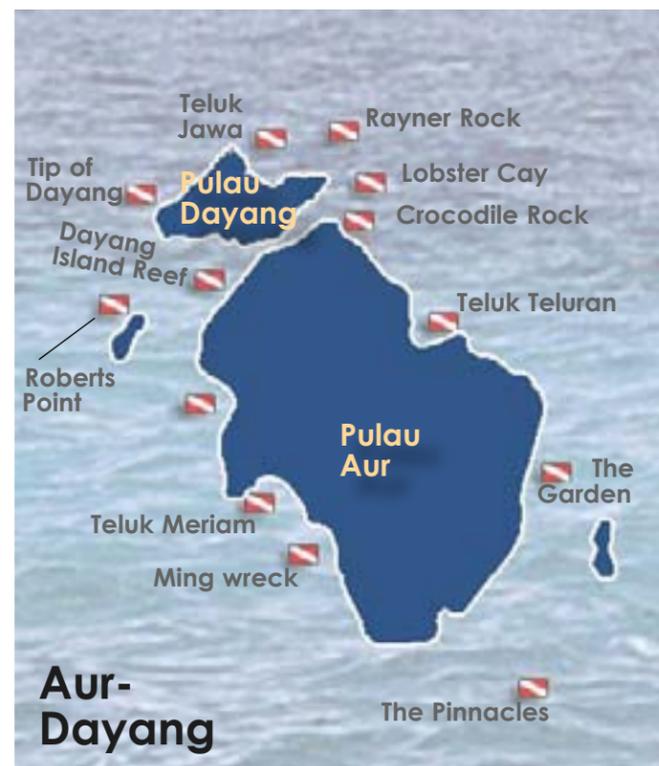
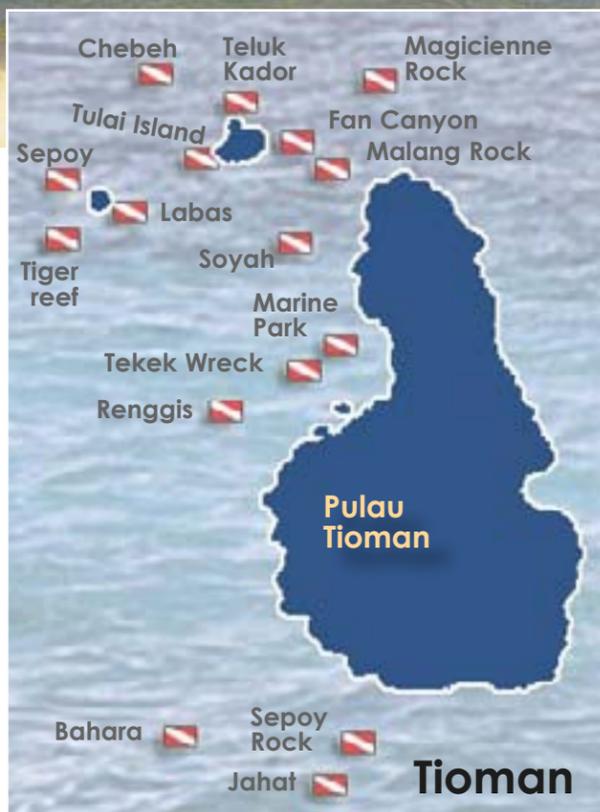
**Pulau Aur** is located 65 km east of Mersing on the east coast of Johor. Together with surrounding islands Pulau Dayang, Pulau Lang and Pulau Pinang, it makes up for about half of Johor Marine park. The blue waters here are deeper than around the inner islands.

Due to its remoteness from the mainland, visibility is excellent and sightings of big pelagics are common. However,

cost of boat rentals is high and scuba diving has been possible only in groups pre-arranged by dive shops in Kuala Lumpur and Singapore. Spectacular dive sites include Teluk Teluran with large undulating corals — which are home to various octopuses, crabs and moray eels — the Ming dynasty wreck at Teluk Mariam and the wall diving at Pulau Pinang, which is also good for drift diving.

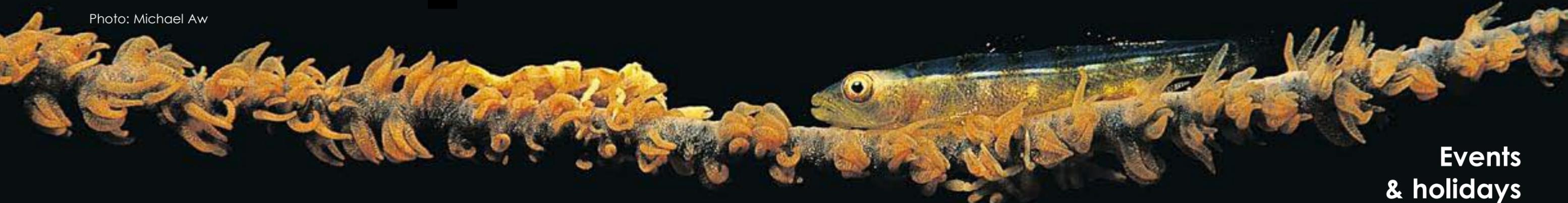
Accommodation is available only on Pulau Dayang and Pulau Aur. Amenities are pretty basic as electricity to the rooms is limited and there is no hot running water. It is a popular getaway for divers based in Singapore for which reason it can be quite busy at weekends. However, you may have the island practically to yourself on weekdays.

PHOTO: 'MALAYSIA'



Colonies of sponges and soft corals are motels for feather stars and cardinal fishes

PHOTO: MICHAEL AW



Whip goby and black coral shrimp

## Events & holidays

The major Islamic events are connected with Ramadan, the ninth month of the Muslim calendar. The major Malaysian festival is Hari Raya Pusa, which marks the end of Ramadan with three days of joyful celebrations. Hari Raya Haji marks the successful completion of the hajj (pilgrimage to Mecca)

# HMS Prince of Wales and Repulse



Photo taken from Japanese aircraft showing the sinking of HMS Repulse on December 10, 1941. Source: US Naval Historical center

If you're into deep technical diving, then 95 km off Kuantan lie the wrecks of two of the most powerful ships in the British Royal Navy from the second World War: The 35,000-ton battleship HMS Prince of Wales and the 32,000-ton battle cruiser HMS Repulse. The Repulse is on her starboard side in about 55 m of water, with the decks leaning at about a 30-35 degree angle. HMS Prince of Wales lies in 66-68 metres of water buried in the soft bottom, but she is completely upside down. The bottom is silty and the visibility rarely good. Also two Dutch submarines and a British mine-sweeper found their final destination in the South China Sea after hitting the same mine field. The main difference between Tioman and other World War II wreck diving destinations is that most of the wrecks around here are in deeper water and therefore only suitable for technical divers.

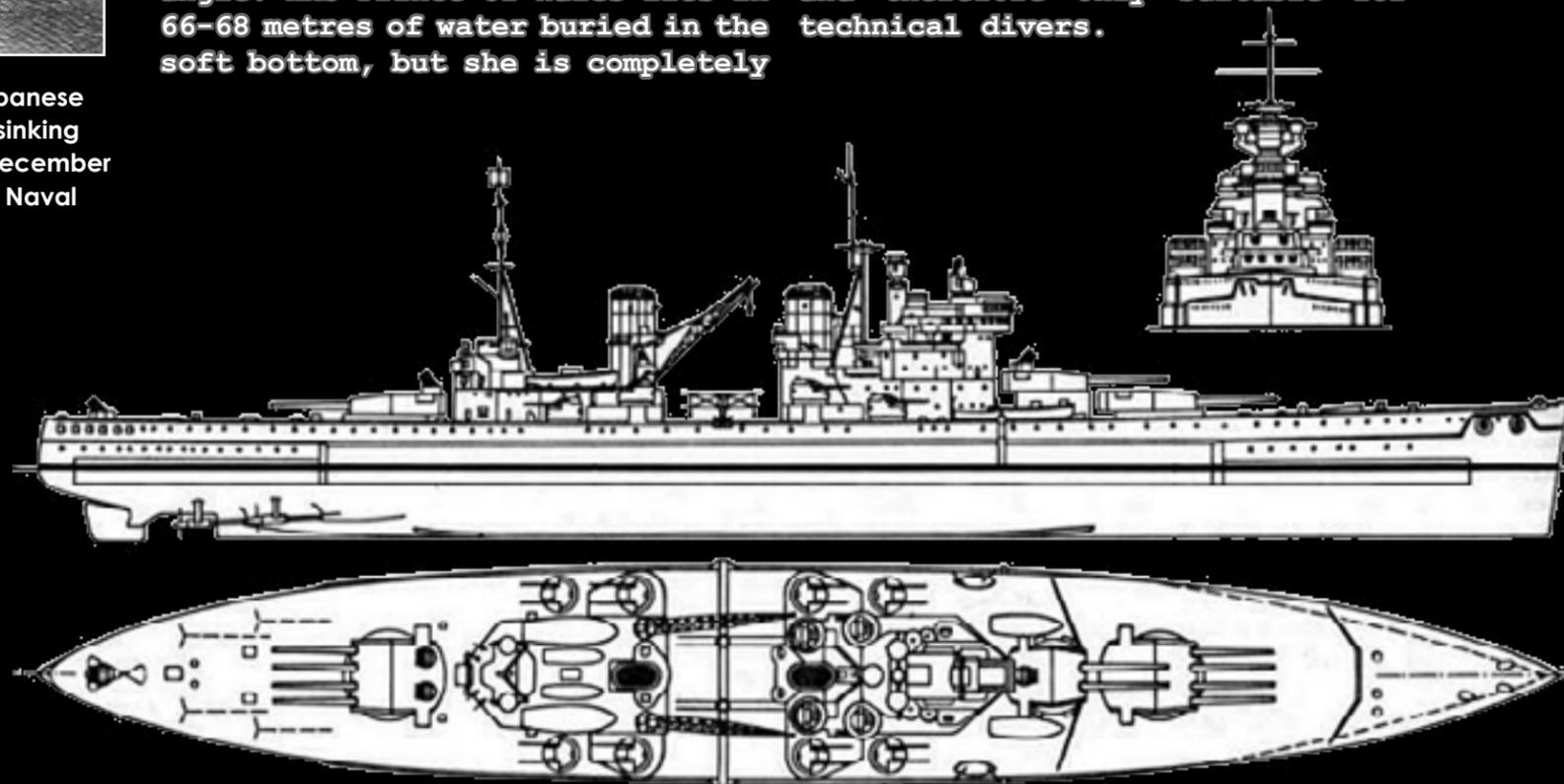


PHOTO: 'MALAYSIA'

with a two-day feast of cakes and sweets. Chinese New Year, in January or February, is welcomed with dances, parades and a lot of good cheer.

The festival of Thaipusam in late January is one of the most dramatic Hindu festivals during which devotees honour Lord Subramaniam with acts of amazing masochism — definitely not for the squeamish. In Kuala Lumpur, devotees march to nearby Batu Caves. In Penang, the event is celebrated at the Waterfall Temple.

The Kota Belud Tamu Besar is a huge tribal gathering held in May at Kota Belud near Kota Kinabalu in Sabah. It includes a massive market, traditional ceremonies, ornately decorated horsemen, medicine men and tribal handicrafts. A smaller tamu is held in Kota Belud every Sunday if you're not visiting during May.



9. Tanjung Datu  
10. Talang Salang  
11. Miri

*“Unlike reefs on the neighbouring state of Sabah and those of Indonesia and the Philippines, which are consistently exploited by destructive blasts and cyanide fishing, Miri reefs are relatively pristine. There are no conspicuous signs of damage or impact from high sedimentation or illegal fishing indicating that the reefs of the Miri-Sibuti areas are among the last remaining ones in the world”*

*Michael Aw*

More than 30 ethnic groups live together harmoniously in Sarawak, including 21 native ethnic groups, Malay and Chinese. Even with such diversity, individual groups have retained their cultural identity, observing traditional customs and rituals on a day-to-day basis. Tourists are welcome everywhere and the people are all very friendly. English is widely spoken although the national language is Malay.

Despite the fact that three quarters of its landmass is still covered with the world's oldest tropical rainforests and latticed with rivers and tributaries, travel around Sarawak is easy. Ten national parks scattered throughout the state make for easy access to Sarawak's splendid natural treasures. Residents include the endemic proboscis monkey, the famous bearded pig, silver leaf monkeys and long-tailed macaques. The

park also showcases a wide variety of vegetation found in Borneo including carnivorous pitcher plants, sundews, bladderworts and the world's largest flower — the one metre wide Rafflesia.

Miri, near the border with Brunei, is the gateway to the north of Sarawak and its spectacular national parks, rivers and highlands. Niah and Gunung Mulu National Parks in Northwest Sarawak are perhaps the best known in Sarawak with

their spectacular limestone cave formations. The famous limestone caves here include the world's largest cave passage and the world's largest natural rock chamber.

Most of the waters around Sarawak are not great dive locations because of the shallow waters and a number of muddy and swampy estuaries lying off the coastlines. The best spot for diving in West

Sarawak is around the Talang-Talang islands, a marine turtle sanctuary. The corals surrounding this island are remarkable in their variety. There's a colourful palette of fish, and the waters are pleasant and very safe. The area around the Talang-Talang islands was, however, recently gazetted as a national park. This change has brought about some confusion as to how the public may enjoy the natural beauty, which is now

PHOTO: MICHAEL AW



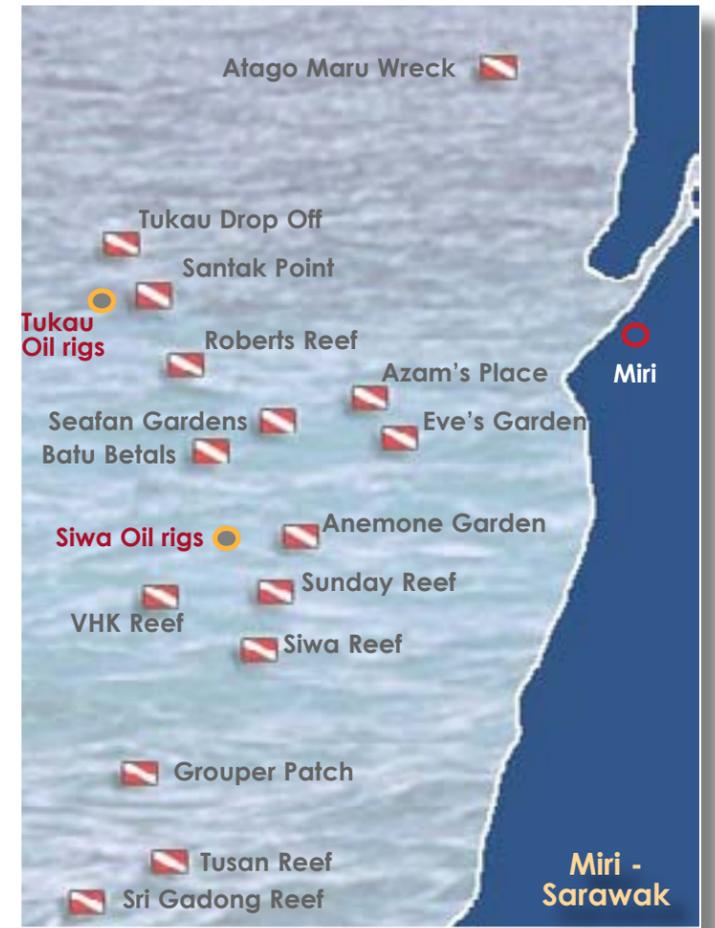
# Glimpses of Malaysia



PHOTOS: MICHAEL AW

INSET: Double horn nudibranch

LEFT: The pilons of an oil rig make a good home for soft coral gardens and marine life which shelter there like this school of batfish



preserved as part of the national heritage. At turtle nesting time, no marine traffic is allowed near the islands at all.

The underwater scenery around Satang is not as attractive as Talang-Talang. Visibility is not too good and the nearer you are to the mouth of Sarawak River, the cloudier the water gets.

Off the rivermouth there is some

wreck diving, but these dives are regarded as quite challenging. Also challenging are the waters around Tanjung Datus, the rocky headland at the northwest cape of the great island of Borneo. Here, two ocean currents clash together creating underwater turbulence that can only be managed by experienced divers.

The artificial reefs at Talang-

Satang National Park were constructed for marine conservation using concrete reef balls. Since 1998, about one thousand reef balls have been deployed around the coast of Sarawak. This is the first reef ball project in Asia and was instigated for conservation purposes. The National Park has important turtle nesting beaches, and reef balls are used to stop

trawlers from trawling within the resting areas used by turtles during the nesting season that falls between May and October. A permit from the Forest Department is necessary for entry into the park.

**Gunung Gading National Park** Trek through the mountains to view beautiful waterfalls and rare plants. You

may come across the Rafflesia, the world's largest flower, whose blooms measure a metre across. Mountains sweep down to the sea. This park lies on the extreme western tip of the State.

The debris-free mountain streams ensure crystal clear waters off some of Sarawak's finest beaches. There are also coral formations close in to shore that make this yet-to-be-explored dive site ideal for scuba diving. On shore, the park is rich in flora and fauna.

**Miri** Just 30 minutes off the coastline of Miri, there are several diving spots where natural reefs provide diverse marine life. The dive locations have next to no current most of the time and water temperature averages 30 degrees Celsius. The reefs here are all patch reefs

with varying depths from 7 to 30 meters with average visibility of 10 to 30 meters. You can explore old shipwrecks and spectacular coral reefs. South Luconia Shoals, Eve's Garden, Anemore Garden, Royal Charlotte Atoll Grouper Patch Reef, Sri Gadong and Atago Mari Wrecks are just some of the newest attractions for diving enthusiasts. There are more than 15 dive sites with the latest one dubbed "Rig to Reef"— a recently submerged decommissioned oil platform that is the only one in Malaysia. The best dive season is April to October.

**Labuan island** is located 115 km south of Kota Kinabalu and 8km off the mainland of Sabah at the northern mouth of Brunei. Its deep harbour and duty free port attract shipping from all over the



## Sabah



- |                                    |                  |             |
|------------------------------------|------------------|-------------|
| 12. Labuan                         | 16. Mantanani    | 21. Mabul   |
| 13. Pulau Tiga                     | 17. Kudat wrecks | 22. Sipadan |
| 14. Layang-Layang                  | 18. Lankayan     |             |
| 15. Tunku Abdul Rahman Marine Park | 19. Mataking     |             |
|                                    | 20. Kapalai      |             |

world and in 1990, Labuan was declared the International Offshore Finance Centre of Malaysia. Although three islands – Pulau Kumaran, Pulau Rusukan Kecil and Pulau Rusukan Besar — are designated as Marine Parks, the special underwater attractions of Labuan are its shipwrecks. Four well-researched and regularly dived wrecks to the southwest make this area “the wreck diving center of Malaysia.” Two of the wrecks are from World War II, the U.S. Navy minehunter, the USS Salure, also known as the “American Wreck,”

and the Dutch vessel, the SS De Klerk, also known as the “Australian Wreck,” which was thought to have been sunk by the Royal Australian Air Force.

The other two wrecks were sunk in the 1980’s, the Philippine stern trawler, MV Mabini Padre, locally called the “Blue Water Wreck,” and the Tung Hwang, a Japanese freighter locally known as the “Cement Wreck.” All four ships lie in 30 m to 35 m of water, with the top portions lying at 8 m to 12 m. The water visibility varies greatly season to season from 6 m to 20 m. The type of diving on these wrecks ranges from novice to experienced wreck divers with penetration possible into the hulls, but the wrecks are great dives even if you choose not to enter them. Diving the wrecks can be arranged through Borneo Divers.

**Pulau Tiga** is an island situated in Pulau Tiga Park, located about 35 nautical miles southwest of Kota Kinabalu. Three islands make up Pulau Tiga Park — Pulau Tiga, Pulau Kalampunian Damit (better known as “Snake Island”) and Pulau Kalampunian Basar. Pulau

Double Horn nudibranch

Tiga is believed to have been formed by the eruption of several mud volcanoes, which, with the combination of subterranean gas pressure and expelled muddy sediment, could have built up the island to its present height of approximately 100 m above sea level. The only resort on the island, Pulau Tiga Resort, offers PADI dive courses and many dive sites for the novice and experienced divers including some unexplored dive locations. A rich variety of marine life can be seen including nudibranchs, bamboo sharks, cuttlefish, marbled stingray and, of course, a visit to nearby “Snake Island” guarantees sightings of banded sea snakes. The surrounding reefs are shallow with healthy coral and water visibility ranging from 6 m to 20 m.

**Tunku Abdul Rahman Marine Park** is easily accessed from Sabah’s capital, Kota Kinabalu, and is part of a larger protected ensemble that offers the double-splendor of land and sea adventures. The marine life that has been spotted here includes manta rays, turtles, lionfish, a multitude of pelagics and lots of coral. During the krill bloom from December to April, whale sharks are sometimes spotted. Located a short 15 minute boat ride from the city of Kota Kinabalu, Pulau Mamutik offers a fine site for macro photography.

**Layang-Layang** or “Swallow Reefs” is an atoll (14 sq. km) that lies about 300

## Glimpses of Malaysia

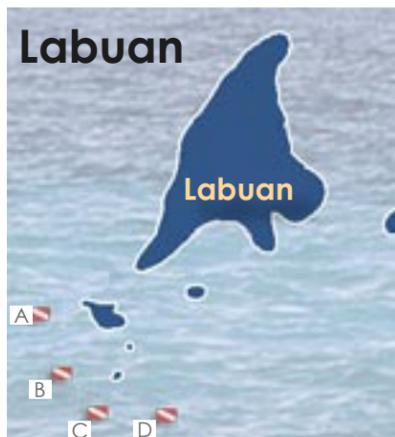
kilometres north of Labuan near the famous and disputed Spratly group of islands. Its coral walls plunge a staggering 2000 metres down to the floor of the South China Sea. In 1985, the Malaysian Federal Government began reclamation work and created a 50-acre island on one part of the reef. The island now has a 1,067-metre airstrip and a comfortable 90-room three-star resort with a full service PADI dive centre. It is now a world class diving paradise dubbed the “big fish and wall diving Mecca of Southeast Asia.”

Its warm waters are crystal clear with visibility averaging the best in the underwater world. Large shoals of pelagics, including massive numbers of barracuda, jacks and an awesome school of hammerhead sharks, numbering about a hundred individuals, regularly visit Layang-Layang. Manta rays with fin-spans of over ten feet (3 m) are also found here. Other residents include the Napoleon wrasse, Hawksbill turtles, Dog tooth tuna, Giant hammerhead wrasse and the White tip reef sharks.

**Mantanani Islands** have a new exciting resort. Dugongs have been seen occasionally in many coastal regions, but they are most consistently sighted around the Mantanani Islands which are a group of three isolated islands northwest of Kota Belud and about 80 km north of

Kota Kinabalu. Until recently, the islands were only known to a few locals. The largest island houses the only dive resort, Mantanani Resort, which is situated at the western end on the edge of a white sandy bay. Three wrecks have been discovered and many species of rays can be found: Marbled stingray, Blue spotted ray and large schools of eagle rays. For macro photographers, the “muck diving” is amazing. You will find seahorses, imperial shrimps, pink-eye gobies, jawfish, blue-ringed octopus, ribbon eels and many nudibranchs. There are now 16 dive sites identified by Mantanani Resort with many more still to be explored.

**Kudat wreck diving** is found off the northwest coast of Sabah where a group



- A. Blue Water Wreck
- B. Cement Wreck
- C. American Wreck
- D. Australian Wreck



PHOTO: MICHAEL LAW



- |                  |                    |                  |
|------------------|--------------------|------------------|
| A. Great Wall    | E. Sahara Desert   | I. Police Gate   |
| B. Gilly Rock    | F. Abalone Avenue  | J. Italian Place |
| C. Boxy Avenue   | G. Southeast Point | K. Hasim Stone   |
| D. Mantis Avenue | H. Riza Garden     | L. Three wrecks  |

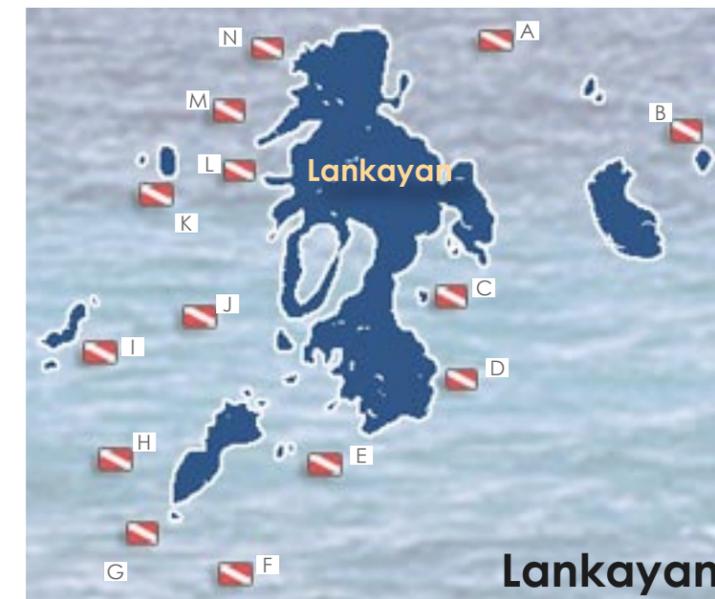


# Glimpses of Malaysia



## Sarawak

- A. Bimbo Rock
- B. Lost Reef
- C. Ken's Rock
- D. Mosquito Wreck
- E. Twin City
- F. Jawfish Lair
- G. Malu Malu
- H. And & Ant
- I. Supermarket Group
- J. Lankayan Wreck
- K. Froggie Fort
- L. Ricky Rock
- M. Coral Garden
- N. Fan Garden



LEFT: Deeper reef colonies of red whip and coral seascapes

BELOW: Shrimp living with bubble coral

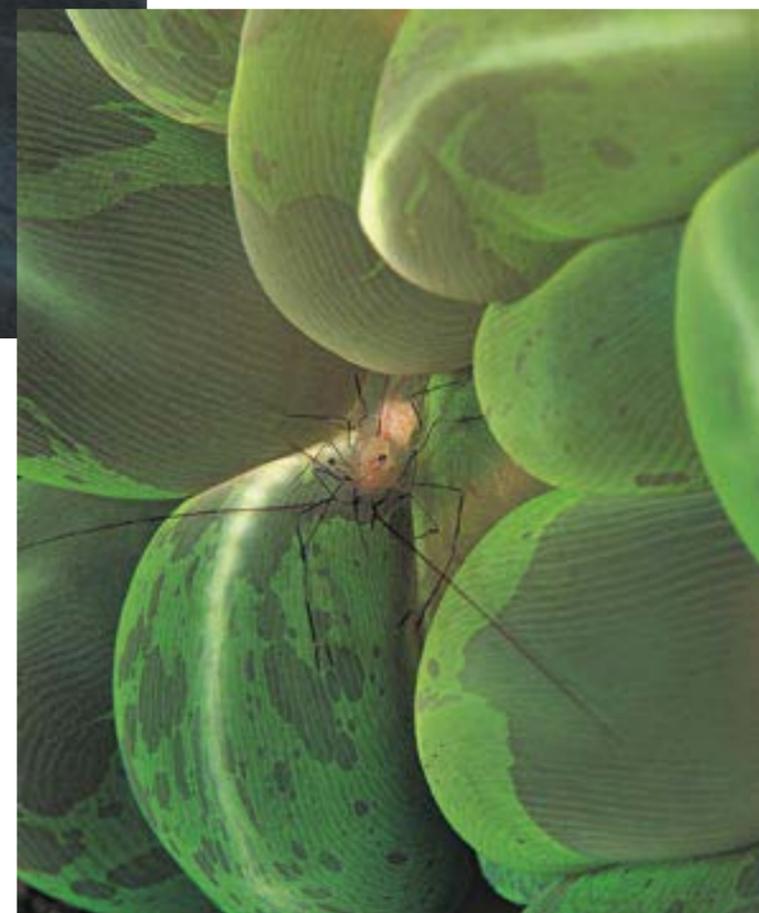


PHOTO: MICHAEL AW

of islands lie with rarely dived reefs. These islands include Pulau Balambangan, Pulau Banggi, Pulau Jambongan, Pulau Molleangan, Pulau Balak and Pulau Malawali. A number of wrecks have recently been discovered in this area. All thought to be merchant ships, two are lying at 20 m to 25 m and the third is lying a little deeper at 50 m. All three wrecks resemble coral gardens. They are completely covered in colorful sponge and soft corals. Marine life around the wrecks

includes schools of glassfish, lionfish, scorpionfish and huge resident groupers. The surrounding islands have shallow reefs fringing their shores with all the usual resident reef fish such as the coral trout, butterflyfish, angelfish and the occasional cuttlefish. Sipadan-Mabul Regal Tours, which is based in Kota Kinabalu, now has a live-aboard boat, the "Scuba Explorer," regularly visiting the area. As these reefs have rarely been dived, new sites are being discovered on many of the trips.

**Lankayan Island** is a virtually uninhabited island and one of the best spots for whale shark sighting. The location of the whale shark is usually indicated by flocks of seabirds screeching high above the placid surface. Lankayan Island is also a true macro-world paradise. Large stretches of beautiful hard and soft corals belonging to numerous genera are preserved, including colourful juvenile fishes. It is possible that some of the species found here are as yet to be identi-

fied. Pelagics also abound here, from large schools of scads to yellow-tail barracudas and jacks. The many schools of medium to large humphead parrotfish are always exciting to encounter. Sometimes, divers are lucky enough to meet large rays, guitarfish and even manatees. Among the 40 dive sites is Lankayan Wreck, the remains of an ocean-going boat that was used in illegal fishing here. This wreck now hosts many different species of fish from small glassfish, harlequin ghost pipefish, painted frogfish to giant grouper and marbled stingrays. Despite the remoteness, the island resort has all the amenities of a modern resort. Visitors stay in bungalows made out of local wooden materials to blend into the natural surroundings.



PHOTO: PETER SYMES

# Glimpses of Malaysia

The area around Semporna at Sabah's eastern tip is home to several famous dive destinations from which a lot of the same dive sites can be reached



## Eastern Sabah

**Matakina, Kapalai, Mabul and Sipadan. From muck diving to impressive dropoffs, it is all in one place.**

**Matakina** is a small island, about 45 minutes by speedboat from Semporna. There is only one resort on the island, the Reef Dive Resort, with a total of eight executive chalets and two lodges that can accommodate up to 60 guests at one time. The Reef Dive Resort is an eco-friendly dive resort and, from the very beginning, the management of the resort has placed a great emphasis on care for

the environment and the surrounding sea.

Here, tourists can learn and participate in The Reef Ball project during their stay at the resort. 'Reef Balls' are made of concrete, which are then placed at various sites underwater to rebuild corals and to provide artificial homes to the underwater fishes. Since the start of the project, a total of 220 reef balls have been deployed. Coral plantings include *Tubastraea micrantha* (Dark Green Tube), Knotted Fan Coral, Sea Fan (Red Gorgonian), pocillopora *Verrucosa* (Staghorn Coral) and *Seriatopora hystrix* (Staghorn Coral).

There are about 30 dive sites around Matakina, its surrounding islands of Pandanan, Timba Timba and the Tun Sakaran Marine Park islands of Bohey Dulang and Gaya. The three best-known dive sites that surround Matakina are Magic Rick, Mantis Reef and Alice Wall. The Alice Channel, which is about 100 metres deep, connects Matakina to Sipadan Island, which is only a 45-minute boat ride away.

Midway to Sipadan, we find two other famous dive sites. Mabul and Kapalai Islands are probably the most exciting diving places for macro marine life in the wild. First, on the Ligitan Reefs, a very extensive stretch bordering the deep and vast Celebes Sea, we find a long-kept secret dive destination called Kapalai.

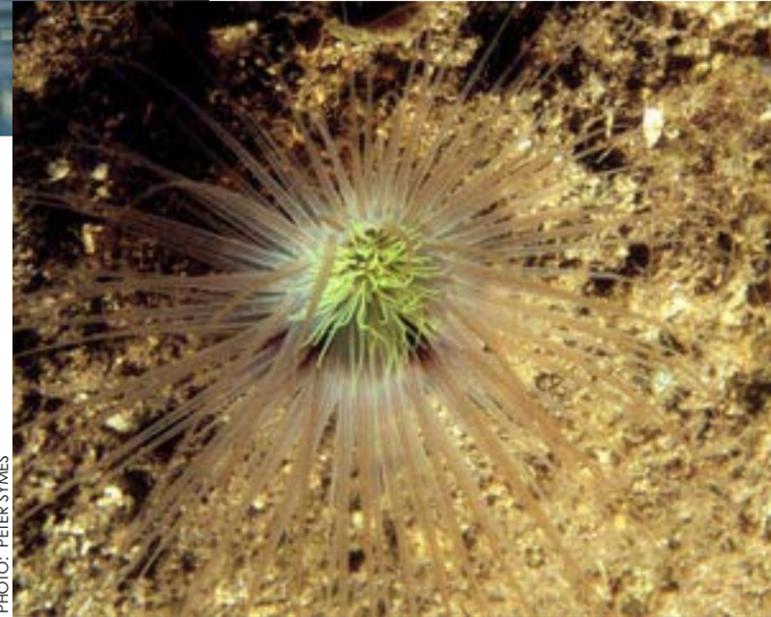


PHOTO: PETER SYMES

shelf, downstream from the mangrove delta off Semporna. Due to the pattern of the currents in the area, Mabul Island seems to act as a scoop catching the most amazing sorts of critters. Like Kapalai, the sea bottom at Mabul seems covered with mysterious creatures.

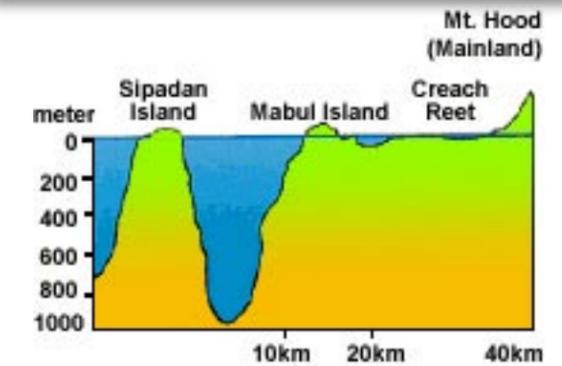
**Sipadan Island** Just a 15 minute boat ride from Mabul Island is Sipadan Island — a unique island because it sits on the oceanic bottom. With Sipadan and Kapalai practically

**Kapalai Island** offers some of the best "muck diving" in this part of the world. Here, divers come face to face with amazing marine creatures. Testing your skills at spotting minute and cleverly camouflaged oddities is well-rewarded. Rare subjects such as cuttlefish, blue-ringed octopus, sea moths and mating mandarinfish are seen on a regular basis. Although Kapalai is just a few minutes away by boat from Sipadan, one can expect a completely different diving experience. The only resort occupying the island is the Sipadan-Kapalai Resort, which is built on wooden stilts over the reef.

**Mabul Island** is where the phrase, "muck diving," was coined. Here, many new species have been discovered. A sheltered bay just off the luxurious resort, Sipadan Water Village, provides a natural protection to fish fry. Mabul Island sits just on the edge of the continental

shelf, downstream from the mangrove delta off Semporna. Due to the pattern of the currents in the area, Mabul Island seems to act as a scoop catching the most amazing sorts of critters. Like Kapalai, the sea bottom at Mabul seems covered with mysterious creatures.

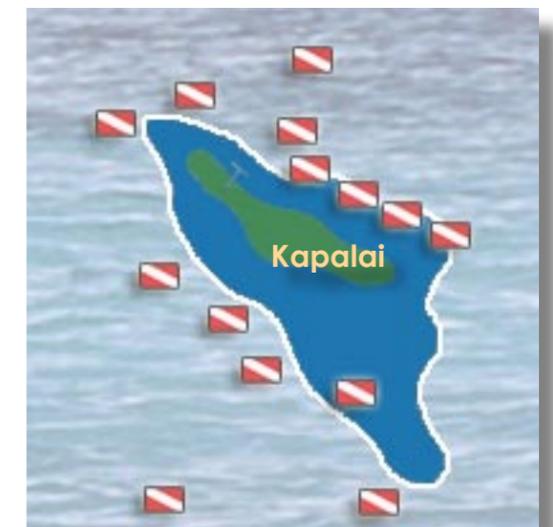
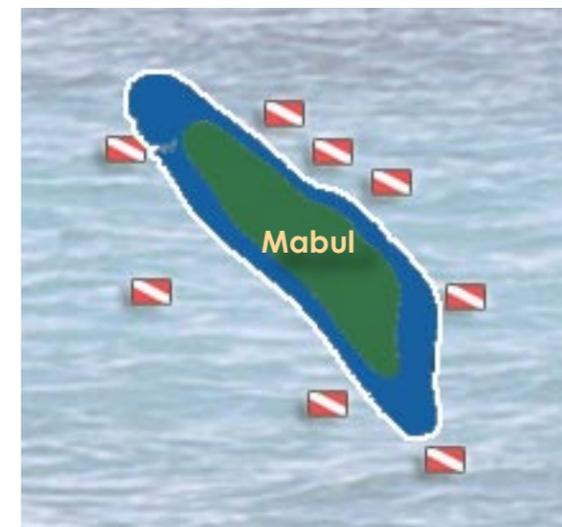
across the street from Mabul, the discerning diver has the best of everything within a few minutes ride, not to mention access to the Mabul's magnificent house reef. In the following pages, we devote a whole section to diving at Sipadan Island. But first, let's go ape and check out the orang-utans at Sepilok.

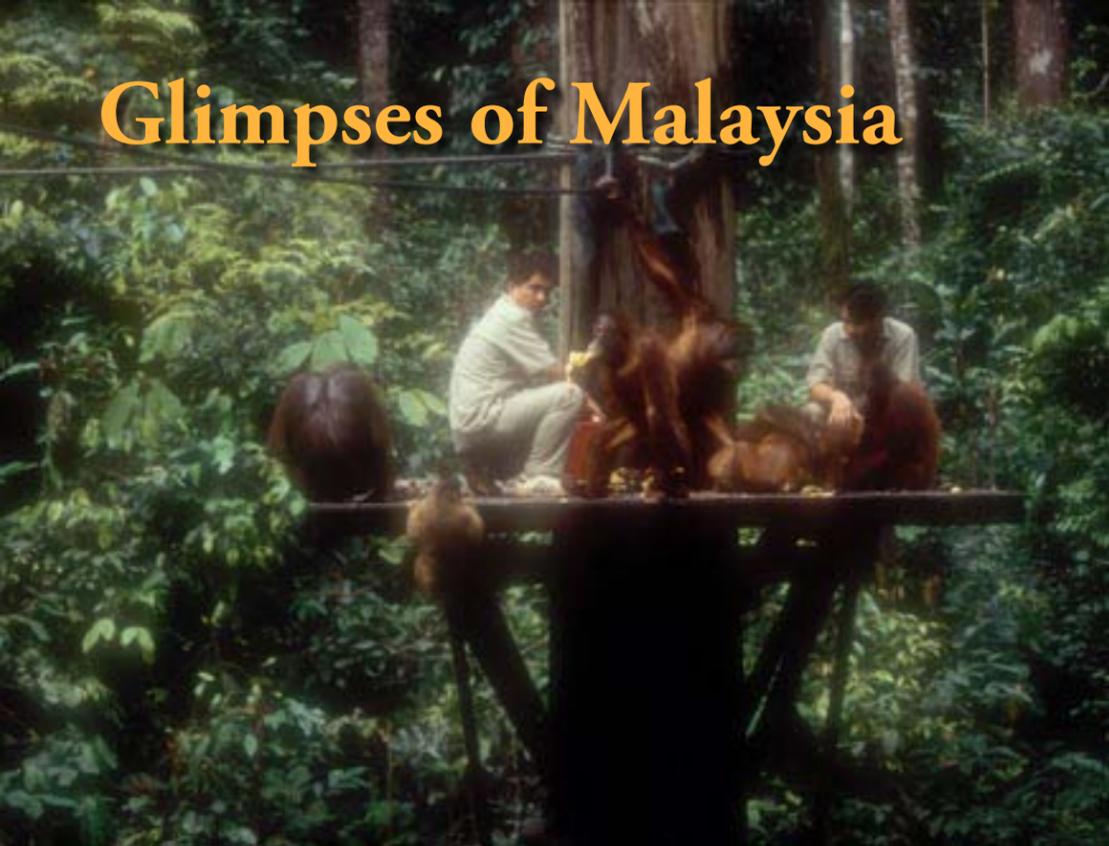


Profile of the sea floor in the area. One can see that Sipadan Island is a pinnacle located in what is technically the ocean, whereas the continental shelf lies just beyond Mabul Island.



PHOTO: PETER SYMES





# Sepilok

Text by Michael Symes  
Photos by Peter Symes

back to health before they can be released into the forest. Many orangutans that end up here have strayed into logging camps or been rescued from captivity. Many are orphaned babies that cannot survive in the forest alone.

When the rescued orangutans first arrive at the centre, they are often in a sorry state and riddled with diseases. They are put into cages while they are treated for their ailments and nursed back to health. The wardens then teach them how to forage for fruit, climb trees and generally fend for themselves. When they are mid-way through the rehabilitation process they are released into the surrounding forest reserve. The animals then spend most of their time in the forest but often return to one of the centers five feeding platforms for a "free" meal. When the wardens feel that that an orangutan is fully rehabilitated, it is caught and returned to the wild - usually deep in the forest or to one of the National Parks or Wildlife Sanctuaries.

The objectives of the project have expanded in recent years, and while orangutan rehabilitation is still the primary goal at Sepilok, present aims include public education on conservation and research with other endangered species, such as

captive breeding of the rare and endangered rhinoceros.

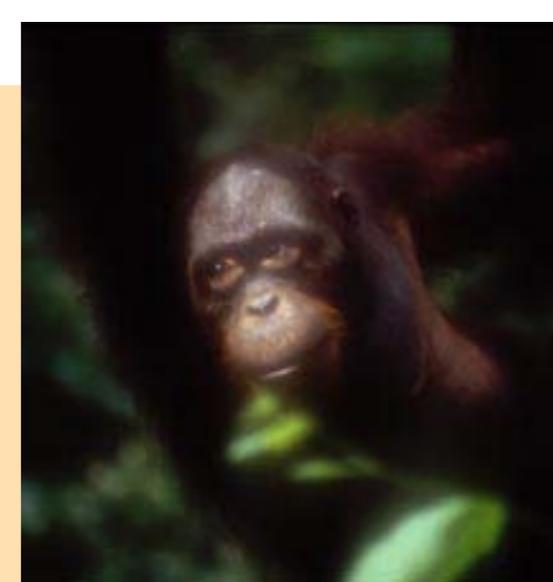
**Possibility for working at Sepilok** At Sepilok you could have the opportunity to work with these gentle and highly intelligent red apes in their natural environment. Interaction with these remarkable creatures, man's closest relative, could be an unforgettable experience. All details regarding the project are to be found at: [www.travellersworldwide.com](http://www.travellersworldwide.com)

**The Orangutan Appeal** Sepilok Orangutan Appeal UK, founded in 2000, is a registered charity based in England. It is dedicated to the rehabilitation and preservation of orangutans and their habitat in the Sabah region of Malaysian Borneo. It supports various sponsor schemes, and also publishes material, including a DVD about the Rehabilitation Centre. For further information about the important work of this charity please visit: [www.orangutan-appeal.org.uk](http://www.orangutan-appeal.org.uk)

**Late postscript** For those interested in more information regarding orangutans, Among Orangutans: Red apes and the rise of human culture has just received a very positive review in NewScientist, 22 January 2005 (Vol 185 No 2483). See [www.newscientist.com](http://www.newscientist.com) ■

## Orang Utan

The Orangutan (also spelled 'Orang Utan' or 'Orang-utan' and sometimes incorrectly as 'orangutang') is a great ape with long arms and reddish, sometimes brown hair. It is native to Malaysia and Indonesia. 'Orangutan' is derived from the Malay phrase 'Orang Hutan' meaning "man of the forest."



Orangutans are the most arboreal of the great apes, spending nearly all of their time in the trees. They are only found in rainforests on the islands of Borneo and Sumatra. These two small isolated populations were classified as subspecies until recently, when they were elevated to the specific level (Pongo pygmaeus on Borneo, and P. abelii on Sumatra). Furthermore, primatologists now recognise three subspecies of the Bornean orangutan: P. p. pygmaeus in northwest Borneo, P. p. morio in northeast and east Borneo, and P. p. wurmbii in southwest Borneo.

Orangutans are highly endangered in the wild. Orangutan habitat destruction due to logging, mining and forest fires has been increasing rapidly in the last decade. Much of this activity is illegal, occurring in national parks that are officially off limits to loggers, miners and plantation development. There is also a major problem with the illegal trapping of baby Orangutans for sale in the pet trade; the trappers usually kill the mother to steal the baby.

*Orangutan is derived from the Malay phrase Orang Hutan meaning man of the forest.*



## Men of the Forest at Sepilok

The orangutan, meaning "man of the forest" in Malay, is one of the most endangered of Malaysian wildlife species. Found only in Borneo and Sumatra, the orangutans' survival is constantly threatened by forest fires, felling of trees, poaching and illegal hunting. Orangutans are protected under the Fauna Conservation Ordinance which, among other things, prohibits hunting, trading or keeping them as pets. The population is now estimated to be as low as 15000, and so orangutans are now on the critically endangered list and face extinction within 10 years if nothing is done now.

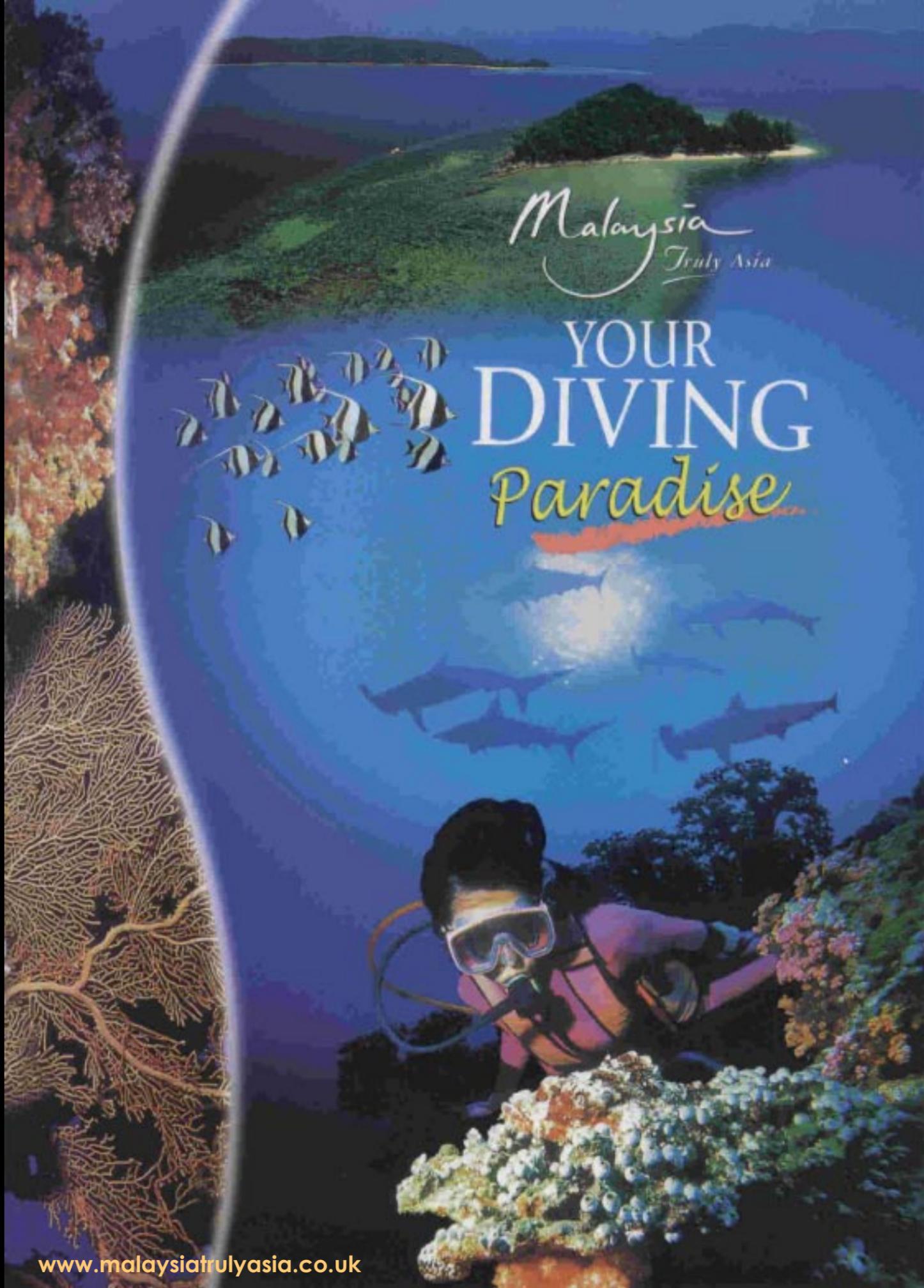
Orangutans share 96.4% of human genes, and catch most of the diseases that affect man. They are astonishingly gentle, highly intelligent and they gaze at you with almost disconcerting frankness.

## The Sepilok Orangutan Rehabilitation Centre

The Sepilok Orangutan Rehabilitation Centre is situated on the east coast of Sabah, 23 km from Sandakan. A twenty-minute drive from Sandakan brings you to Kabil-Sepilok Forest, an enormous area of virgin rainforest. The wealth of indigenous and rare plants, animals and birds that have found sanctuary here must be seen to be believed. The Wildlife Reserve contains the orangutan rehabilitation centre.

This centre, established in 1964, was set up as a means of housing injured or orphaned orangutans, caring for them and nursing them





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# SIPADAN

## Still open for business?

Text by Peter Symes  
Photos by Peter Symes & Gunild Pak Symes

Jacques Cousteau called Sipadan Island a rare pearl. It is thought to have the best diving in the whole world. Take but a few steps from the beach and you can dive straight into vertical drop-offs. The wealth and diversity of species there is quite overwhelming. There are turtles everywhere, with shoals of barracuda and sharks that lay and sleep on the plateaus covered by gardens of coral.

Popular and famous but also exploited beyond what the island's fragile ecosystem could sustain, the Malaysian government was forced to act. Dive operators on Sipadan have had to vacate their structures on the island. Effective January 1st 2005, only day trips are allowed to Sipadan and these are limited to a maximum of 80 visitors.



ABOVE: Sipadan Island as seen from the dive boat



LEFT: Detail of one of the many orchids that grace the region

# Glimpses of Malaysia

**Reality check** We speed over the mirror-smooth surface at 25 knots — the jungle-covered foothills of Borneo slowly disappear behind us in the white wake. I squint my eyes under the bright tropical sun. Everyone on board this powerful motor-boat is dozing off into their own thoughts.

It all seems a little unreal to me, and difficult to grasp. That little island, like a small green fragile point seemingly hovering on the nearly invisible line of the horizon, in all that overwhelming blue, is the legendary Sipadan. Ever since my young diving days as a sports diver, coming here has been one of my biggest dreams. And for me, back when I was a poor student, it was also nearly an impossible dream. But here I am now, sitting and listening to the keel of the boat cutting through the water, as the sun warms me and jetlag melts out of my body.

My thoughts went back to the plane trip out here, to that moment of daybreak when, after a night-long flight from Europe, the plane took its silent descent. I looked down over Asia for the first time. There seemed to be something symbolic in that quiet arrival in Singapore. And now, after having flown over the South China Sea and driven across Borneo, I am here — at last. A great adventure is about to begin.



## Sipadan

- ◀ Orchids
- ▼ Mokon fishing boat



**The myth** The boat slows down as we near Sipadan. How small the island is! But there is a large reef surrounding the it. The guide looks down into the water.

We are getting close to Barracuda point, the northerly part of Sipadan's reef. The ocean current splits at this point to flow past the island, so large shoals of barracuda often collect here. Today is no exception. There are both current and barracuda, so we glide carefully into the water and swim quickly down to the edge of the reef at a depth of about 10 meters, in order to get into the lee of the current.

The wall is steep and covered by sponges and corals of every shape and form. I find a small sandy spot where I can sit and collect both my thoughts and all my photographic equipment — flash, cables, bracket and camerahouse. I look up and see an enormous barracuda-carrousel. Above me, majestic predators circle peacefully, while several sea turtles glide by looking like circling aircraft awaiting permission to land on the airstrip reef.

It is a reef abounding with life. Turtles are napping here and there. Or are they keeping a lookout? White-tip reef sharks twist lazily in and out among the blocks of coral, or lay at rest on the plateaus. There are many blue fusiliers sporting deep blue colours and perfect forms, creating their own playful shoal around the barracudas.

I slowly close-in on the barracudas. I give a gentle kick and make myself streamlined in order to be able to swim

nearer, against the current, without having to make too great an effort. With my eye stuck to the camera viewfinder I move in towards the circling predators.

Suddenly, like a flock of birds in their autumnal migration, the whole shoal changes direction and now comes towards me. A living carpet of fish-faces full of needle-sharp teeth are checking me out. The entire formation passes close by me and then around me.

I hang there in the water, in the middle of a crowd of shiney muscular fish that, at one and the same time, consider me with some interest and yet, like aloof felines, demonstrate an arrogant indifference to my presence. I am just a guest here, and they make sure that I don't forget it.

But soon the barracuda allow me to swim with them as one of their shoal. I look around, and on both sides and over me, their bodies are parallel with mine as we swim slowly forwards. Yet even when they are swimming in a relaxed fashion they move much more rapidly than I can. It is difficult to keep up with them.

The shoal disappears into the blue haze,



Divers approach a tornado of barracudas at Barracuda Cove off Sipadan Island

# Glimpses of Malaysia Sipadan



leaving me feeling slightly dizzy after such a multitude of different impressions in so short a time, with an empty camera and a goofy empty expression on my face.

**Introspection** I shake myself loose of my moment of awe and release a surface marker buoy so that the boat can find me. It really wasn't necessary because the boatsman had kept good contact, but I always do it routinely.

We sail quietly in to the little jetty where we have a short break for lunch. We are served scalding hot tea, which we sit and drink while peacefully enjoying the scenery around us.

From the end of the short jetty, one can nearly see straight down the famous drop-off of Sipadan. Just a few meters from the beach it goes down almost vertically. Sipadan is special, in that the



island ascends like a spire from the sea floor, vertically rising straight up from the ocean bed some 800 meters down.

On and around the edge of the reef, many sea turtles can be seen sticking their noses up out of the water to get air. All is tranquil. We go for a walk on the island.

With only 12 hectares, the island is not very big, and it takes just a quarter of an hour to go round it. There are many

huts clumped together in the little bit of jungle that hugs the crown of the island. It seems bizarre. This is a remote outpost of civilization, out where the world seems to be based only on a couple of floorboards. It is a tiny island surrounded by an enormous ocean, and there is nothing here. Nothing, that is to say,

other than a fabulous underwater realm for which the diving fanatics of the world are willing to travel half way around the planet to explore!

**Strange** Pulau Sipadan means 'The Island in the Borderland' in Malay. The name fits very well, since the island crosses borders in more than one sense.

Geologically, it lies six sea miles from the continental shelf, and is Malaysia's only oceanic island. The island is topped by a coral cap. It is an atoll of indeterminate depth that has formed over a volcano rising sharply from the ocean bed. This spire seems to be a magnet for animal life, and it is that characteristic which makes the island unique.

The island is porous and has

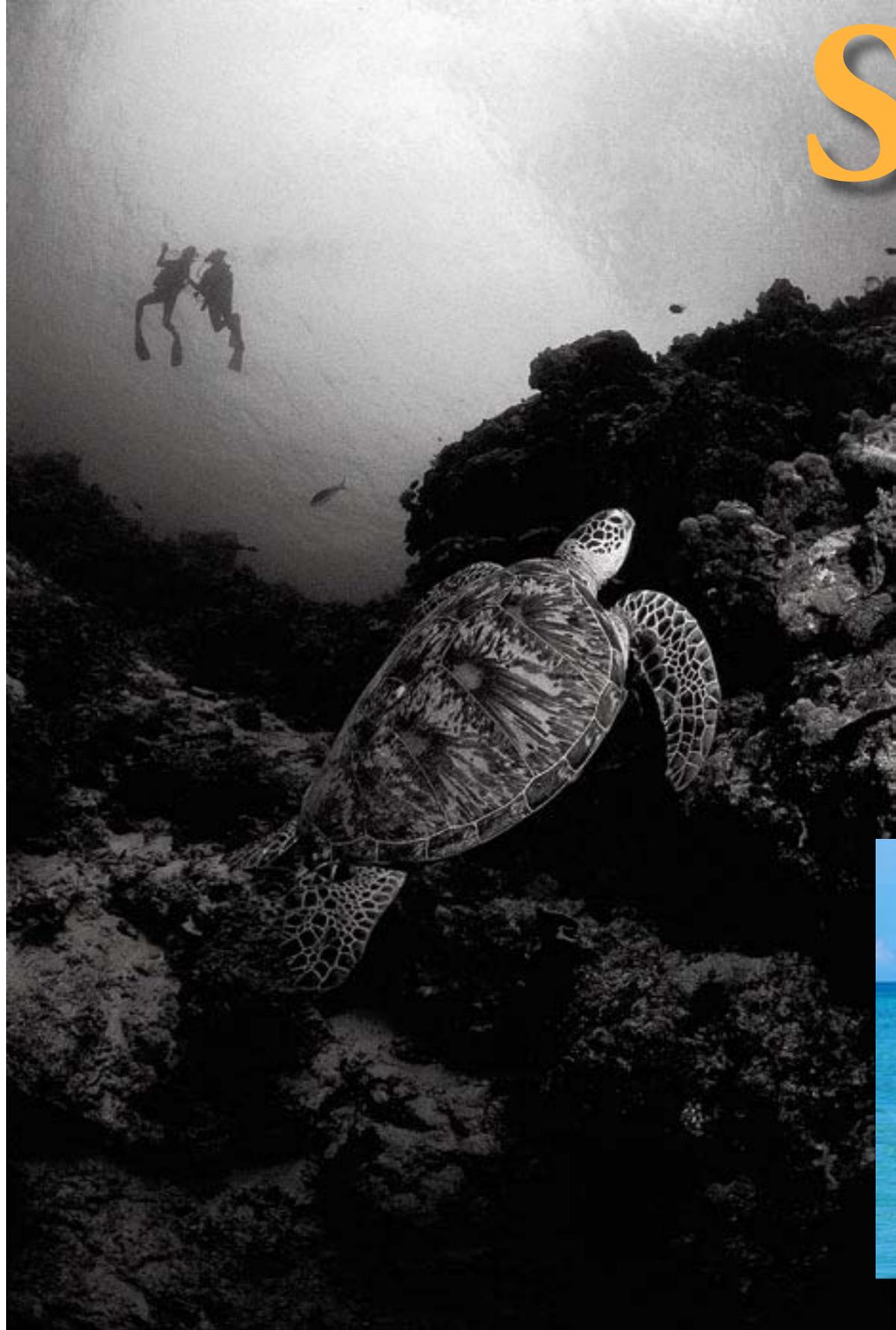
large caverns beneath it, among which is the famous Turtle Tomb. But it also contains fresh water. While the island itself is no bigger than 7-8 football pitches the surrounding reef covers about 200 hectares, and the outer reef has a circumference of 5.7 km. There is a low-water lagoon with sea-grass, different algae, small coral clumps and micro-atolls. The edge of the reef lies at a depth of two to eight meters, where the reef either goes over into a drop-off (i.e. a vertical coral wall) or a slope. About 2.4 of the 5.7 km are vertical or form overhangs, and 2.3 km of the walls have an incline of over 60%.

**Politics** The island has constantly been an object of dispute and friction regarding the setting of international frontiers. Malaysia, the Philippines and Indonesia have laid claim the island, not to mention, there is still an old Malay who claims that the island was given to



CLOCKWISE FROM LOWER LEFT: Sipadan Water Village Resort (SWVR) bungalows, Malaysian flora, SWVR Welcome Center & check in, view of SWVR from dive center, indigenous and nomadic Moka people fish early in the morning and at night

# Sipadan



his grandfather by the sultan of Sulu. Malaysia fought a war of independence against Indonesia in the 1960's over, among other places, the boundary that still runs right across Borneo. The Philippines have also claimed Sabah, the Malay state in which we are now located. On my last visit, I was told that Indonesia owned the island but that Malaysia had an irrevocable leasing agreement, which annoyed Indonesia, to say the least. They could clearly see that Sipadan was a magnet for tourists. With so much contradictory information, it was difficult to a handle on the confusing situation. However, I found out that the matter was settled on Dec 17, 2002, when the International Court of Justice at The Hague in The Netherlands, made a judgment in the long-pending case concerning the sovereignty of the islands of Sipadan and Ligitan. In its ruling, which



belongs to Malaysia.

Notwithstanding, the island was already declared a bird reservation back in 1933, and is therefore protected. There are frigate birds here, as well as sea-eagles, kingfishers, a number of species of dove, and a large number of rare birds whose names I did not catch. In between dives, it really is worthwhile to go round the island to look at the birdlife. The large and rare robber crabs can also be found here, as well as birgo latro, the spectacular coconut crabs which crawl up into the coconut palms to get at the fruit.

At the present time, it is the Malay tourist and environmental authorities who have responsibility for the island. And these authorities are the administrators who determine the ever-changing permits for how many guests are allowed to visit Sipadan at any one time. The authorities have stationed park rangers on the island to look after the birdlife and to protect the sea turtles that come to the beaches of Sipadan to lay their eggs.

the southern part of the island. The water is still calm. The reef is not so steep on this side, and there are large flat surfaces of coral-gardens with both hard and soft corals. Some 300 species of corals have been identified here.

Among the blocks of coral, there are many turtles to be found looking at the surrounding multi-coloured life. Down inside the corals one can find blennies with all sorts of strange growths on their fins. If one looks carefully enough, one can also find ghostpipefish which, with their superb camouflage, can disappear completely into the background. A trained eye is required to spot them when they are not moving.

The current has increased, so we let us drift lazily past the walls of coral in a northerly direction up towards Turtle Patch on the east side of Sipadan. Above us, there is a giant shoal of blue fusiliers and one or two barracuda. Beneath us, further down the coral wall, we can see the sharks patrolling. Most of them are white-tip reef sharks, but other types can occasionally be seen.

At mid-reef, our guide, Alex, waves us

ABOVE: A gentle sea turtle rests on the reef surrounding Sipadan Island, Malaysia  
INSET: Moka people live and work and raise their families in wooden fishing boats  
TOP RIGHT: View of the beach at Sipadan-Mabul Resort

## Afternoon

After lunch we sail around South Point,

is considered "final, without appeal and binding for the parties," the high court found that sovereignty of the islands



# Glimpses of Malaysia Sipadan

down to the bottom. He has found a large group of humphead parrot fish swimming idly between the blocks of coral. These big fish are generally rather shy of divers, but here they let us come quite close.

In the strong current, it is not so easy to hold on and at the same time control a large camera with a flash on a long bracket. So, I am really sucking air while I lay there and battle with the equipment. Each time that I edge myself forwards a couple of meters against the current, it seems as if the manometer needle is counting down like the second hand on a watch. I take a couple of shots and that's it. I must begin my rise to the surface.

While I hang there at my safety stop and drift under the dive boat, I can see down on to the plateaus on White Tip Avenue. It is an appropriate name. I think that I can count at least 25 white-tip reef sharks resting there.

It has been a good end to yet another day in paradise. I return home to my lodgings on Mabul, where a warm shower and a good meal are waiting. I can hardly wait to get my film developed.

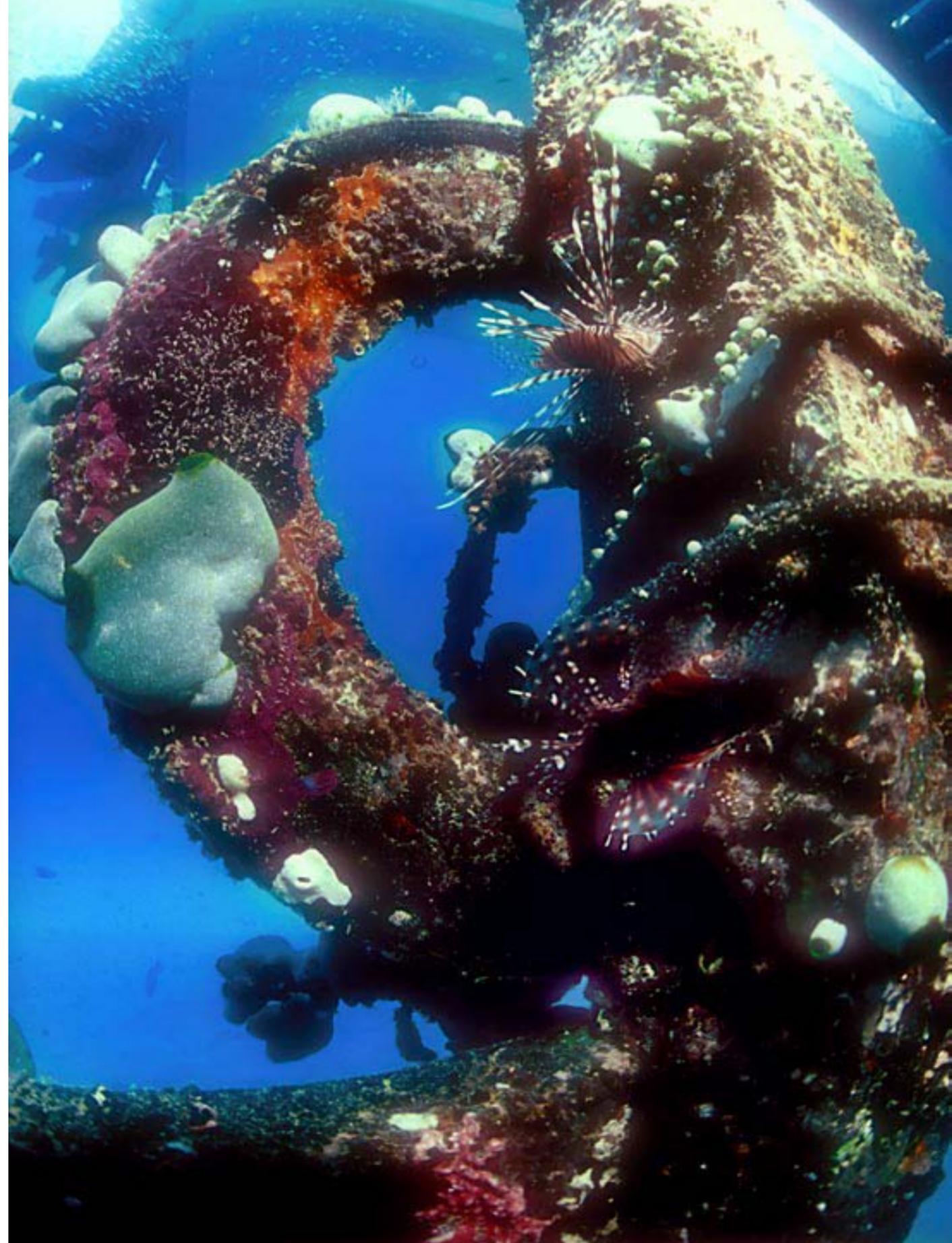
**Turtle tomb** There is a large cavern under Sipadan with skeletons of turtles. It is part of an old legend about the island.

Cousteau's film about

Sipadan was called "The Ghost of the Sea Turtle" with reference to the local superstition. This beautiful film shows a large underwater cavern with the remains of dead turtles. Did they come here to die like elephants in an elephant cemetery? No, the explanation is much more simple and sad.

The turtles swim into the caves and can't find their way out again. So, as they can't get up to the surface to breathe, they drown. One is tempted to say, "Just like divers!" After a number of accidents, guides stopped taking divers into the cave. It is now necessary to have a cave-diving certificate.

**Biology** First and foremost, one notices all the sea turtles that seem to be everywhere, otherwise it is the big fish and the beautiful coral gardens on the plateaus and walls so characteristic of Sipadan. But also noteworthy is the fact that 496 species of fish have been recorded at Sipadan — a much greater diversity of species than is seen in the South China Sea. As a visitor, one is also struck by the large shoals of barracuda and jackfish. Manta rays and hammerhead sharks are also frequent visitors. It is also worthwhile to look out for the lesser known smaller species and other creepy-crawlies. Sipadan is situated right



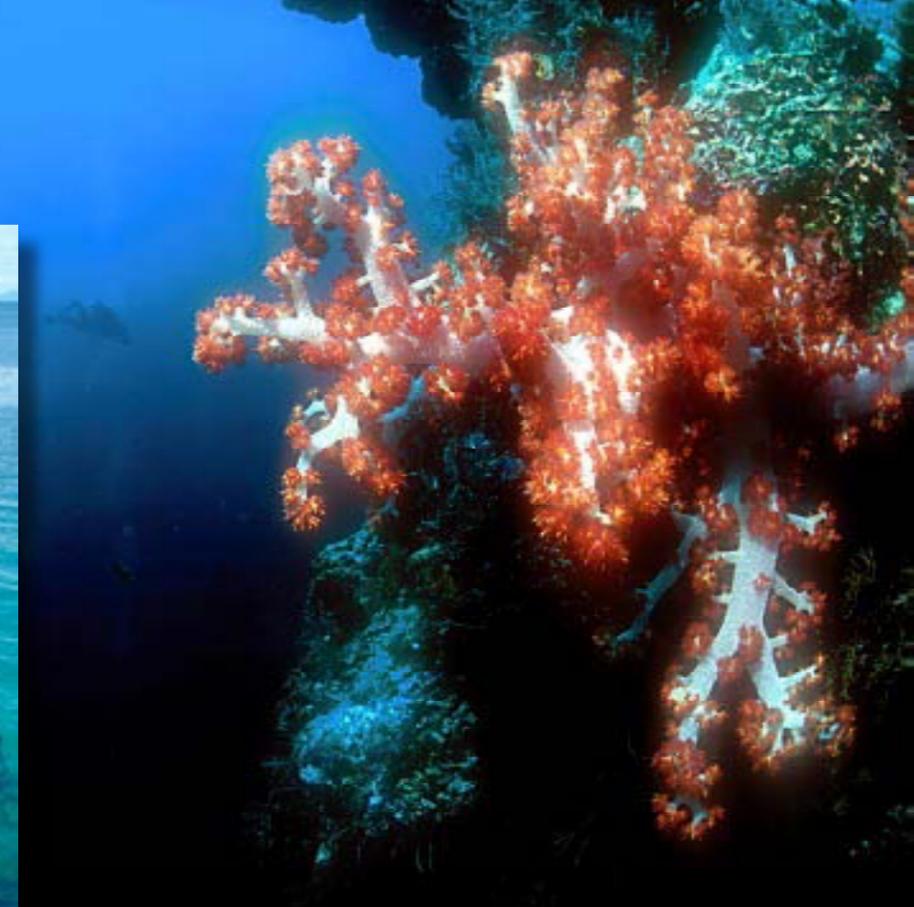
TOP: A Christmas Tree Worm braves the current  
BOTTOM: White and red corals at Sipadan Island

An abundance of marine and coral life thrives under the pier at the dive center of Sipadan Water Village

# Glimpses of Malaysia



## Sipadan



*“It is never too late to recognise something must be done to reverse the impact of human activities, and it is a wise decision to limit dive operators to conduct only day trips to Sipadan by year-end.”*

WWF  
(World Wide Fund for Nature) Malaysia Borneo programme director Dr Geoffrey Davison

LEFT TO RIGHT: An underwater photographer captures images of a school of jacks under the pier of the dive center at Sipadan Water Village, a long wooden walking pier stretches out into the tranquil bay where bungalows rest on stilts, divers prepare to explore Paradise I and II at SWV, delicate red and white soft corals hang from the steep vertical walls supporting Sipadan Island

in the middle of what is called the Indo-Pacific. The region is a great coherent ecological area consisting of the Pacific Ocean and the Indian Ocean, which also includes southern Japan, the Philippines, Indonesia and Australia.

Of the turtle family, it is mainly the green soup turtle, *Chelonia mydas*, which populate the waters around Sipadan. This turtle comes to the island to lay its eggs. It can be up to 1.2m long and weigh over 180 kg. The soup turtle is first and foremost nocturnal, and lives on sea grasses. During the day it rests, and one can often meet sleeping turtles in the corals.

There are also many loggerhead turtles, *Eretmochylis imbricata*. It can be difficult to distinguish between the two species under the water, but the latter has a shell

with a serrated edge, whereas that of the soup turtle is smooth.

One can normally get very close to the soup turtles. They often appear to be crying. It is thought that that the tears they shed serve to prevent their eyes from drying out and keep them free of sand.

The majority of corals at Sipadan are in fine condition and, like the fish, a large diversity of species is to be found. Within the hermatypical corals alone (these are corals that have symbiotic photosynthesising algae in their cells), over 400 species have been found. Due to the volume

of information, it is not possible to go into any detail here about this topic but briefly it can be stated that the low watered plateaus are dominated by elkhorn and table corals, plate and grape corals plus large leather corals. On the walls, fan corals and sponges can be seen. And, at greater depths, black coral and big barrel sponges dominate.

**History** Very little is known of Sipadan's early history. A unique and special ecology has been recognised at Sipadan since 1933, when the island was designated a bird reservation. It was not before the end of the 1970's, however, that serious scientific evaluations of the reef were ini-

tiated, and a deeper understanding was obtained of the significance of the island.

Through the 1980's, the WWF (World Wildlife Fund) was involved in several large investigations, and their results have laid the foundations for the environmental stipulations that now protect the island.

Between the 1930's and 1985, it was mainly fishermen and egg collectors who regularly visited the island. In 1985, Borneo Divers began dive operations on the island. They were the first operators to come to the island. At the start, there was only a tent in which divers could overnight at the island. The first huts came along in 1989. Then, Sabah Wildlife Department built a small experimental station in 1989, and in 1991 another dive operator arrived.

An investigation in 1992 showed that about a fifth of the northern reef was affected by the latest developments, with new construction work and the presence of boats and many divers in the water. The reef had previously been damaged by dynamite fishing, but the practice had ceased with the arrival of humans on the island. Until 1989, all the turtles that could be found were dug up and emptied of their eggs. However, this led to a fall in the population of turtles and the practice was therefore stopped.

In addition to this, it has been necessary to regulate the use of fresh water, to organise the purification of waste water and to establish effective waste disposal. With six resorts now based on the island, Sipadan was not able to bear

# Glimpses of Malaysia Sipadan



TOP LEFT: Malaysian bananas, bottled water and packaged nuts are locally produced

the ecological burden in the long run. The diving was still spectacular, but it was clear that it could not continue to be so. Unfortunately, a nasty kidnapping affair in April 2000 had a very chilling effect on tourism to the area and forced the government to put a temporary limit to the number of visitors.

Originally, only one centre had permission to build on the island. But there is a clear indication that corruption and capitalistic interests have had a large role in the development of Sipadan Island.

Early in 2004, the Malaysian federal cabinet announced the decision to close of all the dive resorts on Sipadan. Effective on the 31st of December 2004, all five resorts on the island are required to close all their facilities and move elsewhere. Chief Minister Datuk Seri Musa Aman had stated clearly that "we are doing this to preserve the environment, thus ensuring Sipadan remains the number one diving spot in the world.

As Mabul and Kapilai are close by, this fortunately does not mean that

already have resorts at both of these alternative locations that are actually rated at higher standards.

On Dec. 4, the government rejected a request from scuba diving resort operators to be allowed to remain on Sipadan for another year. The Dec. 31 deadline remained in place for the five operators on the island to vacate the popular diving spot.

Effective on January 1st, 2005, the government will allow only day trips with a maximum limited of 80 visitors. The decision is expected to strengthen Malaysia's application for the island to be listed as a world heritage site by Unesco.

**Geography** Between Sipadan and Semporna lie the islands of Mabul and Kapalai, which are also interesting dive locations. There are accommodations for divers on both islands.



Village Resort, is found on nearby Mabul Island, where there are two resorts which are both cheaper and of much better quality than those found on Sipadan. There is also a converted oil-rig near Mabul called Seaventures. On Kapalai Island, there is a resort on stilts, but the island is so small that you can hardly stand on it.

These islands are within 15 minutes sailing time of each other, and it is easy to dive all three places regardless of what island upon which you choose to stay.

At the moment, Sipadan has six resorts. They are the most expensive in the area, since they are located on Sipadan Island, the target of diving in the area — "the real thing." Considering the lodging prices, the standard of these

Mabul is known as the place where 'muck diving' was invented. Muck diving can best be described as diving for exciting small crawlies on the flat seabed. It is an activity that is greatly recommended — one can discover bizarre new creatures time after time.

Closer to Semporna, you can dive among the mangroves. During a longer stay in the area, divers should find time for a special diving excursion to the mangroves. It is a different diving environment with interesting natural finds that are unique to the mangrove ecosystem.

## Evaluation

Can you take the children or inexperienced divers to Sipadan? Yes, and even though it must be acknowledged that the diving is mostly for feinschmecker and those interested



BOTTOM LEFT: Bungalow chimes are sold by vendors at the resort shops and roadside stalls

TOP RIGHT: View of the dining hall at Sipadan Water Village Resort

MID RIGHT: Handmade straw baskets, wood flutes and trinkets are sold at open markets

BOTTOM RIGHT: Bags of rice, beans, peanuts, straw hats, fresh pineapples and hanging fruit fill the stalls at open air markets

divers are excluded from visiting the island. Many of Sipadan's operators

accommodations is disappointing. My favorite location, Sipadan Water



# fact file

## Malaysia



**Capital** Kuala Lumpur  
**Area** 330,000 sq. km  
Malaysia consists of the southern part of the Malay peninsula together with Sarawak and Sabah on northern Borneo. In recent years the country has enjoyed a considerable economic growth, and has declared its intention of achieving the status of an I-land, or first world nation, in 2020.

It has a population of 22 million, of which 53% are Sunni-Muslims, 17% Buddhists, 11% Taoists, 8% Christians 8%, and 7% Hindus. The average life expectancy is 71 years. Ethnic grouping include Malays 59%, Chinese 32% and Indians 9%.

**Language** the official language is Malay (Bahasa Malaysia). Other languages: Chinese, English and Tamil. English is widespread.

**Currency** Malay Ringit (RM). Exchange rate: 1 RM=.26 USD or .20 EUR; GNP per capita: US\$ 3,890; Income: agriculture 42%, service 39%, industry 19%

**Entry requirements** Passport valid for six months required. Visas are issued on arrival at no cost. Weapons or walkie-talkies are not permitted. Smuggling of narcotics is punishable by death in both Malaysia and Singapore.

**Climate** Tropical, with a south-west monsoon in May-June and a north-east monsoon in October-February.

**Electricity** 220 V, 50 Hz. The plugs are of the British type. Ordinary European plugs require adaptors loaned out at hotels.

**Health** Public hospitals accept tourists in the case of accidents. But talk to your travel agent about travel insurance. European national health insurance certificates are not valid for travel outside Europe. Vaccinations are not required at present, unless one is arriving from an area where yellow fever has been confirmed. According to the local authorities, cholera and malaria have mostly been eradicated in the area. But

it is advisable to contact your own doctor or the State Serum Institute before travelling.

**Methods of payment** BIG CITIES: ATMs. VISA, MasterCard, American Express accepted. RURAL AREAS: Cash only. Tips if any, are usually included in hotel and restaurant bills.

**Travel agents/tourism** Sabah Tourism & Promotion [www.sabahtourism.com](http://www.sabahtourism.com)  
Sabah Hotel Association (SHA) [www.borneo-online.com.my/hotel](http://www.borneo-online.com.my/hotel)

**Dive-operators/resorts** MABUL  
Sipadan-Mabul Resort \* [www.sipadan-mabul.com.my](http://www.sipadan-mabul.com.my)  
Sipadan Water Village Resort [www.swwresort.com](http://www.swwresort.com)

SIPADAN  
Borneo Sea Adventures [www.bornsea.com](http://www.bornsea.com)  
Borneo Divers & Sea Sports [www.borneodivers.info](http://www.borneodivers.info)  
Adventure Journey World Travel [www.borneo.org/ajwt](http://www.borneo.org/ajwt)  
Sipadan Dive Centre Sdn Bhd [www.mattasabah.com/sipadandive](http://www.mattasabah.com/sipadandive)

KAPALAI & SIPADAN  
Pulau Sipadan Resort & Tours [www.mattasabah.com](http://www.mattasabah.com)

SARAWAK  
Sarawak Tourism Board [www.sarawaktourism.com](http://www.sarawaktourism.com)

SABAH  
Sepilok Nature Resort [sepilok.com](http://sepilok.com)

\* Resort has nitrox and trimix  
See *directory page* for more info



Neon bright dive gear and BCDs dry very quickly under the tropical sun as they lay strewn on the pier at the dive center at Sipadan Water Village Resort

in nature, it is not difficult in itself — that is, if you don't jump down into a strong current, or dive too deep, or go into caves for which you have no training.

On the other hand, the experienced diver can find numerous challenges here. Nitrox and technical diving are available on the neighbouring island of Mabul, where many photographers will also be pleased to find E-6 developing.

It is rather a question of whether or not you want to spend your money on a travelling companion who perhaps might not be able to really understand and appreciate Sipadan. When all is said and done, it costs a great deal more to go to Sipadan Island, than say, staying a week at the Red Sea, due to the cost of air travel to a desination half way around the world.

But everyone, whatever their level of competence, will bring home the experience of a lifetime. Especially so if you round off the trip with an excursion into the jungle to see the proboscis mon-

keys, go trekking on Mount Kinabalu, white-water rafting in Saba, or visit the orangutan reservation at Sepilok.

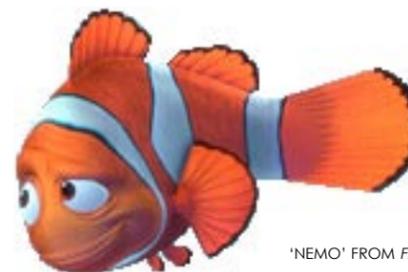
### Visibility and Current

Visibility at most of the diving locations near to the coast decreases greatly after rain because sediment is swept out into the sea. But at Sipadan, which rises directly from the ocean bed, visibility is generally quite unaffected by rainfall, and a visibility of under 30 m is a rarity. One can dive at Sipadan the whole year, but the visibility can change greatly from one day to the next.

There can be strong currents around Sipadan, or there can be none. Especially around Barracuda Point and South Point, there can be quite a 'storm' under the water, which requires good physical condition of divers. But good visibility and good captains on the dive boats make it easy to go on an entertaining current-dive. ■

Edited by  
Michael Arvedlund

## The tale about **Nemo's Nose** & Clownfish Chemistry



\*NEMO\* FROM FINDING NEMO BY DISNEY/PIXAR FILMS

*There are 28 recognised anemonefish species and ten species of host sea anemones. All anemonefish species are obligate symbionts of one or more host anemones in tropical and subtropical coastal waters.*

Even before the clownfish achieved Hollywood stardom as cartoon character Nemo, most of us, divers and non-divers alike, knew about this little colorful fish nesting in a stinging sea anemone. As popular photographic subjects the symbiotic relationship between the fish and their invertebrate hosts have become one of the most well known images from the world beneath the surface. What is less known, however, is how the fish avoid being stung.

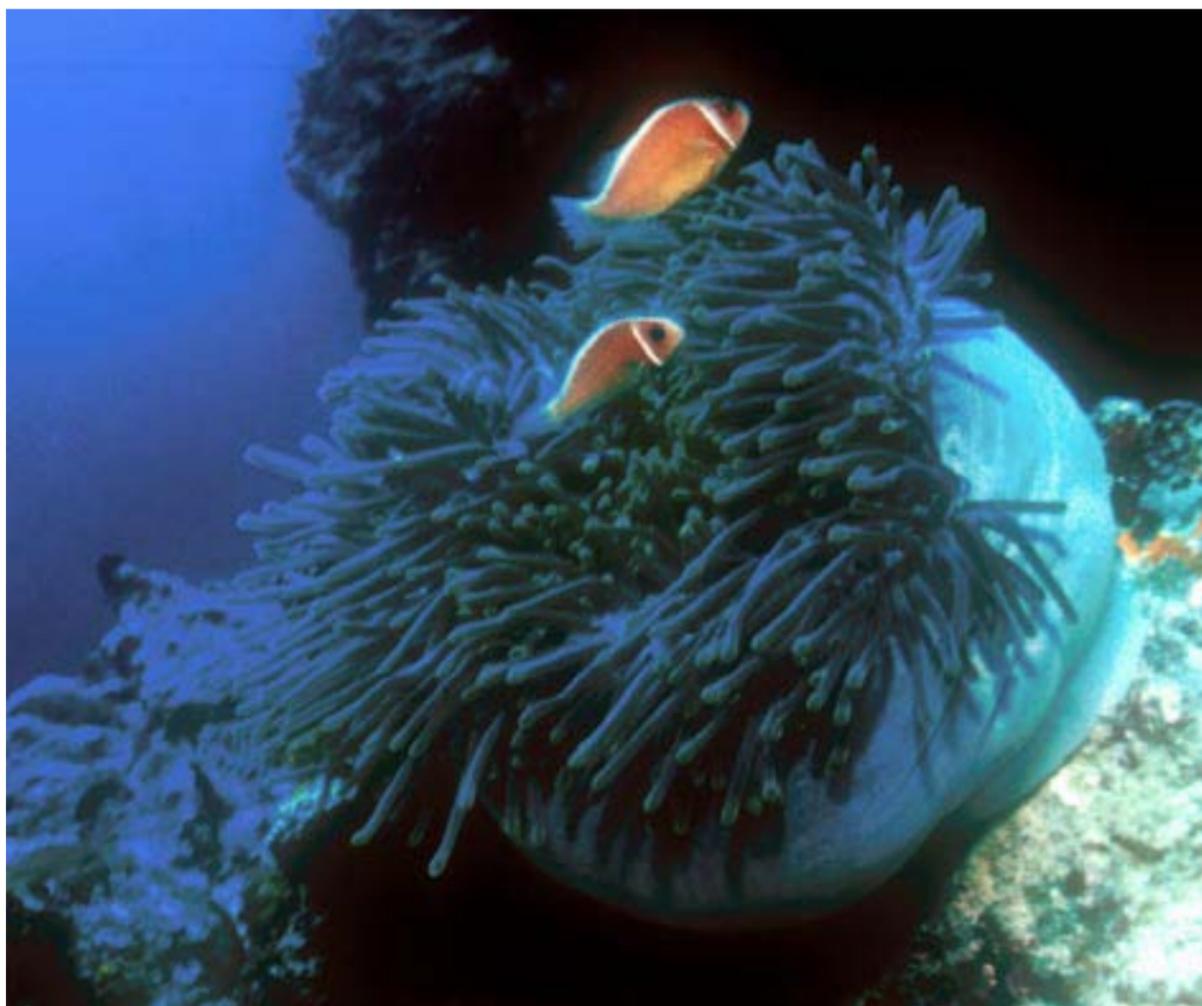


PHOTO BY PETER SYMES

This is the tale about an odd relationship that not only works, but also is necessary at least on the part of the clownfish, which in nature is never found without an anemone whose stinging tentacle offers them protection from becoming prey of larger

fish. But the clownfish also protects the anemone against being preyed upon by the butterflyfish. As most divers, who have the experience of taking a closer look at clownfish in an anemone, will testify, these fish are quite territorial and will protect their anem-

one very aggressively. They will fearlessly nibble at divers hands and poke at lenses.

**Not plants** Sea anemones, which contrary to their name are not plants but animals related to corals, live throughout the world's

oceans. However, out of nearly 1000 species of sea anemones, only 10 are host to anemone fishes. These are found in the parts of the Indian and Pacific Oceans that lie within the tropics, or where warm tropical waters are carried by currents. Consequently, we find the associated clownfish in the same places. The anemones that are host to clownfishes must live in sunny places. They exist only in shallow water, because within the cells of an anemone's tentacles and oral disc live microscopic algae, which, like all plants, require sunlight for photosynthesis. In this process, sugars are produced from carbon dioxide and water. Some of these sugars fuel the algae's own metabolism, but most of them "leak" to the anemone, providing energy to it. This is, by the way, another example of symbiosis.

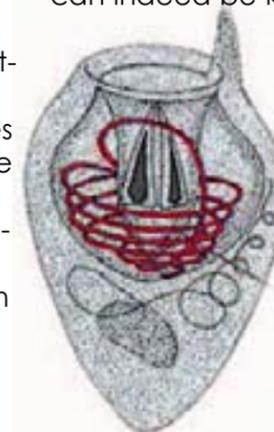
There are 28 species of clownfish and they all exhibit unique patterns of association with host sea anemones in nature. It ranges from the extreme specialist, the spine-cheek anemonefish (*Premnas biaculeatus*), which lives with one

host species only, to the generalist Clark's anemonefish, (*Amphiprion clarkii*), which occurs with all ten hosts.

**Nematocysts** Sea anemones are related to corals, jellyfish and hydra. Together they make up the phylum cnidaria. A common trait for the cnidaria are nematocysts, the harpoon-like stinging capsules that give jellyfish their sting, fire coral their burn, and the tentacles of some sea anemones their stickiness. Within each capsule is coiled a fine thread-like tubule many times the capsule's length. When the capsule is stimulated to fire, the tube shoots out — inverting like the sleeve of a coat turned inside out — to penetrate or wrap around the target. Nematocysts function in prey capture and many can inject toxins, which are delivered to predator and prey by or through the everting tubule. The threads are frequently armed with spines that aid in puncturing a hole in the prey.

Over the years, many biologists have wondered how it is possible for the clownfish to adapt to such a hostile embrace. It has been sug-

gested that the tentacles of the particular anemones do not contain nematocysts but all 10 host species are quite typical in this regard. It has been mentioned that the fish may not actually touch the tentacles. But while this is true for some Caribbean fish that seek protection behind and under sea anemones, as most divers will know clownfish do swim among tentacles, and in fact sleep on the oral disc at night. Another suggestion was that the skin of anemone fishes is thicker than normal so nematocysts cannot penetrate it, but this is not the case, the skin of clownfish differs little in thickness from that of other fishes, and may even be slightly thinner than that of the damselfish. Also, as mentioned below an unprotected anemonefish can indeed be killed by its



Nematocyst. Upon discharge, the coiled thread bores its way into the tissue of the prey, injecting a toxin with a paralyzing action

Text by Michael Arvedlund & Peter Symes  
Photos by Peter Symes, Michael Aw, Edwin Marcow & Malaysia Tourism

## Nemo's Nose & More Clownfish Chemistry

host's sting. Finally it has been suggested that while a fish is present, the anemone will not fire its nematocysts. But although a sea anemone seems to be able to have some control over its firing, it still stings and captures prey while harbouring clownfish.

The biochemical details remain ambiguous. What we do know is that some anemone fish species have evolved resistance to toxins secreted by host anemones, but the essential protection from the nematocysts stems from the anemone fish skin mucus. Anemone fishes are innately protected from some anemone species but must acclimatise to live with others. Most anemone fishes are stung by unnatural hosts, i.e. hosts they do not live with in nature. However, the protection mechanism remains

largely unclear. Several hypotheses exist, though they are not mutually exclusive.

**Protection** What seems to be the matter, is that clownfish somehow acquire or elicit protection, and that this protection can also disappear again. In experiments in aquaria where the clownfish has been separated from its host anemone for more than a few days or weeks, when the partners are then reunited and the fish swims into the host's tentacles, it withdraws rapidly, appearing to have been stung.

Depending on the species involved, this reaction is sometimes very obvious. However, a stung anemone fish will return to its host and carefully and gradually expose itself to the anemone's tentacles through elaborate stereotyped

motions, first touching the anemone with its ventral fins only, then exposing its entire belly. This process may take a few minutes or several hours but in the end the clownfish is able to dive right in.

**Who?** So, is it the fish or the anemone that is responsible for the protection? A clownfish which has been living alone will be stung by an anemone already harbouring another clownfish. It seems that the protective agent resides in the mucus coating that anemone fishes, like all fishes, have on their surface. But what is the source of this protective mucus? It has been speculated that when contact between the clownfish and anemone is initially made, the fish smears mucus from the anemone all over itself. And just as the sea anemone does not sting itself, the fish is thereby chemically camouflaged: it is, essentially, a fish in anemone's clothing. The fish's normal behaviour of returning to its anemone at least once a minute can be interpreted as serving to maintain its protective layer of mucus. According to this theory, what allows clownfishes to live in this peculiar habitat is their unusual behaviour.

**However**, not all biologists subscribe to this hypothesis. There are other sci-

entists who believe that the presence of protective mucus is the result of the fish being protected and not cause. According to their beliefs the fish's own mucus has evolved to lack components that stimulate nematocyst discharge, and the observed "acclimatization" behaviour just an artifact of artificially separating animals that normally never are parted. The secret to clownfishes' peculiar habitat, according to this interpretation, is their unusual biochemistry.

However, experiments have provided evidence that both fish and anemone may be active in forming the symbiosis for at least one combination of fish and anemone species. A fish kept in an aquarium with a surrogate sea anemone made of rubber bands glued to a Petri dish required an average of

only 20 minutes to acclimate to a real anemone, whereas the acclimatization time being directly exposed to a real host anemone was two and a half hours. It appears that the mere perception of what seems to be a host anemone elicit the fish to produce an especially protective mucus, but since it must still undergo a period of acclimatization, that alone does not suffice. It seems necessary that the anemone alters or adds to the mucus somehow. ■

**RECOMMENDED READING:**  
DAPHNE G. FAUTIN AND GERALD R. ALLEN. 1997. *FIELD GUIDE TO ANEMONEFISHES AND THEIR HOST SEA ANEMONES*. REVISED EDITION. WESTERN AUSTRALIAN MUSEUM, PERTH, PP 160. ELECTRONIC VERSION: [HTTP://BIODIVERSITY.UNO.EDU/EBOOKS/INTRO.HTML](http://BIODIVERSITY.UNO.EDU/EBOOKS/INTRO.HTML)

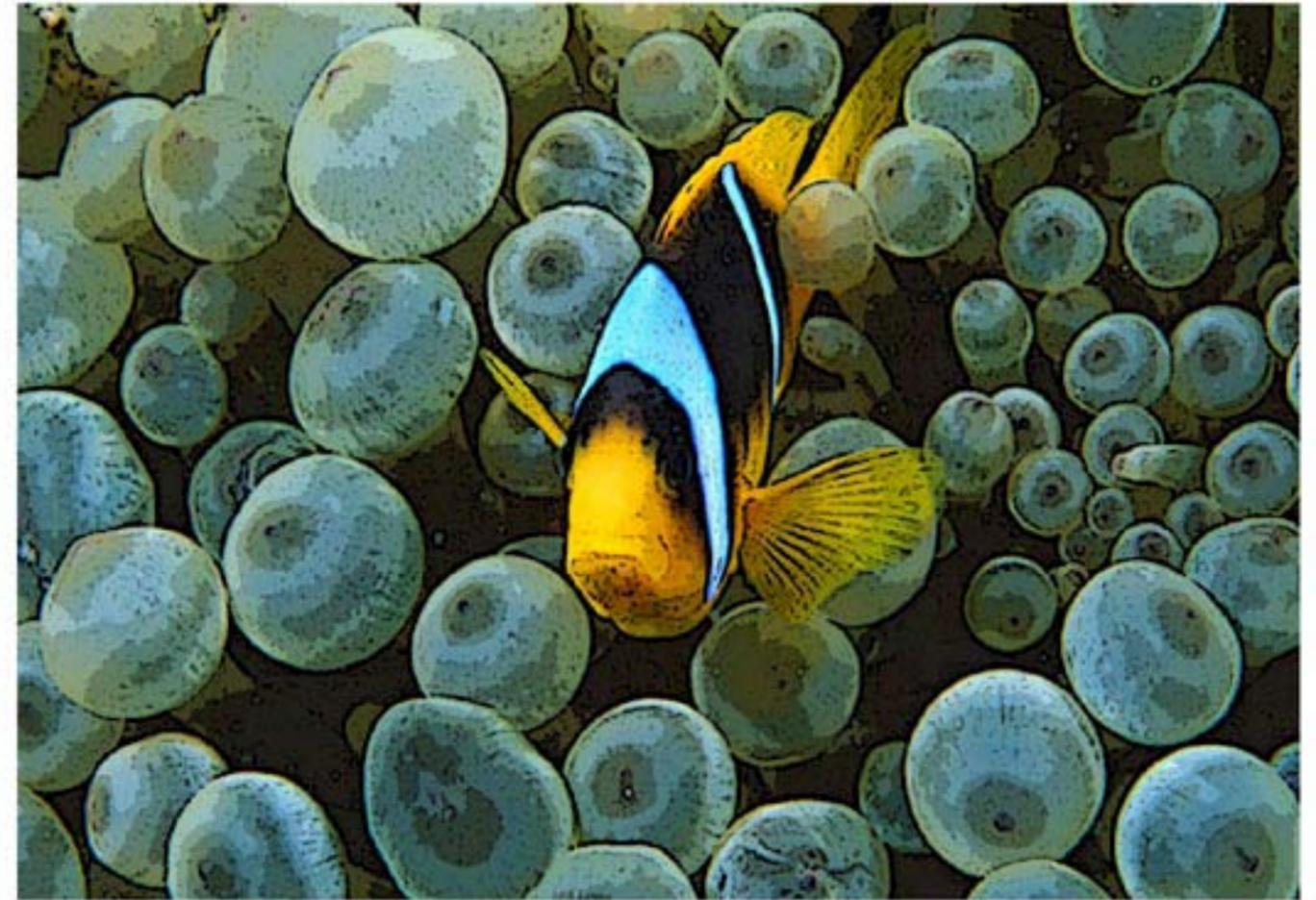


PHOTO BY EDWIN MARCOW. DIGITAL IMAGING BY PETER SYMES



PHOTO COURTESY OF MALAYSIA



Chemical imprinting may be more widespread among reef fishes than was previously thought

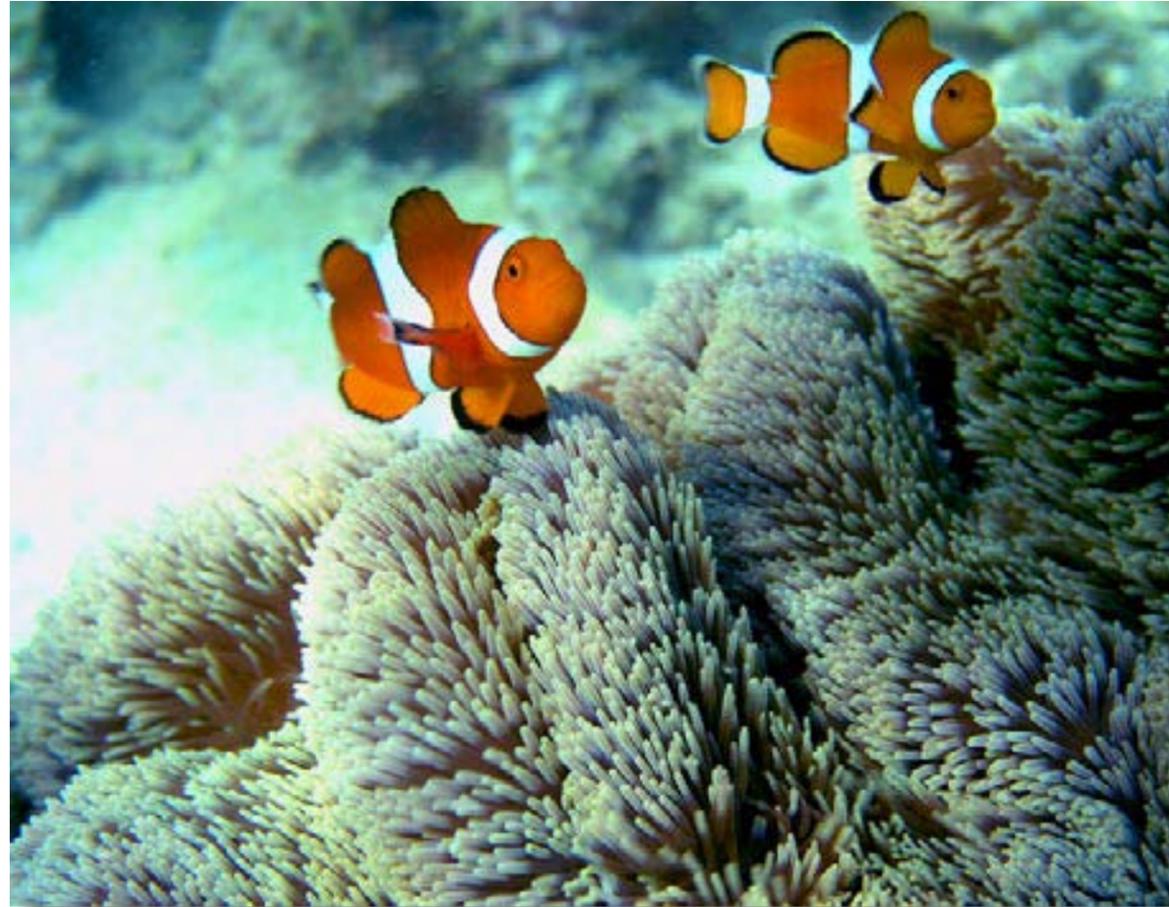


PHOTO BY MICHAEL AW

## Nemo's Nose & More Clownfish Chemistry

Text by Michael Arvedlund

### Clownfish find their hosts by remembering their smell, which drifts over them as embryos.

Sea anemones have long been known to release very powerful olfactory compounds, which might best be described as perfumes. It seems that Clownfish become 'addicted' to the perfume as an embryo in the egg, lying next to the sea anemone covered in perfume-like compounds it releases. This hypothesis had to be proved underwater by locating a lot of clownfish egg-clutches nestled by host anemones. Over several weeks of successful dive-investigations, we observed about 40 pairs of clownfish with egg-clutches and, without exception, they had all placed their clutch right next to their host anemone's col-

umn, not even a millimetre away.

By good memory, and a keen sense of smell, juvenile clownfish can quickly track down a suitable sea anemone by smelling their way to the perfume, when they settle on the reef two weeks later. Earlier American and Japanese research on the fate of reef fish larvae established that clownfish larvae emerge from the egg case after seven to nine days, and immediately swim to the surface. They swim around in the ocean, sometimes drifting with the currents, vulnerable to the environment, and feeding on plankton.

After two weeks, the juvenile clownfishes are about a centimetre long and ready to settle on the reef. This always happens in the middle of the night, when there is less chance of being dis-

covered by a hungry predator. Once the fish reach a coral reef, the search is on for a suitable host sea anemone to take them under its protective tentacles. Not all of them will be fortunate enough to find one, and the unlucky ones will end up on the menu of many larger fish or invertebrates on the reef. But for the lucky surviving ones, the smell they instinctively remember is their passport to safety.

This chemical imprinting may be more widespread among reef fishes than is thought, and smell the trigger which leads most fish to coral reefs when they come to settle. It is thought that olfactory cues, perhaps released from corals, similar to the perfume released from sea anemones, might be the trigger for many juvenile coral reef fish to settle. ■

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Edited by  
Andrey Bizuykin  
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# New & Interesting Equipment



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**Ellipse Alaska** Cressi presents a new version of the Ellipse Titanium, for divers who mainly use regulators in cold water. The MC7 diaphragm first stage comes with the Cressi antifreeze kit that completely seals off the external elements of the first stage from contact with water. The second stage is identical to the one used in the Ellipse Titanium. [www.cressisub.com](http://www.cressisub.com)

**Third Generation** Even before this new 'III', Sea & Seas Motormarine series was already a true classic, and the new generation of Motor Marine looks more than capable of living up to the reputation of its forebears. The III is more rugged and offers more controls than ever before. With features like two point focus for fast reliable focusing and a target light for accurate framing, the

MM III is a perfect choice for the beginning photographer. Advanced features like strobe bracketing control and push-button shutter speed control provide creative freedom for the experienced photographer. All the controls of the MM III are on the top or back of the camera making them easier to read and operate. Price in the U.K. £844 / \$1486 USD / €1219 EUR. [www.seaandsea.com](http://www.seaandsea.com)

**iPod u/w** H2O Audio is launching the first underwater casing for the Apple iPod. The H2O SV-iMini will ship for \$150 USD. The casing allows for underwater dial and push button access to a maximum of 10 feet (3 Meters) and full protection in wind and rain conditions. [www.h2oaudio.com](http://www.h2oaudio.com)

## Quotes & Comments

### Professor Negroponte on 'Featuritis' in software

"The speed and performance of software worsens with each succeeding release because of featuritis, the tendency to bloat new releases with features and options that monopolize the hardware's improved speed and memory. What you actually get is 10 different ways to do the same thing, with fewer and fewer of them intuitively obvious. Bloatware keeps the costs of computers, phones and other devices basically the same, thanks to featuritis. Users should reject the attitude that they are stupid, and that machines must be built the way they are."

"Simplicity should be a rule of thumb for mainstream products, while dedicated, special-purpose devices could be created for consumers of advanced features by adapting software to make the hardware act in different ways. The long-term strategy is to imbue computers with common sense."

"Simpler machines can be much less expensive, and while consumers, I believe, want this badly, the manufacturers have little interest in making this happen because the high end of any market is more profitable."

Nicholas Negroponte is the Wiesner Professor of Media Technology at the Massachusetts Institute of Technology and founding chairman of MIT's Media Laboratory. In 1995, he published The New York Times bestseller, *Being Digital*, which has been translated into over 40 languages. In the private sector, Professor Negroponte serves on the board of directors for Motorola, Inc.

**On the grapevine** Due to be released on March 1 is Mares new concept of "Limited Edition". According to a recent pressrelease dive equipment can now be custommade to order. The Italian manufacturer is responding to a slowing market by putting out equipment such as regulators and bcDs in limited numbers of max 2,000 numbered pieces each. Number 0001 in each series can't be ordered but it will be offered the highest bidder in an auction and the proceeds will go to a charity



### Sea & Sea On-line Photography Course

Sea & Sea introduces a novel approach to underwater photography training: The MX-10 On-line Photography Course taught by underwater imaging expert, Marty Snyderman.

The comprehensive program is designed exclusively for owners of the Sea & Sea MX-10 System. The entire MX-10 system is covered along with popular Sea & Sea accessories including the Close-Up Lens, Macro Lens, 20mm Wide Lens and the Fiber-Optic System. The course is easily accessible through a password protected area. Students have one year after their initial session to

return to the site as often as they want, whenever they want, wherever they might be on the globe. As long as photographers have web access, they can review needed skills or techniques from an exotic resort, live-aboard or from the comfort of their home. The price is \$29.95 USD [www.seaandsea.com](http://www.seaandsea.com)



**Slate Slip** A 2 or 3 pocketed, arm mounted slate holder. The diver can carry, and easily view more than one table or run time. Elasticated straps and Velcro fastening on pockets. Inside pocket size 10cms x 14cms SRP: £18.00  
[www.bowstonediving.com](http://www.bowstonediving.com)



**Archimede**  
New style for the casing of this instrument, with coloured inserts to improve its look. The strap is also new, with stretch inserts to absorb the squeeze of the suit deep down.  
[www.cressi-sub.it](http://www.cressi-sub.it)



**F2 Pouch Set - Battery Pack and Lamp Holder**  
This packet contains a pouch to carry the battery pack, 1 strap to go around the bottle and an elasticised holder on a quick pull Velcro tab.  
SRP: £15.00. [www.bowstonediving.com](http://www.bowstonediving.com)



**Primetime** Scubapro-Uwatec writes: tThe Aladin PRIME is the NEW Uwatec computer for recreational divers with an array of features that compete with other manufacturers' top end products. This new computer is easy enough to use for anyone who is new to diving but at the same time has the necessary, advanced features to satisfy the more advanced diver. [www.scubapro.co.uk](http://www.scubapro.co.uk)



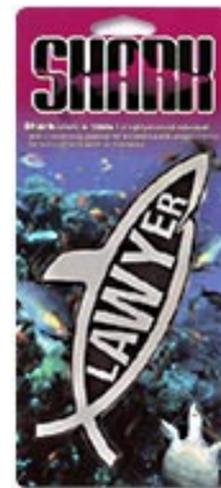
**ArmorProducts** In or out, it's up to you where you want to keep water. This dry boat backpack keeps your gear dry even in a wet boat environment, and keeps your car and cloths dry from wet gear you pack away in the backpack after a dive. The pack features touch PVC rubber coated tapaulin material, 100% non-corrossive PK zippers, contoured backpack straps with BCD style D rings, detachable with dry hidden pocket, regulator pocket, padded with access from inside for extra protection, continuous loop webbing for maximum durability, roomy size: 26" long x 18" wide x 12" deep, and 6,000 cubic inches of storage space.  
[www.armorbags.com](http://www.armorbags.com)



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A completely new interface both in terms of software and hardware. The hardware uses a new clamp that is easy and quick to position onto the computer contacts, to download the data to the PC (USB port). With the software you can create a comprehensive electronic logbook, with lots of information inserted automatically and other data that the user can insert manually. There is also a sophisticated simulator for dives using air or hyper-oxygenated mixes, which makes it an extraordinarily effective educational tool.



**Shark** These diving car emblems display underwater with way more class than any "Divers do it deeper" bumper sticker. Stick it to your car, boat or computer - the Dolphin Diver emblem will make a big splash with all your dive buddies all over the world. Fabricated out of a high quality polymer Signs of Success™ emblems are made to withstand car washes, road salts, and sunlight for years of indoor or outdoor display without fading or discoloration. The plaques are approximately 6" long and 2 1/4" tall and come with a strip of foam adhesive tape.  
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**New Analyst 4.01**  
Analyst 4.01 is available in a Standard edition for the recreational diver and a Professional edition with added fea-

tures for the more advanced diver. Analyst 4.01 is capable of checking for edition updates and automated registration/activation when the P.C. is connected to the internet.

It also supports both USB and serial port interface protocols. Dan Export files for Diver Exploration are Level 3. Analyst 4.01 supports the Cochran Commander, Commander

EMC-16, Commander EMC-20H and the Cochran Gemini, but not the Nemesis series or the Commander Plus, Commander Nitrox and the Gemini Plus. Additional features that are,

or soon will be available in the Professional edition are:

- Blending Wizard
- Planning/Simulator (200 m)
- Inter-Dive Event Profiling
- Confined Water Protocol

- Script Files
- Half-Time Compartments Graph
- Parametric Cloning
- Flight Data Recorder

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By incorporating Halcyon's Helios NiMH battery technology into the Apollo HMI's design, Halcyon has been able to shrink the canister size down to less than a "standard" 14 amp hour lead acid primary light canister. The new NiMH Apollo HMI is one-third the size of the original Apollo HMI, with a longer burn time.

[www.halcyon.net](http://www.halcyon.net)

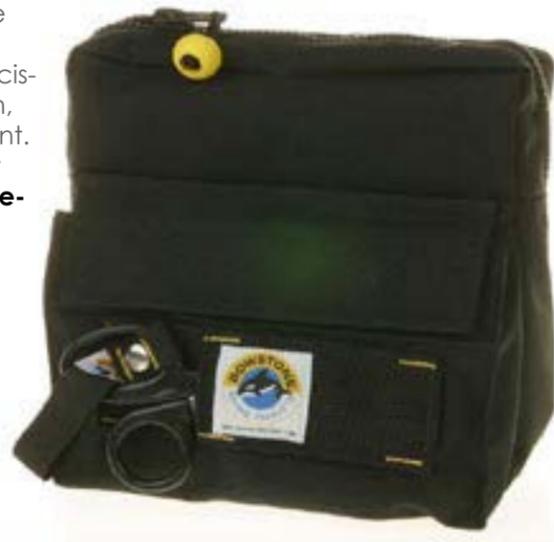
**Perla** From Cressi, a new mask that copies the lines of the Focus. It has separate lenses, a skirt edge that adapts well to most faces and a much smaller inner volume. It is made from soft, transparent or dark silicone, and comes with strong and quick action buckles to adjust the strap. It is particularly suitable for free diving or snorkelling, but is just as appropriate for scuba diving.

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



**Tech Pouch with Scissors** Good sized pouch with a D ring sewn inside, a zipped opening and a velcro front pocket for extra storage. Will slide onto 50mm webbing.

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**Rebreather Wings** Custom Divers has launched the *Variable Buoyancy System*. This dedicated rebreather wing has extra width allowing for the wing to inflate properly. The VBS has three zippable compartments around the outside of the wing. The compartments (which are completely independent of one another) expand, offering the diver variable buoyancy capability, whilst the elasticated cordless side panels allow for controlled even deflation. The design of the neck section ensures that the breathing loop and hoses are not caught and snagged, no matter what position the wing is bolted onto the back box. Divers also benefit from 4 D Rings attached to the Wing, making mounting accessories an easier task. [www.customdivers.com](http://www.customdivers.com)

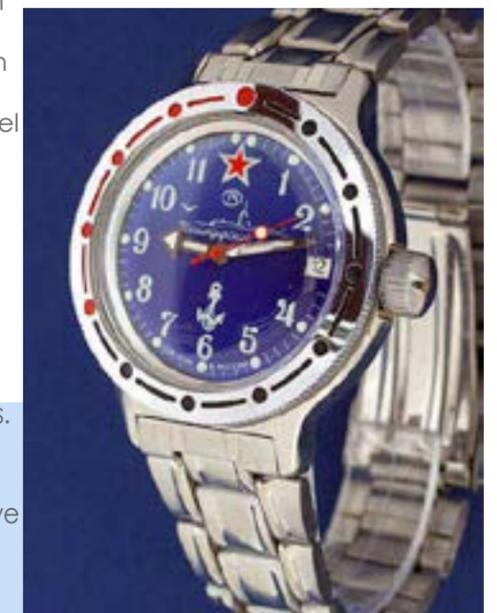


**Greenforce** The info at the manufacturer's website is rather compact: 6 Volt (NiMH 5 x 4,5 Ah). STD6 (Xenophot 20 Watt) Burn time: 75'. incl. handle and slow charger. Total length 180mm. Weight in air 1100 gr. Weight in water 630 gr. [www.green-force.com](http://www.green-force.com)



**Resin body** Sea and Seas new Video Light is compact, lightweight and made of synthetic resin body. The LX-15, installed with a 15-watt 4.8 V halogen lamp has a continuous burn time of 40 minutes (when using Ni-MH 2,400 mAh battery), Ni-MH batteries sold on the market can be used, so there is no need to carry around exclusively-designed battery a charger. Equipped with a newly-designed reflector, with a beam angle of 70° even light from the center to the edges without a hotspot can be maintained, making the LX-15 very suitable as a video light. [www.seaandsea.com](http://www.seaandsea.com)

**'K-19 submarine'** Vostok Amphibia automatic retro look Waterproof 200 m screwed head. Round shape solid case, size is 39 x 12 mm. All stainless steel case. Rotating bezel with markings. Band width 18 mm Stainless steel bracelet. Price ea. 54.00 USD [www.russian-time.com](http://www.russian-time.com)



Pressrelease:  
**Suunto and Aida announce cooperation**



**Suunto D9 becomes the official AIDA depth instrument** Suunto, the diving instrument market leader worldwide, and AIDA, the International Association for the Development of Free Diving, have engaged in a co-operation related to AIDA diving events for which the Suunto D9 has been chosen as the official depth instrument. As result of the co-operation, for the first time ever, the exact

profiles of the record dives can be monitored afterwards. Due to a sampling rate as low as 1 second, and 200 meter depth display, the Suunto D9 can produce detailed informa-

tion on the record attempts. AIDA will publish all successful world record dive profiles using the Suunto Dive Manager PC-software.



**Ikelite JVC DZ7 housing.** A delightful compact size housing and camera allows you to capture the moment with the latest digital video technology, including digital stills that can be printed or sent as electronic mail. Molded of clear polycarbonate to provide seamless construction and corrosion proof performance. This "Clearly Superior" design provides full view of the camcorder, control functions, and assurance the system is safe. Changing between video and stills underwater requires only the flip of a switch. Link: [Sample digital still photo](#). The housing operates safely to 200 feet. The housing lens port is threaded for 67mm wide angle lenses of Inon and Epoque. [www.ikelite.com](http://www.ikelite.com)



**SUUNTO SAFETY NOTICE ABOUT THE NEW D9 COMPUTER.**

Suunto production tests have found a software fault in the first series of Suunto D9 computers (products with serial numbers 4xxxxxxx - 45000699, software version 1.x.x - 1.2.4). Suunto advice is that the above numbered D9 computers are not dived with before a software update has been made.

Although highly unlikely, the fault may under certain circumstances cause the depth and time display to update slower than normal. Any potential problems are avoided by upgrading the D9 software to version 1.2.8. There have been no reports of users experiencing this fault.

**Pelican case** The new 1610 case will be the toughest and biggest airline-legal carry-on case on the market. Complete with side handle, front handle and convenient extension handle, it will be the perfect rolling travel companion. An added value to this case is the effortless release latch for the extension handle. Also, the padlock protectors provide added strength and extra security against cutting and theft. [www.pelican.com](http://www.pelican.com)



**Sea Eagle II - Dual Bladder Wing** from Northern Diver. Each of the independent bladders comes with its own power inflator and fitted with a shoulder pull-cord dump and an auxiliary rear kidney dump. The stainless steel backplate with comfort pad makes the Sea Eagle ideal for single or twin cylinder rigs. 2 front utility pockets, mounted on the waist straps, have velcro flaps, top and bottom, and can be used as easy-ditch secondary weight pouches or as conventional

pockets. The Sea Eagle II incorporates a chest strap and crotch strap in conjunction with the internal cummerbund, making it one of the most comfortable and functional jackets on the market. Sizes: M, L, XL. Stainless Steel Twinning Bands and Manifold Available. [www.northerndiver.com](http://www.northerndiver.com)

**Free Scuba Buoyancy Simulator Software**

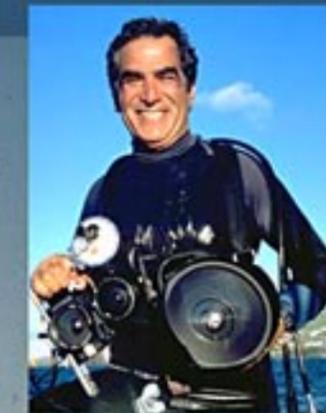
This FREE program simulates some of the effects of diving with SCUBA. Some of the effects are exaggerated

for instructional purposes. Click on the download links below to download either a Macintosh or Windows version of the program:

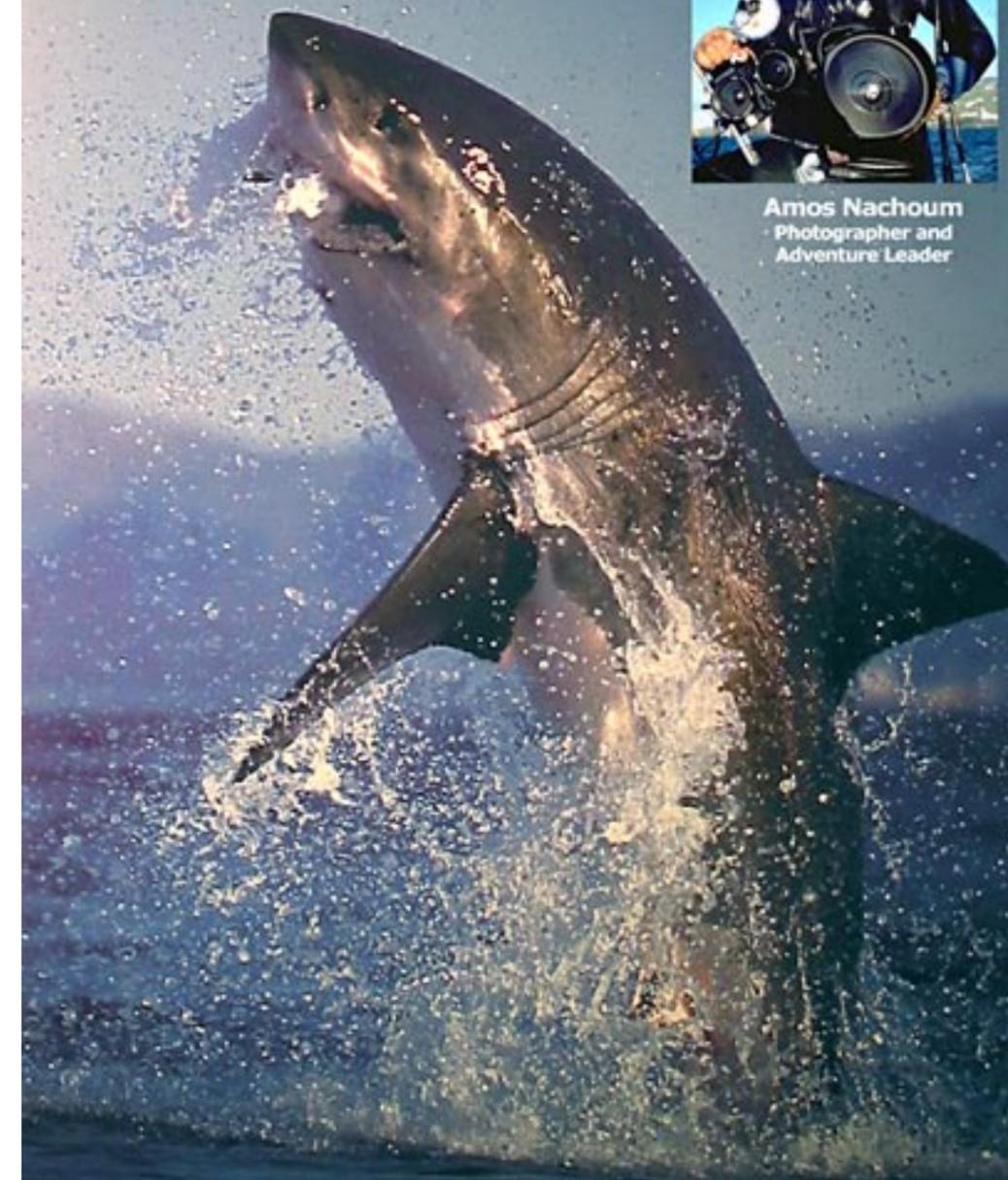
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## Books, Film, DVDs, CDs

Edited by Peter Symes & Michael Symes

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## A Story of Exploration

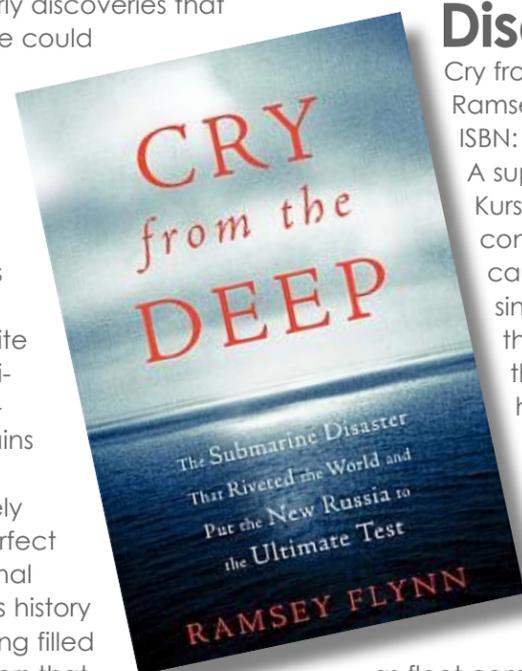
Compass: A story of exploration and innovation, by Alan Gurney

Hardcover: 288 pages, W. W. Norton & Company; ISBN: 0393050734. \$22.95

Centuries ago, a sailor's directional aids were winds and vision. Until the compass was developed in the 12th century, maps and charts could not be used with accuracy, but early discoveries that lodestone could

magnetize a needle

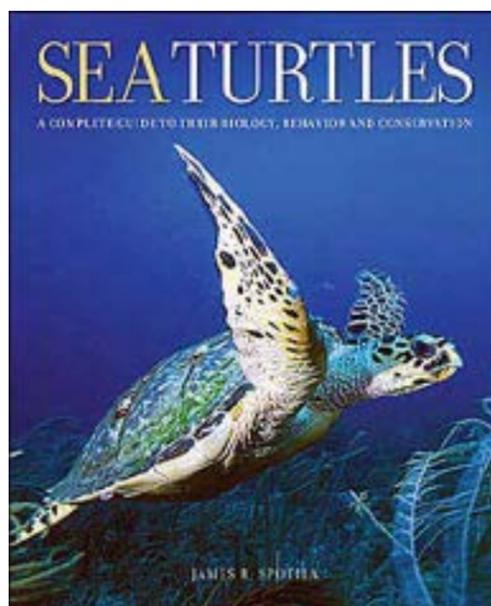
were followed by a large number of devices. In 1901, the magnetic compass was finally replaced by the gyrocompass. Yet despite 20th-century technological upgrades, the magnetic compass still remains a fail-safe measure. This book relates the intensely interesting search to perfect that essential navigational device, the compass, its history up to modern times being filled with the stories of disasters that befell sailors who misused it. [www.amazon.com](http://www.amazon.com)



## Sea Turtles

Sea Turtles: A complete Guide to their Biology, Behavior, and Conservation, by James R Spotila, Hardcover: 224 pages, The Johns Hopkins University Press; ISBN: 0801880076. \$24.95

For more than a hundred million years, sea turtles have been swimming in the world's oceans. Having escaped the mass extinction that wiped out the dinosaurs, these ancient reptiles today face new dangers that threaten their survival. Marine biologist Spotila has spent much of his life unraveling the mysteries of these creatures and working to ensure their survival. In Sea Turtles, he offers a comprehensive and compelling account of their history and life cycle based on the most recent scientific data - and suggests what we can do now to save them. Sea Turtles is illustrated with stunning color photographs by the world's leading nature photographers. [www.amazon.com](http://www.amazon.com)



## Disaster at sea

Cry from the Deep: The Sinking of the submarine Kursk, Ramsey Flynn, Hardcover: 282 pages, HarperCollins; ISBN: 0066211719. \$25.95

A superb account of the loss of the Russian submarine Kursk in the Barents Sea in August 2000. Torpedoes containing hydrogen peroxide exploded in the Kursk, causing a blast registering 4.2 on the Richter scale, sinking the submarine. A few of the crew survived the explosions, but they probably did not live more than a few hours longer. Flynn reconstructs what he can of the fate of the submarine. The Russian Northern Fleet failed to recognize the obvious signs of an accident, and failed to take any constructive action. They also failed to inform political superiors, and didn't allow any cooperation with the efficient rescue gear of the NATO navies. Russian officials were then caught in several outright lies. Several critical hours were lost

as fleet commanders failed to report that something dreadful appeared to have happened to one of its boats. This sealed the fate of those still alive in the submarine. [www.amazon.com](http://www.amazon.com)

## Coming titles

### California DVD

California marine life identification Hammerhead Press Hosted by Kristine Barsky, a professional marine biologist, with over 30 years of diving experience. Learn how to identify many of the most common marine creatures seen underwater off the California coast. More than 80 species of marine plants and animals are included in this program. [www.hammerheadpress.com](http://www.hammerheadpress.com)



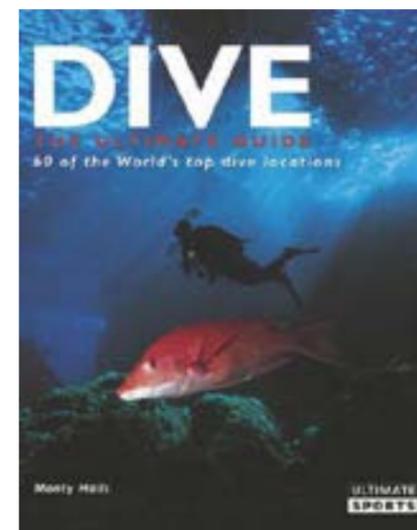
### Totally Wrecked DVD

Playing time: 60 minutes, Produced by Full Circle Productions. £14.99 The DVD follows the Full Circle Wrecks team as they dive the World's top ten shipwrecks. Included are all the best dives on each wreck, information on the operators and, of course, the slightly wilder side of a Full Circle Expedition. Follow the team as they have a close encounter with killer whales in New Zealand, explore an ancient Maori cave system, find human remains in Truk, experience real drama in the engine room of a wreck in Grenada, and dive the clearest water on earth outside the polar ice caps. [www.fullcircleexpeditions.com](http://www.fullcircleexpeditions.com)

## Where to go

Dive - The Ultimate Guide to 60 of the World's Top Dive Locations Monty Halls, Paperback: 320 pages, Ultimate Sports Publications Ltd; ISBN: 0954519914. £20.00

Authoritative, in-depth reporting on 60 of the world's top dive locations, including detailed accounts of the best dives and marine life at each location. This guide is packed full of practical dive information and well-designed data tables that enable the reader to identify key facts easily and quickly. It is totally up-to-date and well presented in a large page format that allows space for over 300 stunning colour photographs and high quality mapping of each location. It tells you everything you need to know about water temperature, visibility, local dive centres, dive governing bodies, conservation and important safety information, with useful telephone numbers and websites as well as general information about the geography of each location, local culture, visa requirements and how to get there.



[www.amazon.co.uk](http://www.amazon.co.uk)

## Movies



[disney.go.com](http://disney.go.com)

### Aliens of the deep in 3D

A 45 minute 3D film, directed by James Cameron. Academy Award winning director James Cameron takes audiences to the bottom of the ocean to encounter some of the strangest life forms on Earth, while inviting us to imagine what future explorers may someday find on other planets. Aliens of the Deep presents the highlights of more than 40 dives made to the Mid-Ocean Ridge, a submerged chain of mountains that winds 46,000 miles around the globe.



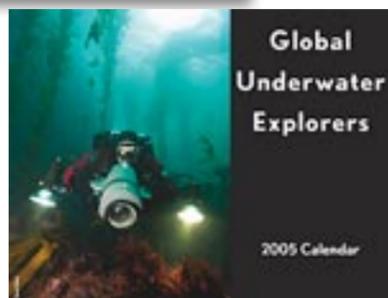
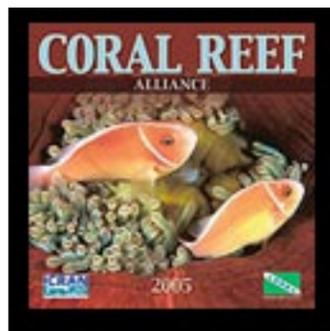
### Sharks 3D

A new 3D IMAX movie. Jean-Michel Cousteau, the United Nations Environment Programme and 3D Entertainment joined forces with this new 3D film that offers an astonishing, up-close three-dimensional encounter with nature's ultimate, yet endangered predator while delivering a compelling conservation message. The film brings the viewer face to face with a multitude of the world's great shark species, including the Great White, Whale Shark and Hammerhead. Audiences experience them as they truly are in their natural habitat: not wicked man-eating creatures, but wild, fascinating, and highly endangered animals. The film, shot on location in Guadalupe Island, Socorro Island and the Sea of Cortez, Malpelo Island, the Red Sea, Sodwana Bay, Mozambique Channel and Rangiroa Atoll, consists uniquely of underwater footage. [sharks3d.com](http://sharks3d.com)

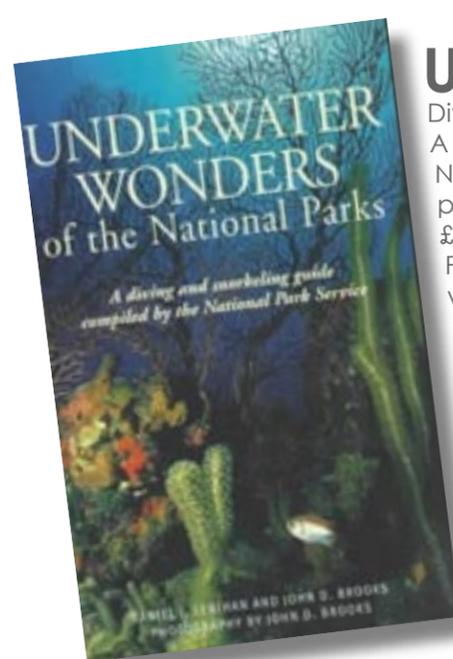
Books, Film, DVDs, CDs

## Looking for a calendar?

GUE's 2005 Calendar Global Underwater Explorer's 2005 Calendar is now on sale. \$17.99 + shipping. This is the perfect gift for anyone who loves diving. The calendar, 8½ x 11 in, features amazing photos from David Evans, Andrew Georgitsis, Claudio Provenzani, David Rhea, Anthony Rue, Sonya Tittle, and Gary Woods. The calendar will remind you of why we live to dive on those dull days spent between time in the water. This is a thirteen month calendar, January 2005 - January 2006. [www.gue.com](http://www.gue.com)



The Magnetic Island Underwater 2005 calendar is a collection of images from Magnetic Island in the Great Barrier Reef Heritage area of Australia. It highlights the special nature of the reefs and promotes Reef EcoTours. It is printed at A4 landscape size, on 160gsm gloss paper and spiral wire bound along the top edge. It sells for \$22 wholesale, \$25 retail which includes postage. [magneticimes.com](http://magnetictimes.com)

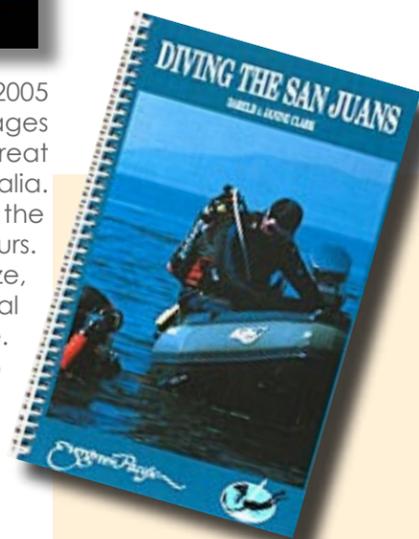
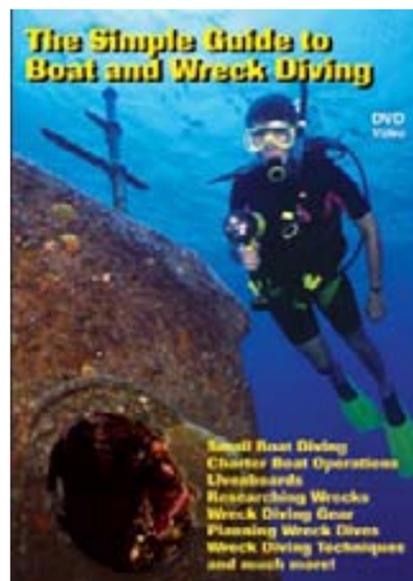


## U.S. National Parks

Diving and Snorkelling the National Parks  
A travel companion for diving and snorkeling in the National Parks. by Daniel F Lenihan, Paperback: 272 pages, Fodor's Travel Publications; ISBN: 0679033866 £17.35 (Sales of this book help to support the National Parks). Essentially a companion for divers and snorkelers which explains how and where to dive. It also details things to see and do for non-divers. The guide covers the North Atlantic, North Carolina Parks, Florida Parks, Virgin Islands, South-Central, Great Lakes, Rocky Mountains, Pacific Northwest, California, Hawaii, Pacific Territories and Alaska. It includes shipwreck diving off Cape Hatteras, Isle Royale, Fire Island, and elsewhere; kelp forests in the Channel Islands; and underwater geysers in Yellowstone. Also underwater archaeological sites such as remains of Spanish galleons in the Dry Tortugas, a Union warship off Cape Hatteras, and a ranch house in Lake Amistad. [www.amazon.com](http://www.amazon.com)

## New DVD: Boat & Wreck Diving

The Simple Guide to Boat and Wreck Diving, 45 minutes, Hammerhead Press, \$17.95. [www.hammerhead-press.com](http://www.hammerhead-press.com). This video provides divers with important insights, tips and details about boat and wreck diving. Filmed by Steve and Kristine Barsky, it contains extensive information on diving from large charter boats, small boat operations, wreck diving gear, and wreck exploration. The video is an ideal supplement to any training agency's educational programs, or as a stand-alone introduction for new divers who are interested in learning about these specialties prior to enrolling in training. The underwater portions of the wreck diving program were shot on the wrecks of the Yukon and Ruby E, off San Diego's Mission Bay.

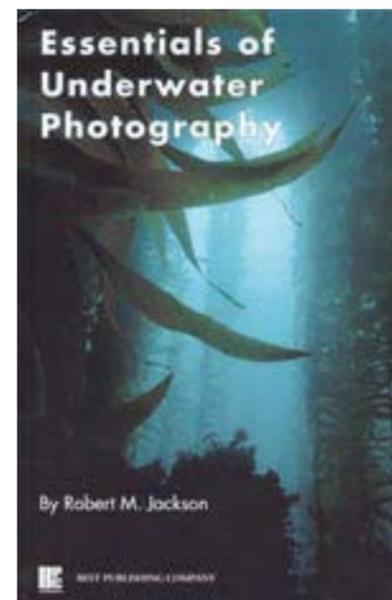


## X-RAY REVIEW

Dareld Clark  
Accord Communications Ltd  
ISBN: 0945265182. pp 135, ca.  
A5 format, spiral bound  
Black/white illustrations  
Amazon.co.uk price: £17.37  
[www.amazon.com](http://www.amazon.com)

## Diving the San Juans

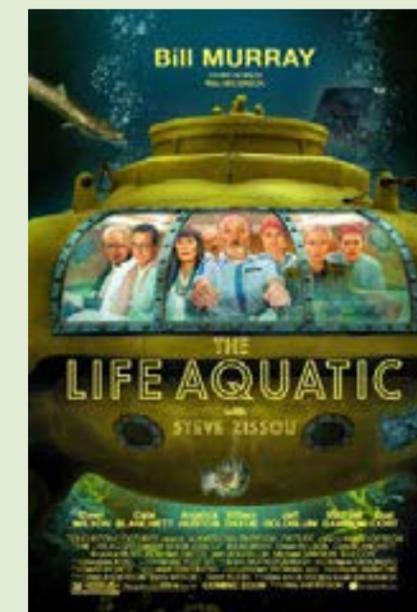
This, the first of a series of detailed practical guides to diving locations, covers over sixty dive locations within the San Juan Islands. It is fully illustrated with plant and animal life native to the Puget Sound area. Each well documented and mapped location provides an abundance of sites to choose from.



## UWP Help

Essentials of underwater photography Robert M Jackson, Hardcover: 88 pages, Best Publishing Company; ISBN: 0941332772. \$21.00. [www.amazon.com](http://www.amazon.com) Underwater photography is challenging, even in the age of autofocus and TTL cameras. This book illustrates these concepts with brilliant color photographs, each of which is accompanied by an explanation of exactly how it was accomplished. This book stresses basic knowledge needed to produce high quality images. Both beginning and experienced underwater photographers will benefit from the presentation of practical suggestions and realistic solutions for making photographs with housed 35 mm cameras, macro or wide angle lenses, and strobe lighting. A glossary of important photographic terms is included, as well as straightforward and comprehensive explanations of useful optical concepts, lenses, cameras, film and strobe lighting.

As the author says, it is the rare diver who has never been disappointed in a dive site because it did not contain the variety of plant or animal life that he or she had hoped to see. One of the purposes of this book, therefore, is to help you to select dives sites based on a knowledge of the environment and of the plant forms and the vertebrate and invertebrate populations to be found here.



[lifeaquatic.movies.go.com](http://lifeaquatic.movies.go.com)

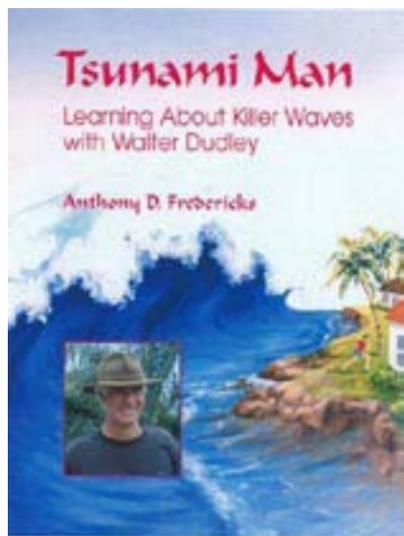
## The Life Aquatic

Internationally famous oceanographer Steve Zissou (Bill Murray) and his crew, Team Zissou, set sail on an expedition to hunt down the mysterious, elusive, possibly non-existent Jaguar Shark that killed Zissou's partner during the documentary filming of their latest adventure. They are joined on their voyage by a young airline co-pilot who may or may not be Zissou's son (Owen Wilson), a beautiful journalist (Cate Blanchett) assigned to write a profile of Zissou, and Zissou's estranged wife and co-producer, Eleanor (Anjelica Huston). They face overwhelming complications including pirates, kidnapping, and bankruptcy. 1 hr. 58 minutes

The data for each dive site is divided into four sections: habitat and depth, dive profile, directions, and hazards. Apart from information about a specific site there is also much of general interest to be found here. All-in-all, then, this guide would be a very useful addition to the library of any enquiring and adventurous diver. First published 1988.

## Dive Destination Guides

Dive Destinations 2005 + Caribbean Wreck Heaven  
Dive Destinations + free DVD Filmed and produced for Sport Diver by former BBC newsman John McIntyre. Obtainable from [www.divedestinations.net](http://www.divedestinations.net) £8.95 + p&p. Dive Destinations 2005 covers more than 70 destinations and offers comprehensive information on climate, entry requirements, currency, language, electricity supply and so on, as well as details of the countries themselves and the types of diving you can do. The DVD, Caribbean Wreck Heaven, visits nine islands and explores more than 30 wrecks. Among the vessels dived on the DVD are the enormous Bianca C – the Titanic of the Caribbean – and the huge Spiegel Grove, alongside the Rhone, the Stavronikita and the James Bond wrecks. The DVD also contains an eight-minute bonus feature titled Shark Frenzy, which sees John get in the thick of a hectic shark feed in the Bahamas.



## Big Waves

Tsunami Man: Learning about killer waves with Walter Dudley, by Anthony D. Fredericks, Paperback: 96 pages, University of Hawai'i Press; ISBN:0824824962. £9.50. Filled with dramatic photographs and accounts of tsunami survivors, this book addresses the how and why of tsunamis, their impact on human lives and the way which information about these so-called killer waves is shared throughout the world. Young readers are also given an inside look at the life of a working scientist.

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

## Sharp Sharks

Sharks of South Carolina Charles Farmer, 160 pages, South Carolina Department of Natural Resources. It is available free of charge through the Department of Natural Resources. For the location of the DNR office call the DNR's switchboard at (843) 953-9300 or visit [saltwaterfishing.sc.gov](http://saltwaterfishing.sc.gov). To receive a copy by mail, send a check for \$2 (postage) payable to the SCDNR, P.O. Box 12559, Charleston, SC, 29422-2559. This is the first comprehensive guide to shark species in the state. Included in the guide are 160 pages of information, a description and overview of 13 families of sharks and 39 species presented individually with illustrations pointing out the key characteristics essential in the identification process, along with other key information. The guide also delivers a message on the conservation of sharks.

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



## Games

Silent Hunter III, Simulation, Ubisoft Entertainment, £29.99, available: 17/03/2005. The king of submarine simulations returns with an all-new 3D game engine, new crew command features, and more realistic action than ever before. Command the cunning and deadly U-boats of the North Atlantic and experience the tension-filled atmosphere of a WWII submarine movie. The game includes a career campaign, patrols that have both single

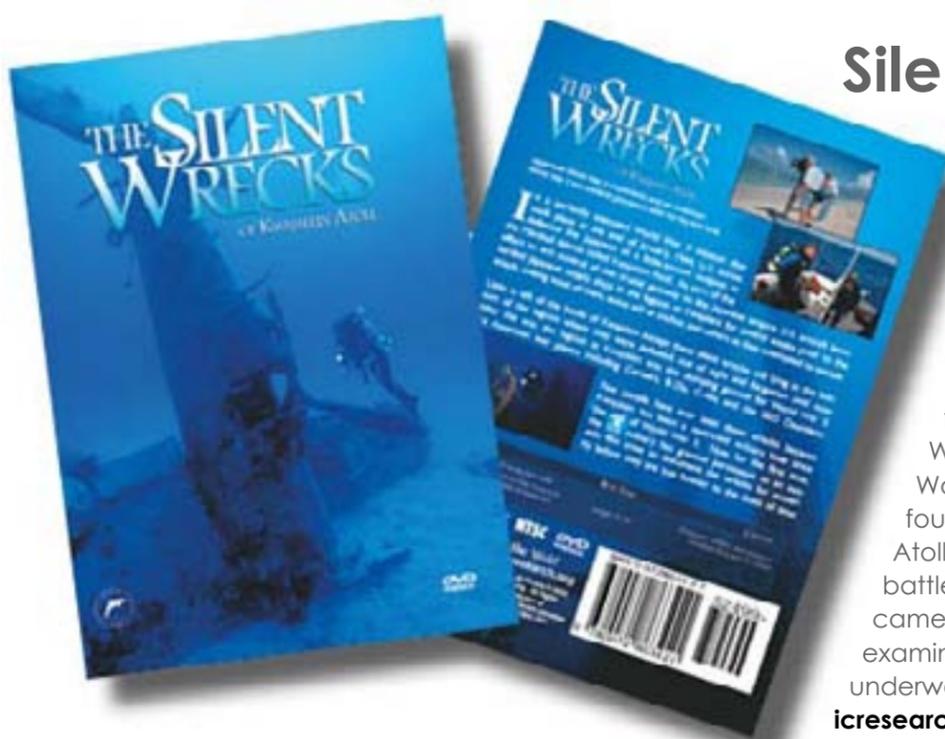
it's stalking destroyers or hiding from depth charges, players will experience their own personal war story. The spectacular graphics, multiplayer options and suspenseful gameplay combine to create the most impressive submarine simulation ever.

[www.silent-hunteriii.com](http://www.silent-hunteriii.com) or [ve3d.ign.com](http://ve3d.ign.com)

## Silent Wrecks

The Silent Wrecks of Kwajalein Atoll

Video film, 55:30 minutes, Produced by Oceanic Research Group, \$24.95 plus \$3.95 shipping (USA), \$7.95 shipping (outside the USA). NB this video is available in NTSC only. In 2000, members of Oceanic Research Group, along with history and dive specialists, filmed the underwater sequences for their full-feature documentary, The Silent Wrecks of Kwajalein Atoll. During the Second World War, Japanese and American forces fought for control of the Pacific. Kwajalein Atoll, part of the Marshall Islands, saw several battles during which many ships and planes came to rest on the floor of her lagoon. This film examines the battle for Kwajalein through the underwater wrecks of those battles. [www.oceanicresearch.org](http://www.oceanicresearch.org)



## Environment

### A practical guide to good practice

Managing Environmental Impacts in the Marine Recreation Sector, This guide can be downloaded for free at [www.coral.org](http://www.coral.org) Marine recreation providers, such as companies that operate snorkeling and diving, whale watching, boating, jet skiing, and recreational fishing excursions, have a major influence on how tourist activities impact the natural and cultural resources in popular coastal tourism destinations. Tourism companies are recognizing that they can contribute to marine conservation and the economic development of local communities by working with marine recreation providers that adopt environmental and social good practices. To consolidate the extensive information already developed by various organizations regarding good practices within the marine recreation industry, a common supply chain management tool has been developed. This tool will provide a central reference on good environmental and social practice from marine recreation providers for the corporate community to use during purchaser-supplier business processes.



### Pro-Active Posters & PDFs

The NOAA Fact Sheets and Public Service Announcement Poster Project was designed to create public awareness for long-term conservation of coral reefs and to educate tourists and other groups that visit the reefs. To download your FREE fact sheet in pdf format, click here: [www.icran.org/pdf/ICZMsm.pdf](http://www.icran.org/pdf/ICZMsm.pdf) or visit: [www.noaa.org](http://www.noaa.org)



## Screensaver

Sharks, Terrors of the Deep. Entertainment Software, Prolific Publishing, Inc. \$19.95 when ordered on-line from [www.lifeglobe.com](http://www.lifeglobe.com). This special beta release of Sharks, Terrors of the Deep includes 11 species of your favorite sharks in two different scenes. The "Open Water" tank allows free movement of the sharks around your position and you will swear you feel those massive tails brush you as they cruise by for

an inspection. The "Fantasy Theme Park Reef" features our menacing sharks circling-in, and underwater reef complete with a sunken galleon, reef fish, and perhaps a few other surprises. [dl.aascreensavers.com](http://dl.aascreensavers.com)

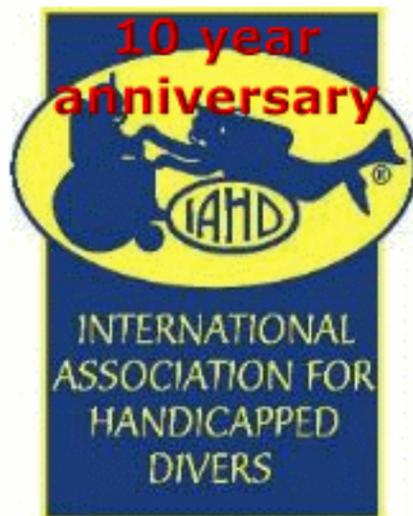


# Fraser Bathgate

Interview by Gunild Pak Symes  
Photographs courtesy of IAHD & Flemming Thyge

**Fraser Bathgate, Vice President and Director of Training for the International Association of Handicapped Divers (IAHD), tells X-RAY MAG what drives him to dive off his wheelchair and into the depths of the underwater realm, why he wants to teach other disabled people how to dive and abled dive instructors how to use alternative approaches and teaching methods that encourage disabled individuals to take the plunge.**

Tell us about yourself and the organization... The IAHD was set up to help train people in scuba diving that weren't able to go through the normal instructional methods with some of the major training agencies. We felt that was the wrong thing, so we wanted to introduce a method of teaching that would mean there was no



exclusion for a lot of people that are excluded anyway. It wasn't just people with spinal injuries in wheel chairs, but also people with cerebral palsy, Down's syndrome, muscular dystrophy and spinal bifida... things like that which means that we get the freedom that everyone else experiences.

Also one of the benefits of water is that it is a great therapy anyway, and also leaving the wheel chair behind. It's the only sport where we can leave the wheel chair behind. The other great thing is it's also the only sport where we can go into a shop and buy straight out of the shop. We don't have

to have things custom made. The only thing that we do have to have custom made any-time is a wet suit because obviously body shapes are different. But everything else can be bought directly from the shop, so they're not being penalized for having a disability.



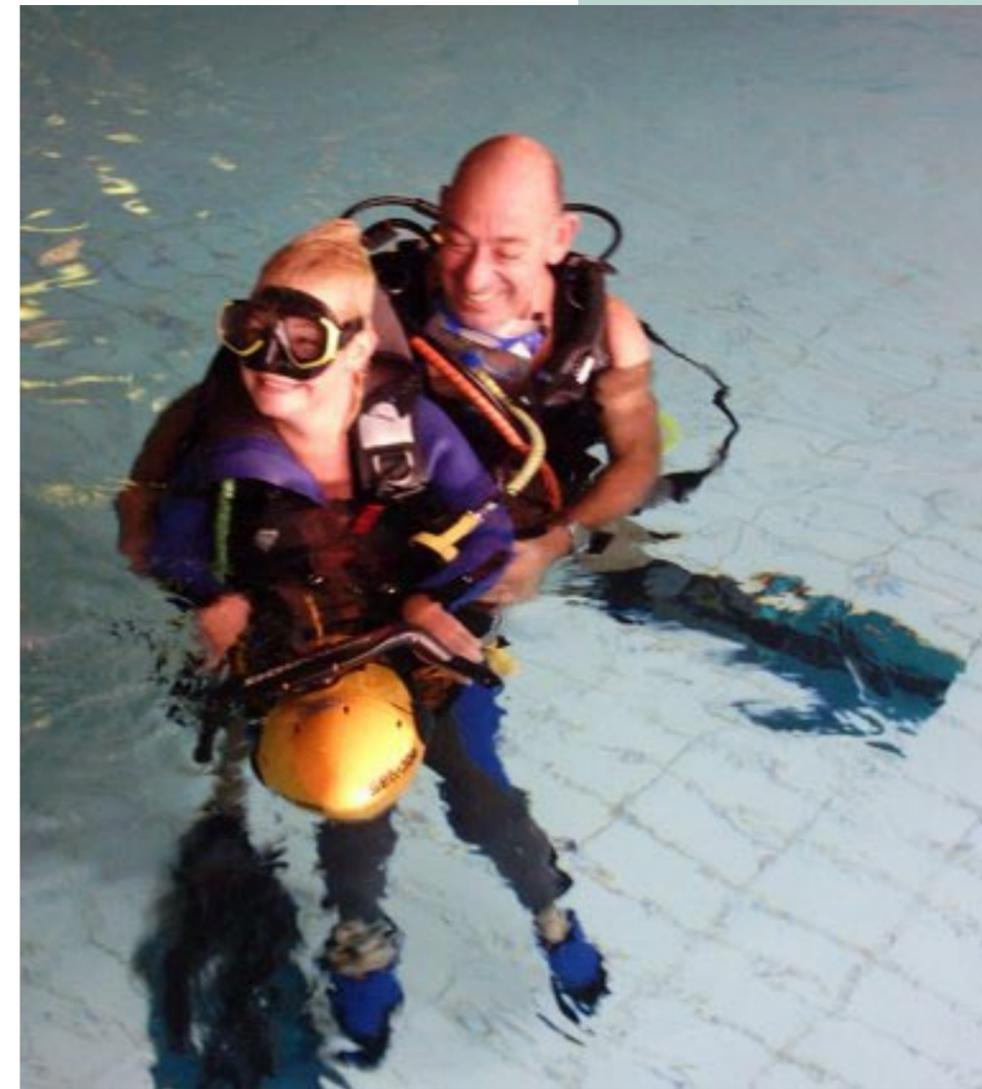
Fraser Bathgate

And how did you get involved with IAHD? I had obviously been, being in a wheelchair myself, interested in trying to give something back to the diving community which we felt was very, very important because a lot of times divers tend to take out, they don't actually give back. And I felt it was important to try to give something

back to the diving community as a whole.

Was your disability something that came later in life? Yes, I had a climbing accident. I was never a diver before, so I was the first person in the world in a wheelchair to qualify as an instructor. So that is unique.

And how did your teachers respond to you? It took me a long time to find someone who would be willing to teach me. When they did finally start to teach me, it was found that I could do just about as much as everyone else in the water. In fact, at certain points I could do things slightly better because my mobility came back when I was in the water, so it is like you are



able bodied again. It's good.

So, you felt happier down in the water? I felt a lot happier, a lot safer and a lot more comfortable in the water.

Do you have pain above water and then less under? I know that some people that we have worked with have had things where they have pain on the surface, but when we take them under the water, the pain reduces. We

The International Association of Handicapped Divers (IAHD) is a non-profit organization that organizes training programs for disabled divers. The organization offers a range of courses on different subjects very much like the PADI-system of diver education. You can read more about diving for disabled people at IAHD's international website:

[www.iahd.org](http://www.iahd.org)

Fraser Bathgate will be at the January 2005 Danish Dive Show in Copenhagen where IAHD will run a training program over the weekend. To register for the course, contact Flemming Thyges at: [www.thygesdykker-center.dk](http://www.thygesdykker-center.dk)





## Bathgate

use a specific program that all of our students can breath nitrox 36 which assists the breathing rates and keeps them warmer for longer.

*How does IAHD help dive centers develop programs for disabled divers?*

We run training programs to train instructors to work with people with disabilities because it not just being able to work with them but also really understanding the different types of disabilities, how to look after them under the water, how to get them to achieve as much as you possibly can. So what we do when we run a training program, we do not only look at just the instructors, we look at the training facilities. We look at the swimming pools, we look at their dive sites, and we look at if they want to take them away on holiday all these sorts of things. So it assists them in becoming more of accessible center.

*So it is a very collaborative process?*  
Very much so.

*Do you have doctors involved?*

We got a medical board with people who advise us. If we have a problem, we can go to them and they will advise us on different disabilities. Also we have people that are involved in sort of a board of recommendation, which assists us in doing new ideas and new programs and things like that.

*So you really have some strong guidelines and criteria?*

Very much so. Also we are recognized by most of the major training agencies as well as carving a link with DAN (Divers Alert Network) where they recognize our programs. We are working with people with disabilities.

*So, if an owner/director of a dive center like for instance, Flemming Thyges of Thyges Divecenter in Denmark, wants to*

*set up a program for disabled divers at his or her location, what do they have to do first?*

Well, Flemming has fortunately done one of the training programs with us and that's really good. What it means is that now he looks at the rehabilitation centers that are in Copenhagen. We made links the last time I was across there, at one of the centers, and they want to introduce it to their people as well. To get it going, I am coming back to do the Danish Dive Show and we are going to take some people in the tank at the dive show so we can get them in the water.

And also we will have this new propulsion vehicle that we have been working with the manufacturers of, so we will be able to showcase that. Because we work with a lot of the manufacturers as well in making the equipment that is more user friendly.

*And what does this propulsion vehicle do for disabled divers?*

It straps to the tank and it's got an on-off button, so it can just push them through the water, so they don't have to worry about swimming as well.

*So it just opens up a whole new world for disabled individuals?*

You've got a three dimensional world that give you a freedom that you don't have on land. And you can do all the things that used to be able to do but you can't do on land anymore.

*I guess you've got a lot of happy divers coming out of your programs?*

Oh, yes a whole lot of happy divers! This is one of the only things that keeps you going, you know, because even when things are very difficult, you just do one of these sessions and it makes it all worthwhile.





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*Do you meet a lot of resistance?*

From people that don't understand what we are doing – those who say, "You shouldn't have to be doing this." And we say, "Well if we don't do this, are YOU going to take them in the water?" And they don't look at that idea. So, you know it's making sure we get the word

Fraser Bathgate is the guest instructor of the specialty courses offered at Thyge's Dive Center in Copenhagen, Denmark

# profile

out to as many people as possible and take as many people as we know diving.

*Do you work with governments or ministries?* Yes, we have in the past because we have been invited to work with various countries especially in the developing world, as well as the Cayman tourist authorities like the Maltese tourist authority, the Seychelles, working with the Key Largo chamber of commerce in Florida. Setting people up like Flemming in Denmark to promote it because he is very enthusiastic and doing a lot. He will become our representative in Scandinavia, so anybody in Scandinavia who wants to work with us can contact him.

*When did you start your with IAHD?* I came in its second year. It's been going on now for 11 years. When I came on, I started developing different things and then, when a new CEO came on board, we were able to expand the programs that were available to everyone a lot faster. So, we have things like surface support specialists, nitrox program, two new pirate fish diver and recon diver. The Pirate fish diver is for people with a mental age of 12. And they collect six pieces on a treasure map and complete skills to get to the treasure chest.

*That's a wonderful idea. So, you work with three different sectors: the government, business sector and the health community. Which one has been the most helpful to your organization so far?*

They are all very much the same... because initially there was a lot of resistance from all of them but now that they understand what we are trying to do, that makes it all a lot easier for us to promote it and be a lot faster and promote it a lot faster.

## Bathgate

*How about the handicapped community themselves?* The handicapped community themselves were very wary, a little bit at first. They didn't believe that it could be done; they didn't believe that we could work with these people, but now that we have proved that you can do it, then it's a lot better now.

*And now they are much more excited to try it.* Yes, especially when we can get people into the water, then it's a lot easier for us to promote it. It makes it a lot easier to work with and a lot more people will become involved with the program especially in the states. We are hooked up with the Miami project. We are hooked up with people up in University of Washington in St. Louis, Missouri. We are hoping to expand into Boston and places like that.

*Do you get parents involved with their kids?* We try to but sometimes the parents can be a bit of drawback. So this is why we developed this program, surface support program, so we can use them to assist rather than get in the way all the time.

*So, if I am a disabled child or teenager who want to learn how to dive, what do I do first?* You'll want to get in touch with us. Go onto our website and click under "Instructors" and it will tell you where the instructors are and you can contact them directly. And if you can't find one to contact directly, then you can contact the head office and we can see if we can organize something and get an instructor as close to you as possible.

*Where do you want to be in 5 to 10 years?* Retired would be nice. (Laugh) In 5 to 10 years, I would like to see that we have a large instructor base that is willing to work along side us and sup-



Instructors learn teaching methods for individuals with disabilities who want to learn to dive

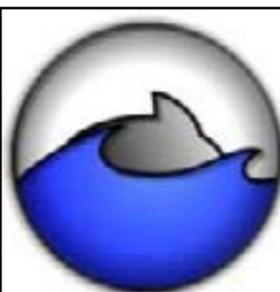
port what we do and actually help out in testing some of the new stuff we are working on. Get the scientists involved and the medical community to help promote us.

We are getting into a lot more developing of programs to assist people and give them more of a challenge. Because it is student-led and not instructor-led, you keep on presenting things for the divers to try, it gives them a hunger to try more new things. Maybe not just diving, but perhaps trying another sport that they had never thought about. And hopefully it will open up the whole of the market. Also the community in which they live in will become a lot more open as well.

*How do you do this financially?*

We are looking for support. Right now, it's just a lot of good will on our behalf. Because we are non-for-profit organization, no one is being paid to do this. We are trying to develop programs to be better for everyone.

*Have there been any documentaries made or media coverage done on your programs?* Yes, actually a documentary film has been made about me and how I got to where I am. And we are hoping the media will come out to meet us and cover our programs at the show. It's my first Danish Dive Show and I am really looking forward to it. ■



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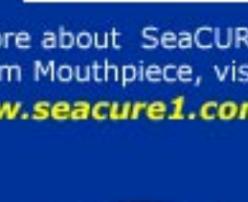
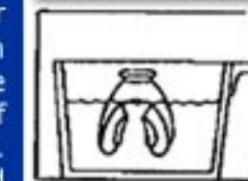
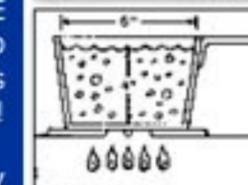
That's right. The SeaCURE Custom Mouthpiece molds to fit your mouth, teeth, gums and jaws!

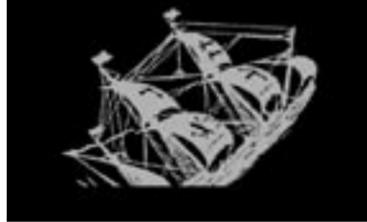
It is scientifically designed by an orthodontist to use your entire jaw for maximum retention and control of the mouthpiece-regulator unit of your SCUBA equipment... without jaw fatigue and headache pain sometimes experienced with conventional mouthpieces. SeaCURE is even remoldable if your "bite" changes due to dental work!

The SeaCURE Custom Mouthpiece is easily molded to fit you precisely! It is safe, durable and reliable. It fits most regulators. Above all, the SeaCURE Custom Mouthpiece is a mouthful of diving comfort!



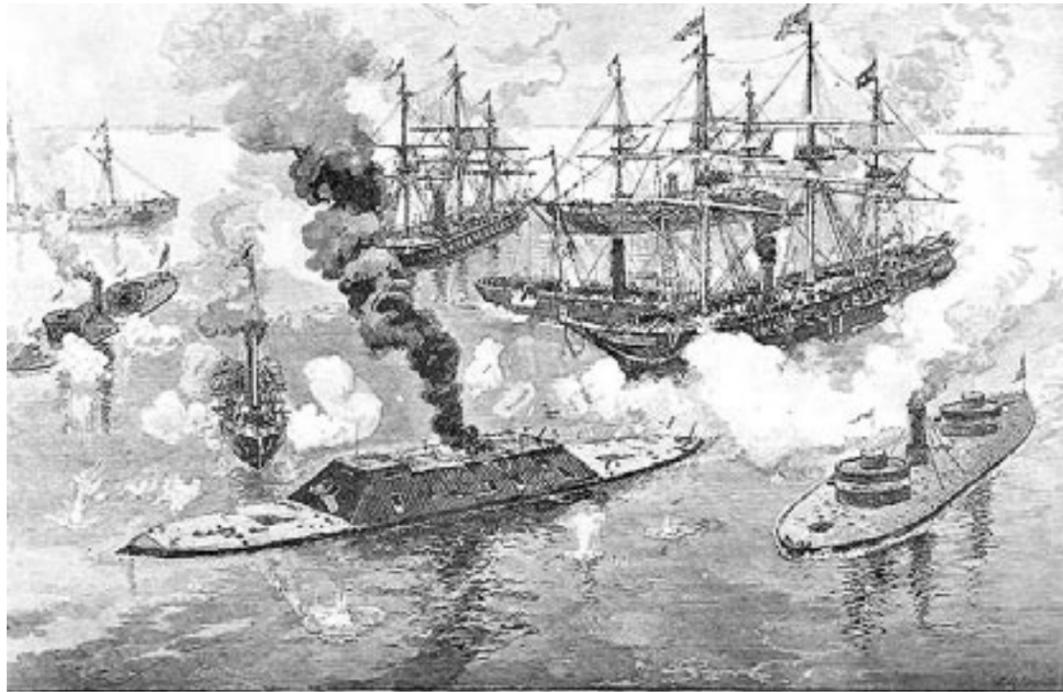
To learn more about SeaCURE Custom Mouthpiece, visit [www.seacure1.com](http://www.seacure1.com)





# Wreck Rap

Text edited by Peter Symes



U.S. NAVAL HISTORICAL CENTER PHOTOGRAPH.

"Surrender of the 'Tennessee,' Battle of Mobile Bay" Line engraving after an artwork by J.O. Davidson. The Ironclad Chicasaw, which has now been rediscovered, is seen in the lower right corner

A surprising find. Beneath the turbid waters of the Mississippi River, archeologists have stumbled across a rare find: The remains of a Civil War ironclad. The USS Chickasaw, which played an heroic role in the Battle of Mobile Bay, has been rediscovered in a graveyard of shipwrecks upriver from New Orleans' French Quarter.

**1864** The story of the USS Chickasaw, which is now the only known Milwaukee class ironclad river monitor left, is one of fame and ignominy. Six months after being commissioned into the Union navy in February 1864, the Chickasaw entered the Civil War as one of four

monitors covering Rear Admiral David Glasgow Farragut's entry into the torpedo-filled Mobile Bay. After a fierce battle at Fort Morgan, the fleet made it into the bay to then face the CSS Tennessee, a Confederate ironclad. In the ensuing battle, the Chickasaw was credited with hammering away at the Tennessee with its guns.

**1874** At the end of the war, the Chickasaw saw no more action, and the Navy decommissioned it in 1874. In the ensuing years, it was made into a coal ferry, and later, it carried railroad cars across the Mississippi in New Orleans. It was fitted with side-wheel propulsion.

**1944** During World War II, the country kept the heavy-duty Chickasaw around just in case German saboteurs destroyed the Huey P. Long bridge across the Mississippi. The vessel was never needed to carry goods and trains across the river again, and its owners sank it. The Chickasaw was designated as shipwreck No. 2, and was put to rest in 1944 at the spot on the river with 19 other outdated and unusable vessels and barges. It has since been forgotten.

**2004** The Chickasaw was rediscovered during recent survey work by the Corps of Engineers to stabilize the bed and bank of the Mississippi near the shipwreck graveyard. "The propeller shaft is the only thing that looks like it did under Eads," said archaeologist Joan Exnicios who works for the U.S. Army Corps of Engineers in New Orleans, about what remains of the Chickasaw. Officials said raising the vessel would be too costly, but rock will be placed around it to keep the vessel from moving. ■



Rogue divers raid war grave wreck

## Wilhelm Gustloff gets stripped

**It is not well known, but the the worst disaster in maritime history was the sinking of the German liner Wilhelm Gustloff on January 30, 1945. As many as 10,000 people, mainly civilians, were aboard her when she went down one winter's night in the Baltic Sea, sunk by Russian torpedoes.**

By the end of 1944, as Russian troops were pressing westwards and closing in on Danzig on the Baltic (today's Gdynia in Poland), mass evacuations took place before the Russians arrived. As many as 60,000 people crowded into the

harbour. As soon as the gangplanks were in place, people surged onto the ships. So many got on that the rescue equipment, lifeboats and lifebelts, were hopelessly inadequate. Yet, the Wilhelm Gustloff set off with only a minesweeper escort. Several hours after leaving the Gulf of Danzig, passengers aboard the Wilhelm Gustloff may have thought that they were nearing safety. But that night the ship was attacked between Danzig and the Danish island of Bornholm.

It was torpedoed by the Soviet submarine S-13, commanded by Aleksandr Marineskom, and took three direct hits. As many as 9,000 or perhaps even 10,000 people perished in the icy waters. Fewer

than a thousand were saved. The immense size of the ship and the location at a depth of 50 m makes her a very attractive wreck. Unfortunately, it also attracts rogue divers hunting for souvenirs and items that can be sold.

The great wreck which is also a designated gravesite for all those who perished with her, has gradually been stripped of everything from its portholes to its wash basins. Many of the divers are encouraged by rumours that items such as ashtrays and bed linen from the ship are regularly snatched by German collectors "for the price of a Mercedes." ■

For the full story, see: [www.patriot.dk/gustloff.html](http://www.patriot.dk/gustloff.html)



## Great Lakes: N.Y. Divers have found the shipwreck of the Etta Belle in the frigid waters of Lake Ontario

The Etta Belle sank in 1873 in relatively calm weather. The oak-hulled schooner sprang a leak just under the waterline on the port bow. After an hour of frantic pumping, the captain and his crew gave up, retreating into a small yawl for an eight-mile row to shore. It took them several hours to reach the shore, accord-



Two-masted schooner

ing to newspaper accounts at the time. Their escape was evidently hasty, because none of them retrieved any possessions. One crewman even arrived at Sodus Point stark naked.

The Etta Belle, now rests in 200 feet of water off Sodus Point, where it was recently found by two Rochester divers who specialize in hunting Lake Ontario shipwrecks. It is the oldest cargo-carrying schooner found on the southern shore of the lake. It's also one of just two that are fully preserved. In 1971, two divers found the St. Peter, a pristine wreck, near Pultneyville, Wayne County. Its full load of coal is still visible, bulging from two cargo holds, and coated with zebra mussels. Fewer than one thousand shipwrecks are thought to repose in Lake Ontario, and only about 200 have been explored by divers.

**Well preserved** Lake water can get so deep and cold that some wrecks "are like ships in a bottle," said Great Lakes historian Brendon Baillod. A pair of British warships near Hamilton, Ontario, sunk in a gale in 1813, are so well preserved in 300 feet of water that "they could easily be refloated and sailed," he said.

About five shipwrecks a year, on average, are found on the Great Lakes. There are an estimated 6,000 altogether — most of them in lakes Erie, Huron and Michigan. The discovery of the Etta Belle had only "modest" historical value. But it is important in Lake Ontario, where there are very few wrecks to begin with," said Baillod, whose web site includes a database of sinkings and sightings on all five lakes, going back to 1679. ■

Footage from dives on the Etta Belle can be found at this link: [www.shipwreckworld.com](http://www.shipwreckworld.com)

## NS Savannah, the world's first and only nuclear passenger ship, now rusts with Ghost fleet

The N.S. Savannah was the world's first nuclear-powered cargo/passenger ship. First proposed in 1955, the Savannah was part of President Eisenhower's "Atoms for Peace" initiative. Congress authorized the construction in 1956 as a joint project between the Maritime Administration of the Department of Commerce and the Atomic Energy Commission. Savannah was launched in March, 1962. Designed to carry 9,400 tons of cargo, 60 passengers and 124 crew, N.S. Savannah was capable of cruising at 21 knots and traveling 336,000 miles on a single fuel load. In 1972, N.S. Savannah was decommissioned in an effort to reduce spending by the Maritime Administration. From 1985, N.S. Savannah was stored near Patriot's Point Naval Museum, South Carolina until, in 1999, when she was moved to James River Merchant Marine Reserve Fleet near Newport News, Virginia.

After 10 years of riding out storms and decaying with age, the Savannah is finally receiving some attention. Congress, for the first time, has allocated money to begin the ship's decommissioning. The \$2 million is part of the omnibus spending bill that Congress recently approved.

The government overseer of the Ghost Fleet, the U.S. Maritime Administration, has a five-year \$25 million plan to remove the defunct nuclear reactor still within the Savannah's belly and purge all remaining equipment, hoses and gaskets tainted with radioactivity. ■

## Looters of sunken treasure subject to \$100,000 fines

In the early days of diving, treasure hunters armed with underwater blowtorches prowled the waters outside Charleston Harbor for the H.L. Hunley. They planned to cut it up and sell souvenirs of the Civil War submarine, and perhaps even the bones of her crew, to collectors around the globe.

There was a time when such looting was pretty common. Now, with legislation that just passed Congress, federal agents can seize a treasure hunter's boat and fine him \$100,000 for mining the government's archaeological gold. Bob Neyland, head of underwater archaeology at the Naval Historical Center and the Hunley project coordinator, said that the new Sunken Military Craft act was forced by rapid advance in shipwreck-hunting technology.

"This will go a long way to protecting war

graves; and it will go a long way toward protecting archaeological sites," Neyland said." The idea is not for the government to hoard these vessels, but to protect the sanctity of war graves first, and then to learn from these wrecks and get the most out of them."

The act covers thousands of wrecks in foreign waters around the world.

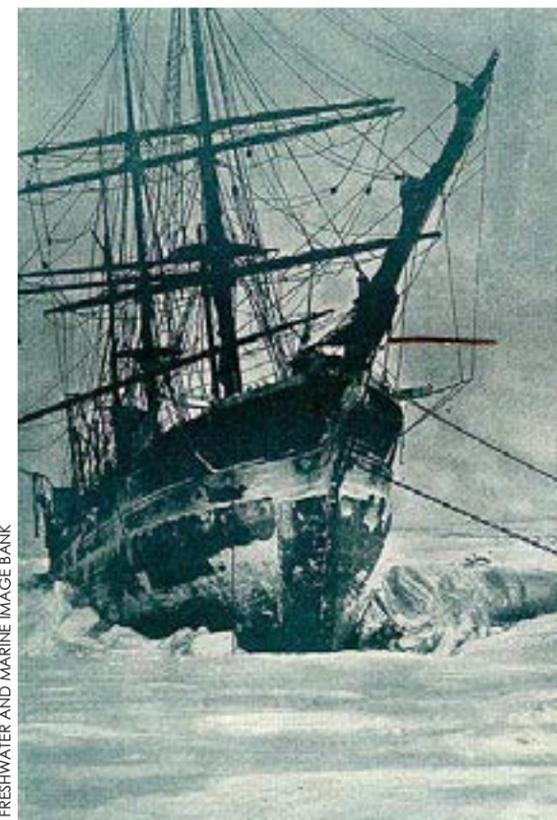
State Archaeologist Jonathan Leader said the new federal law is aimed directly at those looters and others with nefarious intentions. "Obviously they are not just going after people who stumble upon these wrecks," Leader said. "The real issue is people out for gain or profit off these wrecks. I have no sympathy for those people and am glad this is being done."

The law applies to any vessel built for military purposes, but not to commercial or merchant vessels. Courts have generally upheld these rights anyway, but the new law eliminates any question of salvage rights for military ships. James Hunter, a Naval Historical Center archaeologist also working at the Hunley lab, says it's an issue that comes up more often than many imagine. See [www.hunley.org](http://www.hunley.org) ■



Hunley submarine immersed in refrigerated storage tank at the WLCC upon recovery. From Friends of the Hunley [www.hunley.org](http://www.hunley.org)

It was part of the massive 2005 National Defense Authorization Act, a \$420 billion piece of legislation that covers nearly 20 percent of the federal budget.



FRESHWATER AND MARINE IMAGE BANK



Leigh Cunningham

Correct Weighting: What it is and how to get there...

# Do you need to lose some weight?



Leigh Cunningham is the technical manager and TDI Instructor Trainer for Ocean College, Sharm El Sheikh.

Probably best known for his records - Leigh once held the record for the deepest dive in the Red Sea - and attempts of reaching extreme depths, he also has a wide range of teaching credentials to his curriculum:

TDI instructor trainer, DSAT Tech Trimix instructor, PADI MSDT IANTD Technical diver instructor CMAS 3 star instructor.

Regardless of the type of dive, shallow non-deco recreational dive or the 120 metre deep mix wreck dive in the Atlantic, correct weighting will increase the safety and comfort of any dive tenfold. However, it is often the case that not enough emphasis is put on correct weighting from the very beginning, i.e. at the Open Water course.

Text by Leigh Cunningham

There are indeed many instructors that do emphasise the importance of correct weighting, discussing differing amounts of lead based on the thickness of the exposure suit, wet or dry, salt versus fresh water environments, aluminium versus steel tanks, positioning of lead to increase stability, lead bricks on a standard weight belt, soft shot weights in pockets on a belt, a harness belt system (very secure), ankle weights for those in dry suits and quick release pockets on a BCD. This is all good, keep it up!

Unfortunately, with some students, due to the stress of breathing underwater for the first time, good training and advice tends to go in one ear and out the other. By the time divers (who will naturally have inappropriate breathing techniques initially) have cracked the breathing pattern issue, they



have forgotten what the instructor had to say about correct weighting in the first place.

The Open Water Instructor, myself included, also generally overweight students during initial confined water sessions to keep them steady on the bottom, particularly where confined water sessions are carried out in a sea water environment, in order to carry out required skills, without having students floating to the surface, left right and centre. Sometimes, the only way to get some students through the course is to keep them overweight during the whole course. This is, obviously, not ideal, but in the

real world, where you have five days to do an Open Water course, this is sometimes the case.

Students rarely learn how to breathe correctly underwater during the open water course, and for some it will take hundreds of dives before they get it right. But it is the key to correct weighting; a slow deep, controlled breathing pattern, so until you have this, you're wasting your time. Practice more, or take up golf!

Once you have the correct breathing pattern the steps to correct weighting are easy. So once again regardless of the type of dive,, the single tank non-deco dive, or the 6 tank rig

in 150 metres. The end goal is the same.

We should be carrying enough lead to keep us at the shallowest stop depth at the end of the dive - whether it's the 6 or 3 metre stop on a deco dive, or the safety stop at the end of the non-deco dive - with the BCD or wing empty. The over weighted diver, will find buoyancy control harder, the under weighted diver, could end up with a run away ascent.

Bearing in mind that compressed gas has weight, dives will always start with the diver slightly overweight, at the beginning of the dive, the degree of overweighting for the non-deco single tank diver will

be minimal. For the tech diver, on the deep mix dive, the degree of overweighting will vary more dramatically. This is based upon a number of factors, i.e. how many tanks is the diver carrying, hence the difference in compressed gas weight at the beginning of a dive compared to gas weight (with low gas pressure) at the end of the dive. In some extreme cases, where the diver is carrying multiple tanks, he or she might opt for the support team to attach

*hallow rapid breathing = an over weighted diver*





Many tanks compound to the weight issue. Leigh Cunningham in the Red sea with big tank setup

drop weights on the rig during the ascent, to avoid having to be heavily overweighted at the beginning of the dive.

The tech diver should, however, consider some extra weight, in case you need to run to a bail out/emergency plan, where you would use some of your reserve gas supply, to finish your decompression obligation, ending the dive lighter than you would otherwise be if you were running to your primary plan.

**Back to basics.** Think back to your open water course. At the start of a dive, your instructor probably told you to deflate your BCD completely and hold a normal breath, by which you should ideally be floating at around eye level, or, if in doubt, sinking very slowly. A kilo over, no big deal, as it is better to be slightly overweighted, than slightly under.

In a perfect world, you would have cracked the ideal breathing pattern during the open water course. If not, and you have a few dives under your belt, try it now!

The rule will work for the single tank diver regardless



of the thickness of the exposure suit, salt or freshwater, steel or aluminium tank ect. For the tech diver, due to more kit and multiple tanks, the story becomes more complicated.

**Steel or Aluminium?** Where tech divers using steel tank configurations, the diver could be overweighted with no additional weight, apart from the rig and kit he or she is carrying, not only at the beginning of the dive but also at the end. Now you have two choices; Use aluminium tanks which are less negatively buoyant, or at least mix and match your configuration, rather than having only steel tanks. If you are using a wet suit, change it for a thicker one with more positive buoyancy during decompression (shallow water). But don't forget: While a thicker the wet suit will offer more positive buoyancy during deco, the down side is that due to increased suit compression at depth it loses proportionately more buoyancy in deeper water. If you are using a drysuit, you could opt for using a suit made of crushed neoprene or a membrane type,

also have greater buoyancy changes throughout the dive. So, here we go, all you advanced tech divers out there, it looks like the crushed neoprene or membrane dry suit is the way to go. That is, unless you are diving in a tropical environment, where the air temperature is hotter than your average cup of tea! In which case we are back with the wet suit to avoid over-heat-

*Forget about drop weights if you have a decompression obligation*

ing before getting wet! Hm, I'll leave it up to you.

If you are using aluminium tanks all around, you may need to add weight to establish correct weighting. If so, in order to adjust trim and ensure a good div-

During basic training the instructor often overweight the students to keep them on the bottom during first exercises. More often than not the extra weigh never comes off again



ing position throughout the dive, consider where this weight is placed.

A horizontal diver will off gas more efficiently during deco than the vertical diver who has up to a two meter depth difference between head and feet.

A weight belt might not be the best answer. How about a V- weight placed between the back gas and back plate and wing? Or lead on cam bands, strategically placed on the back gas and/or

stage tanks to adjust trim. Forget about drop weights, you have a decompression obligation, so you will need the weight you started with in order to carry out shallow stops accurately.

**The bottom line:** In order to establish correct weighting, experiment with steel and aluminium tanks, and different types of weight systems. When you get as close to correct weighting as possible, your dive will be safer and more enjoyable.

Have fun, and dive safe! ■



PHOTO BY PETER SYMES



# Shark Tales

Text by Edwin Marcow  
Photos by Edwin Marcow & Bite Back

ILLUSTRATION COURTESY OF FIONA'S SHARK MANIA  
WWW.OCEANSTAR.COM

**77 year old Tyna Webb swam religiously every day except for Sundays when she would go to church. A very active woman, she would swim up and down the coast of Fish Hoek, South Africa, where she lived. On Tuesday, the 16th of November 2004, it was to be her last swim.**

Tyna was attacked by an 18 foot long (6 m) Great White Shark, the ocean turned red and she disappeared under the surface — all that was left was a little red bathing cap floating in the swell.

As unfortunate and regrettable as this attack was, it was likely that the shark chose Tyna for a number of reasons. Perhaps it had not successfully hunted for prey that day, and this was the overwhelming desire of the shark to survive, rather than a random attack by some maniacal man-eating shark.

When we enter the ocean — to sail, surf, scuba dive or simply swim — we enter another world, the realm of the shark. No one would safari in Africa on foot without a ranger armed with a high-powered rifle, 'walkie talkie' communications, a first aid kit and a plethora of

vital equipment, yet everyday, thousands of people around the globe enter the ocean, into another world without protection.

We, humankind, consider this world to be ours. But it isn't. One could argue that we enter this world on a limited visa as our visits are only fleeting. But, like tourists who enter a foreign place, when something goes wrong, as in the case of Tyna Webb, we blame the shark rather than accept that it was an accident or an act of nature. Our failure is not to use reason — but why?

The frequent sightings of large congregations of Great White sharks resting and patrolling just beyond the breakwater only a few feet from surfers who are catching waves on

popular beaches along the Cape coast of South Africa will one day, I hope, help to reveal a more balanced image of this graceful and magnificent animal.

The irony is that sharks worldwide have more to fear from us than we do from them.

More than 90 percent of the world's shark numbers have decreased. In



Australia, the Grey Nurse shark is close to extinction with less than a thousand remaining off the Australian east coast. A similar sorry tale is that of the Canadian Porbeagle shark whose numbers have also declined by 90 percent since the 1960's. It is now on the endangered species list.

It is estimated that tens of millions of sharks are killed each year by humans in the name of progress! Ever since shark cartilage has been advocated as a 'cure' for cancer, there has been a measurable decline in shark population numbers. Progress in pseudo-science — an unproven and discredited field — has endangered the future of the shark.

Research has shown that shark cartilage taken as a supplement will not arrest and cure cancer, yet shark cures continue to be sold in many health food stores. Although it is remarkable that, unlike human beings, sharks do not atrophy as they age, the belief that ingesting shark cartilage as a supplement will cure or prevent terrible illnesses is irrational. With the pervasiveness of these beliefs, a great disservice is also being done to many sick and vulnerable patients who, in desperation, turn their backs on proven medicine in favor of some magical cure.

It is the power of marketing and the discrediting of science that has over-

CLOCKWISE FROM TOP LEFT:  
Great white shark;  
Hammerhead shark caught in fishnet;  
Shark tails and fins for sale at an Asian market

PHOTO BY EDWIN MARCOW



PHOTO COURTESY OF BITE BACK



PHOTOS COURTESY OF BITE BACK

turned logical and balanced approaches to very real diseases.

Progress? A bowl of shark-fin soup will sell for \$100 in the Far East. This dish is prized as a delicacy there. Its reputed medicinal value has helped spawn a vast industry — shark-finning.

Finning by trawler boats have also helped to decimate shark numbers globally. Sharks are caught in trawlers' nets. Then, they are hoisted onto the decks where their fins are removed and the sharks, still alive, minus their fins, are then thrown back into the ocean to die a slow and painful death.

One must ask the question: who is acting like an animal, and who is acting with grace and purpose?

If this rape of the ocean continues unchecked, shark numbers may well fall to unsustainable numbers. Due to

their slow growth rate and low birth rate, sharks are particularly vulnerable to over fishing.

To date, 63 countries have agreed to ban the killing of sharks for their fins in the Atlantic Ocean. This is a very positive step forward following earlier conservation bills introduced in other countries, notably South Africa, which gave protection to the Great White Shark in the early 1990's.

Sharks have outlived the dinosaurs. They have seen empires come and go. If we are to protect the future of the ocean, and in turn the future of humankind, we must outlaw shark-finning and the trade of all shark products worldwide.

If you want to help save the sharks, visit the Shark Trust at [www.sharktrust.org](http://www.sharktrust.org) or Bite Back at [www.bite-back.org](http://www.bite-back.org) ■

INSET: At £3.95, Sid the Chocolate Shark raises funds for the Shark Trust





Edited by  
Andrey Bizuykin

*What's hidden under the surface?*

## Portrait of a manufacturer



**POSEIDON - GREEK GOD OF THE SEA**  
Son of Kronos and Rheia, brother of Zeus, Hades, Hestia, Demeter and Hera, Poseidon is one of the six original Olympians. His mission is to give voice to the earth. Poseidon was commonly called the earth shaker and the earth encircler in The Iliad and The Odyssey of Homer. He pounds and shakes the earth and sea with his wrath and pleasure and answers to no one, except Zeus. His kingdom is the vast sea which he has populated with creatures of his own design. He rides the waves in a chariot drawn by dolphins but, curiously enough, his most honored creation is the horse.

# The Poseidon Story



**History** What is hidden under the surface? That was the question that a young boy named Ingvar Elfström asked himself in the 1940's. On fishing trips with his father, he used to sit and try to see the bottom of the sea. The problem was at that time and age, there was no one making diving equipment to buy. So, in order to explore that world, Ingvar decided to make his own equipment.

He made a full face mask in which he inserted a long flexible hose, which was then attached to a manual pump on the surface. When his father pumped air, the mask came halfway off and most of the air

ended up in the water. Certainly, it was very primitive equipment, but it allowed Ingvar to make his first immersions under water. The first prototype of a breathing regulator followed in 1954.

**Twin hose** The first series of twin hose regulators that followed bore the name Poseidon Senior, and was manufactured by Ingvar in his kitchen. As it is the case with these twin hose regulators, where the combined first and sec-

ond stages were placed behind the diver's neck, the long hoses caused a considerable breathing resistance. Ingvar was not happy with the design and it was clear that he had to change it. After a couple of years he started to develop a new single hose regulator together with Rolf Tistrand, who joined the company in 1957. Their next product was the regulator Cyklon Junior, where the second stage was transferred to the position we know so well today — in front of the diver's mouth. Today, this model is



FILEPHOTO: POSEIDON

known as Cyklon 300 and Cyklon 5000, one of the real legends in the world of modern diving.

**Valves** At approximately the same time, the partners began manufacturing valves for diving cylinders. Aided by Ingvar's good friend, Dennis Österlund, sales also started to take off. Products were sold under the name Poseidon and marketed by Aqua-Sport. The equipment that they could not produce was imported from foreign manufacturers. They

*“We shall make equipment for scuba diving as long as one drop of water remains on a surface of the Earth”*

bought cylinders in Germany in which they mounted valves in order to sell complete ready-to-use sets for scuba diving (a regulator plus a cylinder). When the company grew further and began to export the production to other countries, it was decided to transfer the manufacturing from Ingvar's kitchen to a small rented garage. Then, in 1958, the first dive-shop for the sale of under-

water equipment was opened in Gothenburg, Sweden. Shortly after that, shops were opened in Stockholm and Malmö.

In those years, lack of proper suits was also a problem, and Poseidon decided to expand into this area as well and start manufacturing wetsuits. The main problem was finding a suitable non-permeable material. The American company, Rubatex produced a thick rubber material that, with a small modification, could be used in the manufacturing of wet suits.

**Drysuit** In 1961, Poseidon created the first drysuit, called “Narval.” Before this time, all scuba divers used to dive only in wet suits or wool. Thus, when divers resurfaced, it was necessary for them to change clothes and get warm quickly at a campfire, before they put their suits on once more to dive again. “Narval” was a true gift for divers, though at depths of more than 20 meters, the suit produced quite a squeeze and became very uncomfortable. The reason why this happened was, of course, that inlet and outlet valves remained to be invented, but here, too, Poseidon was up for the job. The Poseidon company became the first in the world to develop and patent inlet and outlet valves



for dry suits.

### Neckseal

Ingvar experimented with various ways of sealing, including one rather amusing way, where the hood of a suit had a steel band running along the perimeter of the face of the diver. This band had to be tightened so fast to ensure a good seal, that it was hard for a submariner even to hold a regulator in the mouth. It was very uncomfortable for the diver.

The next idea was sealing the suit with a neck seal, which then became another Poseidon patent. They patented the neck seal together with a hood. For this reason, other companies immediately started to copy Poseidon's neck seal, and not the integrated hood, thereby declaring that they have not broken conditions of the patent.

At that time, there were still no special materials for thermal protection of the diver or heaters for dry suits. Then, in 1963, Poseidon got a request from the Swedish Navy. Was it possible to produce a suit that could be used for longer exposure times? After some research and experimenting with differ-

## Poseidon today

ent manufacturing techniques, they produced a dry-suit that fulfilled the Navy's demands. The first airtight neoprene drysuit, the UNISUIT, was delivered to the Navy in 1963, the same year Poseidon started exporting.

**Spacesuits** When NASA (the American space agency) started the space program, their experts had close contacts with Poseidon in regards to the development and creation of suits for astronauts. The company quickly expanded. Ingvar bought a mobile home, which he used for tours across Europe to sell equipment. In those days, cooperation between the companies making underwater equipment was quite good, and Ingvar cooperated with Mares on developing new regulators and with Cressi Sub on creating new types of suits. At this time, Poseidon started to manufacture the first universal 300 Bar tank connector.

Ingvar's big dream was realised in 1984, when a factory fully adapted for diving equipment manufacturing was built. Ingvar Elfstrom died in 1998 at the age of 70. His life's work made it possible for everyone to explore the exciting world under the surface of the sea.

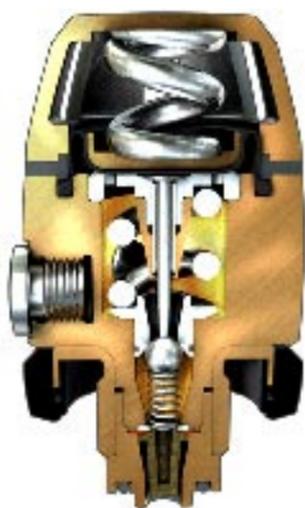


**"Technica" Drysuits.** The neoprene in these drysuits has fewer bubbles than conventional neoprene and the material that goes into making this suit comes from four different countries. On delivery to the Poseidon plant in Göteborg (Gothenburg), Sweden, the material then undergoes rigorous tests on specially designed machines. Any batch that fails to meet the standards gets returned to the supplier. This test allows Poseidon to offer a 5000 dive guarantee on the material.

Since 1997, the firm has used a material called "tough-tex," which has a top layer that is similar to

cordura, but is much more resistant to cuts and abrasions. All the seams and the boots are designed for a lifetime of 15 years. Before the suits leave the plant, they are tested in a water tank. Poseidon makes 3000 to 4000 drysuits a year, an estimated 8-10 % of all the drysuits in the world. The company's list of customers includes the armed forces of Germany, Norway, the United Kingdom and the United States, as well as the offshore oil industry in the Northsea and Alaska.

**X-Stream** is the latest generation of Poseidon regulators. Before creating this series of regulators, Poseidon undertook an exhaustive analysis of future market trends and requirements. On the basis of the estimated prospects, Poseidon then began development and manufacturing of a completely new line of regulators intended for professional military divers, trimix-deep divers, technical divers, ice-divers and cave-divers. New



materials, original design ideas and new technological innovations — all went into the new regulators, which were then called the "Poseidon X-STREAM." These regu-



lators come in three models for use with trimix, nitrox and pure oxygen. They are all certified towards the extremely demanding CE and EN 738-1 standards and have been approved by the Swedish navy.

The "X-Stream TRIMIX" is, as the name implies, the model intended for use with trimix and heliox mixes. This regulator is certified to meet the professional standard NORSOK (Norway) in which the regulator must guarantee failsafe operation at a depth of 200 meters. The "X-Stream DURATION" is intended to be used with gas mixes containing up to 50% oxygen, whereas the "X-Stream DECO" is meant for use with pure oxygen. All second stages have a modern sleek design, an uniquely small size and weight, are comfortable and reliable in use, and simple to service.

**Design** The philosophy behind the X-treme series has been to reduce the number of possible failure points to an absolute minimum. The less complex, the less there is a chance that the apparatus can fail or break. Simple design also minimizes condensation points for ice to form. All viton o-rings have been removed from the first stage and the number of medium and high pressure ports are reduced.

One of the other design decisions was to use no less than 74 apertures (instead of one, as in all more primi-



*"It is not our task to produce the cheapest equipment. We don't aspire to make to make the biggest possible production. Our purpose is to produce the best quality scuba diving equipment in the world"*

Stefan Jennefalk,  
Poseidon

tive models of regulators) through which the can gasses pass, mix and get their relative speeds reduced. It has a balanced diaphragm where the valve is a big smooth ball, which essentially acts as a new anti-freeze system, ensuring the operation of the regulator even at very low temperatures.

Poseidon makes 25,000 regulators and 30,000 medium and high pressure hoses a year. Their kevlar high pressure hoses, which are designed for 1200 atmospheres, are still flexible enough



# manufacturer



## Poseidon

to be tied into knots without affecting their performance. One major characteristic about Poseidon is that there are no differences in standards between the equipment intended for 300-meter commercial divers and that intended for 10-meter amateur divers. All equipment that leaves the plant does so under the trademark "Poseidon."

Today, their trademark with the whale on a trident is well-known and enjoys a well-deserved reputation for quality all over the world. With only forty employees, Poseidon makes and exports production to forty countries. It has a very rational and effective manufacturing plant and remains committed to continued scientific and technological development — to always keep Poseidon at the forefront. ■



CLOCKWISE FROM TOP LEFT:  
Top quality MPV modular multipurpose valves;  
Stefan Jennefalk; Assorted parts;  
The Swedish King, Carl Gustov;  
Poseidon Headquarters in Gothenburg, Sweden

In next issue:  
A visit to Apeks



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Marine  
Archaeology



ADMAT is back in action, this time in the Philippines where we have organised a maritime archaeological survey-training project in a beautiful and historically significant area. BSAC, the British Sub

Aqua Club, have asked us to run this as an expedition, which we are, but as it is an ADMAT project it is open to all as usual.

text by Peter Symes  
photos courtesy of A.D.M.A.T.

The Philippines were an important trading centre for the ancient Chinese and the Spanish, but many ships perished in typhoons that still rip through here part of the year. Maricanan Island was used as a safe anchorage as vessels sort refuge from the tropical storms. This is a unique opportunity to join a maritime archaeological training expedition. The expedition will be conducting an archaeological training survey, to solve the mystery of why 16th century Chinese pottery shards are being found off the beach. We will be training the team how to use side scan sonar, magnetometers, and traditional survey techniques.

# WANT TO BE A WRECK DETECTIVE?

*Adventure  
Maritime Archaeology  
Education  
Historic Wrecks WW2  
Japanese War Fleet*



# WANT TO BE A WRECK DETECTIVE?



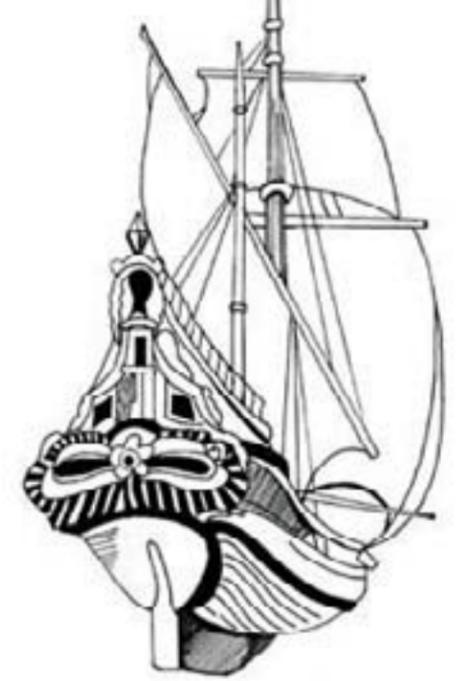
Join ADMAT on an archaeological underwater survey expedition in the Philippines

Two teams of 15 divers/students will be taking part in this exciting expedition from **16th - 30th April and 30th April - 14th May 2005**

Full details about this expedition, and how to apply to be a member of it, can be found on ADMAT's Web site: **www.admat.org.uk**.

Contact person is Dr. Simon Spooner, e-mail: **simon@admat.org.uk**  
Tel: +44 (0) 20-8399-1284.

Dansk kontakt er Christine Nielsen som kan nås på **christine@admat.org.uk**



**A . D . M . A . T .**

All archaeological training will be given to the expedition members, including ADMAT's own Underwater Survey Diver course Pt 1&2, Proton Magnetometer Diver Course (both PADI SDC unique to ADMAT) and various relevant archaeological courses will also be run. These are very practical courses, with as much diving as we can do, this is not a beach holiday. Most of the survey site is approximately 10 metres deep, although some areas may go down to 30 metres.

Turtles, stingrays and sharks are common in the area and there is ample opportunity for underwater photography among the nearby rich corals. The expedition leader is Dr Simon Spooner, a well-known maritime archaeologist, founder of ADMAT, and Research Associate at the Centre for Maritime Archaeology and History, University of Bristol. The expedition will be based at the resort on

Maricaban Island, three hours south of Manila. The island is ten kilometres long and two kilometres wide, with no roads or vehicles, surrounded by gin clear blue waters and rich coral with an abundance of colourful marine life. The resort is a small, local style family run guest-house. It is a two-storey building made of concrete and local bamboo right on

the beach. The eight rooms are double or triple occupancy with single beds, wall fan, toilet and shower. The ocean is just a few meters away, with two small islands a few hundred meters away in the channel, making a superb relaxing view.

A special weekend trip to Coron Bay is planned, for those who want to do

large wreck diving. This will be in the middle weekend of each trip. The WWII wrecks in Coron Bay have been one of the Philippines' best-kept diving secrets. In September 1944, Admiral "Bull" Halsey stumbled on a camouflaged Japanese fleet ahead of the US landing on Leyte. Carrier-based bombers sank 24 vessels, leaving a ghost fleet of Japanese hulks



The Anglo-Danish Maritime Archaeological Team, or ADMAT for short, is a non-profit organisation set up to investigate, promote and protect historic shipwreck sites through field projects and education. Their projects are carried out as field schools and are also open to qualified divers, who are trained and under guidance of experienced staff.

ADMAT was founded by Dr. Simon Q. Spooner from England and Christine Nielsen from Denmark, hence the name Anglo-Danish. During work on historic shipwrecks in the North Coast of the Dominican Republic, they realised the great need for maritime archaeological work to be carried out, to protect shipwrecks from damage by looters and weather, and to investigate the shipwrecks in most danger in coastal areas. Also they recognised the need to make it possible for archaeological students to get hands on practical field experience, as well as informing the general public about the wealth of historical information lying at the bottom of the sea, and the importance of protecting it. Since the beginning of ADMAT, many individuals as well as organisations and museums from around the world, have volunteered to assist ADMAT in their endeavour.

**www.admat.org.uk/phil1.htm**

Text by Michael Symes  
Photos by Peter Symes



# Fish Fashion

**Is there any diver who has not been fascinated by the wonderful colours of reef fishes and the reefs of their habitat? Those of us who have been lucky enough to experience at first hand this interaction between these creatures and their environment, cannot fail to have wondered about this rich excess of colour and the reasons for it. In nature there is a reason for everything – if we can but find it.**

Humans use colours in many different ways. Normally, we only think of colours when they are being used in a decorative way; we liven up the interiors of our houses with paint and coloured wallpapers, and we brighten our textiles and clothes with many coloured dyes. And at sad events like funerals we also remove colour when we use black clothing.

However, although we are not generally conscious of it, colour plays a much more important part in our lives than this.

It can be important for our very survival. For example, we use colours as a diagnostic tool for our health. Not only do we use pale skin to diagnose anaemia and yellow skin as a symptom of liver disease but the bruising from subcutaneous bleeding after a blow can also be observed. Bad teeth can also be diagnosed from their colour.

The use of colour is also important for warning purposes in the case of red traffic signal lights, for example, and the red colour of certain very poisonous toadstools and frogs. We also use colour diagnostically to tell us when our bread is baked, or tell a ripe apple from a unripe one. Colour is very important cosmetically when used both as a sexual signal and as a means of camouflaging bad skin. And colour is very important when used for identification purposes, such as the colour coding of electrical resistors and for product identification, the Kodak yellow film packaging being a typical example. And one could go on, as there are many other important functions of colour for us humans; whole books have, in fact, been written about this subject.

But what about the submarine world of



ABOVE: Scalegin Anthias

RIGHT: Coral gardens, Sipadan Island, Malaysia

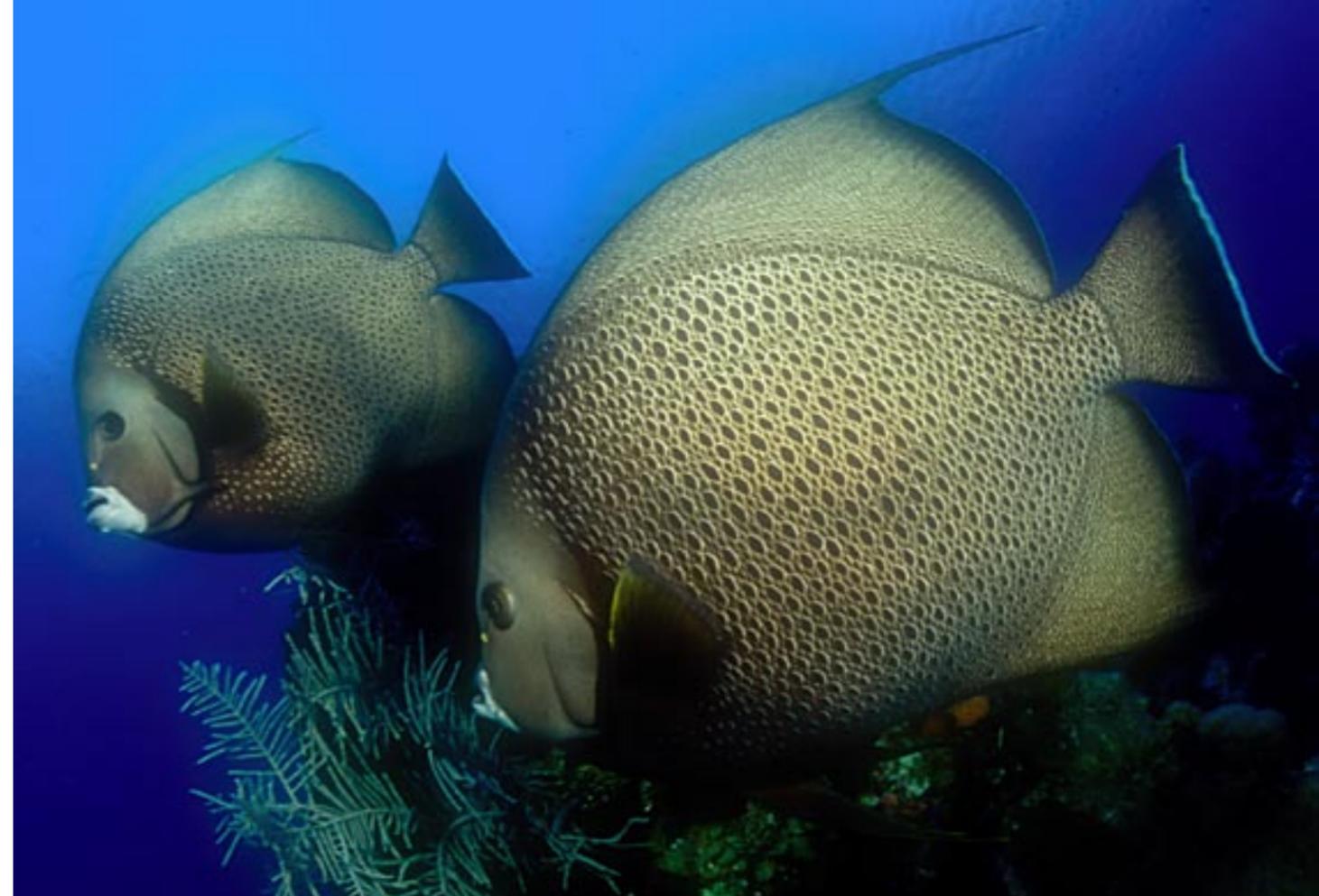


## Fish Fashion

LEFT: Coral gardens  
Sipadan Island, Malaysia

RIGHT: French Angelfish,  
Cayman Islands

INSET: Pufferfish, Marsa Alam,  
Red Sea, Egypt



fishes? Have colours any importance for them? Or are the beautiful colours that divers see in fishes and coral reefs only observed by them and have no function at all for fishes? For there certainly aren't any fish-dentists examining their patients for teeth decay, or fish-bakers making bread.

Several theories have been put forward over the years regarding the wonderful colours of the fishes in and around the reefs.

It was thought that the colours developed through natural selection in order that males will be attracted to females. However, males and females often appear to be the same with regard to colouration.

Perhaps, it was supposed, the colours are warnings that certain fish are toxic or otherwise nasty to eat. This is true for example for the Box fish. However, many brightly coloured fish are excellent eating, not only for other fish but also for us

humans.

The gaudy appearance of the box fish reminds predators that poison is secreted through its skin when it is attacked. Predators associate the effects of its venom with the black and yellow com-



ination of warning colours and learn to avoid them.

Konrad Lorentz, the Austrian animal

behaviourist, proposed that the fish colours might be acting as identifiers of possible mates. For humans this is no problem, as we only form a single species. For reef fishes, however, this could be a real problem as there are so many different species present in the reefs.

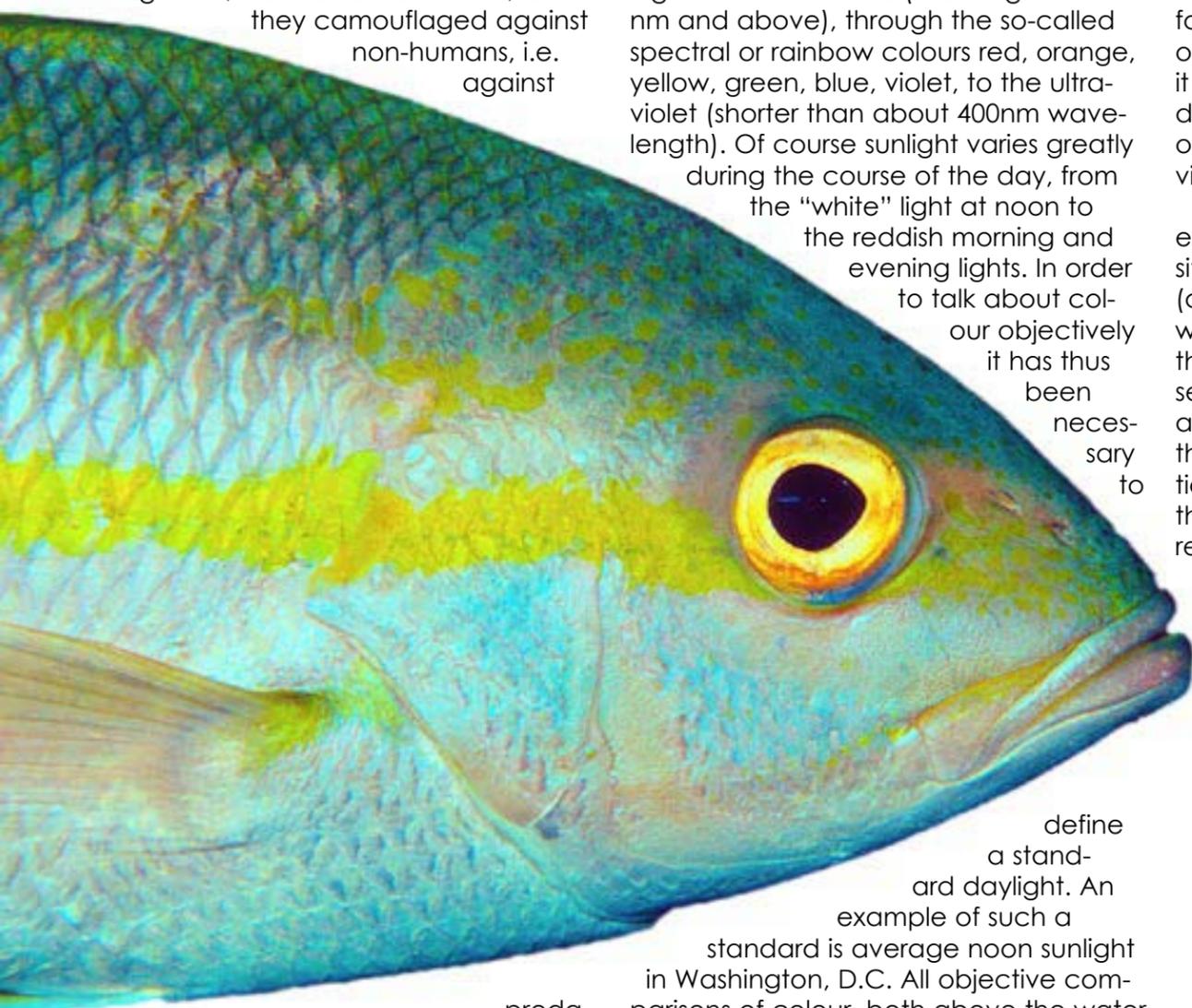
Or perhaps the colours are just a byproduct of fish-metabolism and have no real significance, neither at the present time nor over evolutionary time. However, from the point of view of evolution theory this seems unlikely.

Although there might be some truth in all of these theories the current consensus seems to be that fish use their colourings mostly for camouflage purposes. At first sight this would seem to be paradoxical, for the fish appear to us to be clearly observable against the uniform blue-grey background of the water or even against the many bright colours of the coral reefs. The critical words here, though, are "appear to us", for fish are



## Fish Fashion

clearly not camouflaged against human sight. So, we can ask ourselves, are they camouflaged against non-humans, i.e. against



sists of electromagnetic radiation ranging from the infra-red (wavelengths 700 nm and above), through the so-called spectral or rainbow colours red, orange, yellow, green, blue, violet, to the ultra-violet (shorter than about 400nm wavelength). Of course sunlight varies greatly during the course of the day, from

the "white" light at noon to the reddish morning and evening lights. In order to talk about colour objectively it has thus been necessary to

define a standard daylight. An example of such a standard is average noon sunlight in Washington, D.C. All objective comparisons of colour, both above the water and in it, are then made using such standards.

Secondly, there must be cells in the eye to detect this radiation. Most vertebrates, including humans, use two systems of light-sensitive cells in their eyes. Two or more types of so-called cone cells (three in humans) produce a sensation of colour in abundant light, and a single type of rod cell detects light much more sensitively, but achromatically, under reduced lighting conditions.

Thus, as a survival strategy, humans forgo their colour vision when it begins to get dark and switch over to their rod vision.

The human eye is most sensitive to green (about 550 nm wavelength) in the middle of the spectrum, with the sensitivity falling to zero in the infra-red and ultra-violet i.e. we can detect neither ultra-violet light nor infra-red radiation. To enable us to perceive colour, the three types of cell in the human retina, are sensitive to the blue, green and red spectral regions respectively. The relative amount of different light radiation falling on these three types of cell give rise to the perception of colour. For example, if there is rela-



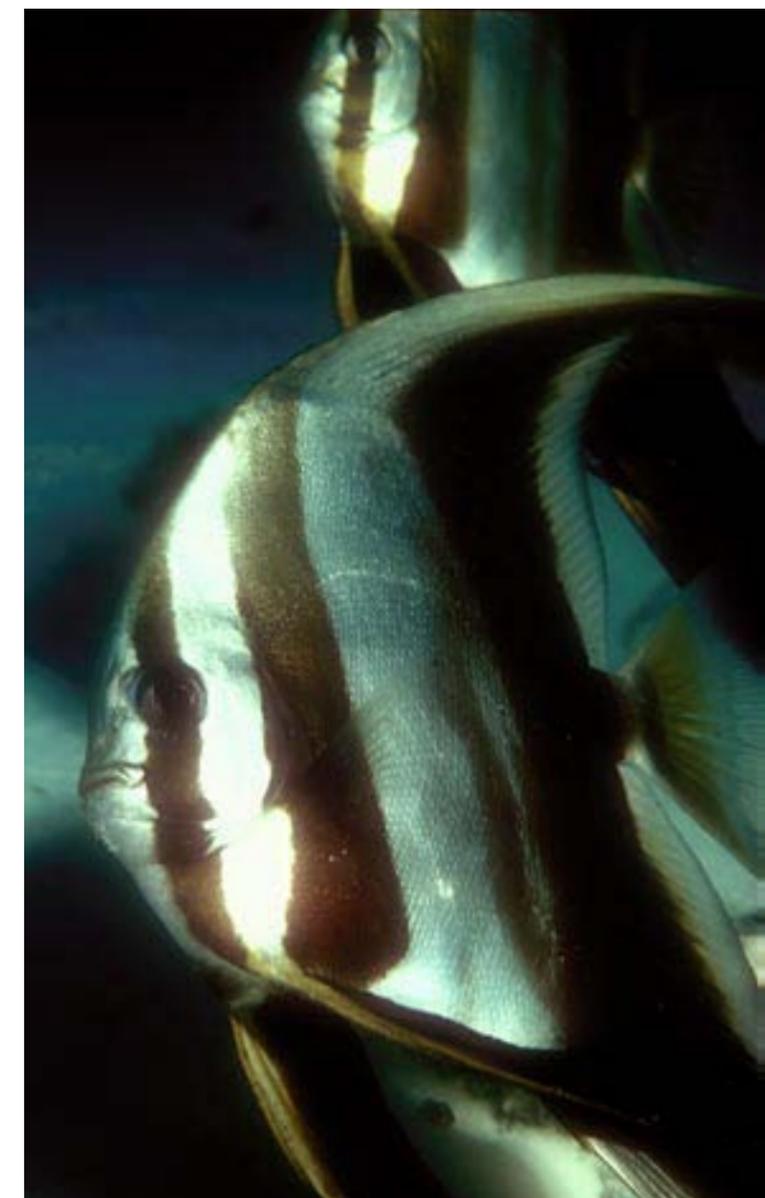
black under yellow light. The perception of the colour of an object therefore depends critically upon the type of illumination.

### Light

Now, to any diver it is obvious that the light penetrating below the surface of the sea is somewhat different to that of daylight above the surface. Although water is apparently quite transparent it does absorb red light weakly, and has a bluish colour – a white object under the surface looks bluish-green. In 15m of

tively a lot of light of, say, 600nm wavelength and above, and little of the shorter wavelengths, we will perceive an orange/red colour.

So, when we humans perceive coloured objects we are using a specialised set of light sensitive cells under an illumination which preferably contains all the wavelengths to be found in sunlight at sea-level. Of course, we do observe coloured objects under quite different illuminations such as the strong yellow sodium light of some street lamps. But as we have all experienced, this form of lighting disturbs our normal colour perception, and the colours of a given object seen under such lighting will generally be much different to that seen under normal daylight. To take an example, an object that looks a pure bright blue under ordinary daylight can appear to be quite



CLOCKWISE FROM LEFT: Snapper, Yellow Shrimp gobies, Batfish, Red Bigeye (Malaysia)

predatory fish species? What do predatory fish actually see when they look at their prey? To attempt an answer these questions we must first look at some of the factors involved in the perception of colour.

### The perception of colour

Firstly, there must obviously be light present, without light nothing can be seen. Human beings have evolved their colour vision under sunlight. Sunlight con-





esting that being carried out on coral reef fishes by, among others, G.S. Losey at the Hawai'i Institute of Marine Biology, University of Hawai'i, and N.J. Marshall at the Vision, Touch and Hearing Research Centre, University of Queensland, Australia. In three very interesting articles published in *Copeia*, vol 2003, No. 3 they discuss the visual pigments of Hawaiian reef fishes, the colours of Hawaiian coral reef fishes, and the environmental light in the ecology of reef fish vision.

### Visual pigments in reef fishes

The eyes of Hawaiian reef fish were examined for the spectral sensitivity of the visual pigments in the retina. The spectral absorption curves for the visual pigments of 38 species of Hawaiian fish were recorded using microspectrophotometry. The visual pigments of single cone-cells of the fish eyes had their maximum absorptions were at 347-376 nm (ultraviolet), 398-431 nm (violet) and 439-498 nm (blue). For humans the cone cells have maximum sensitivities at about 460 nm (blue), 540 nm (green) and 580 nm (orange). Thus, unlike humans, they had no visual pigments covering the green-yellow-red part of the spectrum. Generally speaking, there appear to be three types of short-wavelength vision in fishes: UV-sensitive, UV-specialized and violet-specialized. Some species, like the marine stickle back, in fact have four types of cone cells. At least some of the species examined could therefore possess true UV-colour vision and hue discrimination, although this would only be in a reduced part of the spectrum perceived by humans. This means that fishes cannot have the same perception of colour as humans.

UV-sensitive eyes are found throughout the fishes from at least two species of sharks to modern bony fishes. Eyes with specialized short-wavelength sensitivity (in the ultra-violet region of the spectrum) are common in tropical reef fishes. Water itself is fairly transparent to UV, with a more than 80% transmittance at wavelengths down to 300 nm. In research in which the visual perception of

water red light is reduced to a quarter of its intensity.

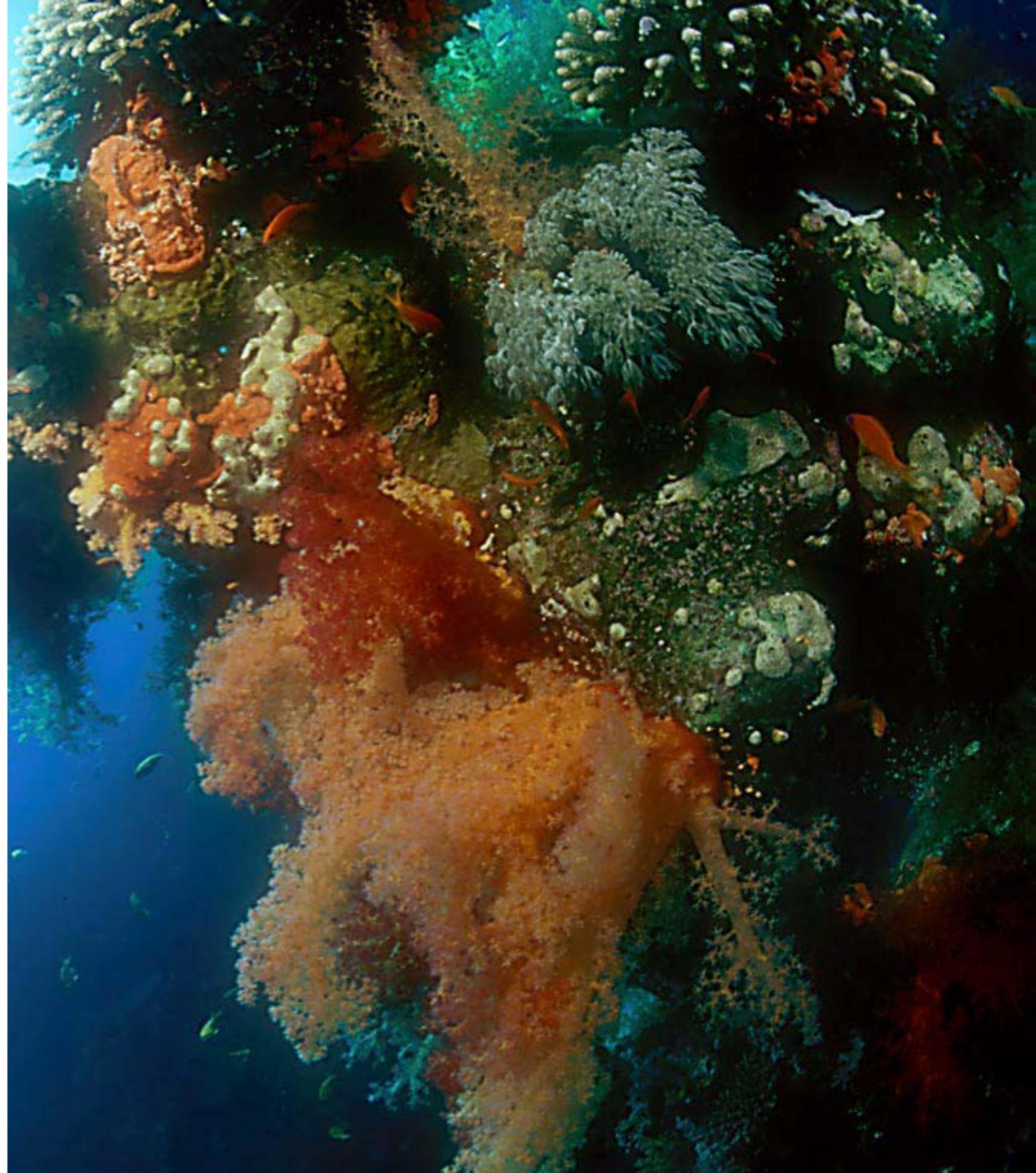
Sunlight is not always available, especially in the ocean depths, so some animals produce their own illumination. Glow worms, fireflies and several species of fish produce their own light by a chemical reaction, chemiluminescence, which is a by-product of their metabolism rather than the more usual heat.

Furthermore, it seems that fish do not have the same type of cells in their eyes as we do to enable them to see colours – at least in the way we do.

We then arrive at the core of the problem. How do fish perceive other fish?

To get some idea of this, we need to understand how the eyes of fish are constructed and how they react to the light entering them. We thus have to study the visual biology of coral reef fishes.

Visual biology of coral reef fishes  
There has been a lot of research done on the vision of fishes, some of the most inter-



ABOVE: Grouper  
RIGHT: Soft and hard corals, Malaysia



## Fish Fashion

fishes is concerned, because most glass and plastics are UV-opaque, it might be necessary to ensure that aquarium dividers, specimen holding containers, etc., are UV-transparent. Op. Cit.

### The colours of coral reef fishes

The colours of 51 species of Hawaiian reef fish were measured objectively using a spectrometer. Such measurements record, independently of any human eye, the different wavelengths of the ambient light that are reflected by the fishes. It is this reflected light that enters the eye of a human or a fish to be perceived as what humans call a colour. In common with other known reef fish populations Hawaiian reef fish reflect light in the spectral wavelength region of 300-800 nm. This is an illustration of the fact that we see reef fishes in all the colours of the rainbow. Yellow or orange with blue, yellow with black, and black with white are the most frequently combined colours.

The authors state that "trends in fish colours seem to indicate that there are both visually driven selection pressures and chemical or physical restraints on the design of colours. UV-reflecting colours can function as semi-private communication signals. White or yellow with black form highly contrasting patterns that transmit well through clear water."

But as we have seen, fish cannot perceive yellow as such, due to lack of the necessary visual pigments, and will thus only see it achromatically, i.e. non-coloured, as a lighter or darker grey. Therefore, the patterns perceived on fishes by other fish is not due to colour but only to an achromatic contrast between the reflecting white or partially reflecting yellow areas, and the almost totally non-reflecting black areas. Fishes see other fishes, not in colour, but only as patterns of non-coloured grey stripes or areas, and black. If these achromatic patterns are similar to those arising in the coral reef environment (for these highly coloured reefs will also be seen achromatically)

then they will be camouflaged against predators.

We may conclude, then, that one of the main functions of the colours of reef fishes is for camouflage against their natural predators and not against we colour-perceiving humans who delight in their colours.

### Camouflage

Although achromatic colour difference is probably the most important factor in successful fish camouflage it is interesting to take just a very short look at the other types of camouflage strategies used by fish.

Humans were very late compared with the fishes in discovering the survival advantages of camouflage on the battlefield, and it was not until the middle of the nineteenth century that



khaki uniforms were introduced in the fighting in Afghanistan.

The uniforms of modern soldiers are now nearly always basically khaki coloured to match with the earth colours of sand and soil, or khaki/green to match with foliage, depending on the battlefield. But this is not the only, or even main factor in camouflage.

### Khaki as camouflage

Khaki, Urdu for dust-coloured, was first used for the uniforms of the English regiment of Sir Harry Burnett Lumsden in 1848 when he was fighting against the Afghans. All British troops in India adopted khaki in 1885. The Boers used khaki clothing as camouflage in the first Boer War; in the second Boer War the British did as well.

The French suffered heavy losses during the first World War, because the troops wore red trousers as part of their uniform rather than, say, khaki, thus learning a bitter lesson about the need for camouflage.

Movement, sound, silhouette, shine, shape and shadow can all betray the presence of a soldier to the enemy on the battlefield. For fishes the enemy are the predators, the sharks and killer whales, and the battlefield is the submarine environment in and around the coral reefs.

Plaice, turbot brill and flounder can match patterns of mud, gravel and sand so carefully that they can even mimic a chess-board.

### Movement

One useful strategy is to keep still and hope that your enemy won't see you. This is a strat-



TOP TO BOTTOM:  
Common Sand Goby (Denmark)  
Sculpine (Denmark)  
Crocodilefish (Borneo)

INSET:  
Plaice (Denmark)

Wall corals with Anthias



LEFT: Angler fish (Malaysia)

## Fish Fashion



Which came first, fish color or reef color?



Decorator Crab, Puget Sound (USA)

egy used by, for example, goby and sculpine.

### Silhouette and shadow

These may be avoided by keeping away from light sources by hiding under an overhanging coral.

### Shape

The problem here is to break up the familiar fish outline and make it less recognisable. Like the soldiers uniforms which are coloured in broken patterns to look like leaves, so can fish camouflage themselves. At the approach of a diver an angelfish will try to hide itself

among the coral branches, where its stripes serve to confuse its outline.

Also, as soldiers attach leaves and grass to their helmets to camouflage their shape, so spider crabs attach pieces of algae to their carapaces.

We see, then, that fishes have evolved quite complex camouflage strategies for survival in and against the background of the coloured reefs. But quite another question is, of course, why the reefs themselves are so vividly coloured. What role do colours play for the reefs themselves? Are they camouflaging themselves against something? And if so, what? ■

# Scuba Diving in Thailand

**The Ocean Rover Liveabaord**  
The brand new Ocean Rover is a 30-meter long true luxury liveabaord offering all comforts and ease of diving operations that discerning liveabaord divers have come to expect. This fast vessel has state-of-the-art technical equipment and the highest safety rating in the business.

There are eight cabins on the main and upper decks for maximum of sixteen passengers. Six of the cabins have queen-size double beds and single upper berths and panorama windows. Two of the cabins have wide upper and lower berths and dual portholes. All cabins feature individually controlled air-conditioning, plenty of storage space and private bathrooms.

The huge dive deck has several camera tables and rinse tanks, and the lower section of the deck slopes down to the waterfront for easy access to the water. The spacious salon offers comfortable dining and sitting arrangement, a fully equipped entertainment center and a camera charging area. There is also a bar and an extensive marine life library.

The aft part of the upper deck is partially shaded and features a bar, a large table, and lounge chairs for relaxing between dives and admiring the scenery. This is everyone's favorite area! Ocean Rover's sixteen guests are looked after by twelve dedicated and friendly crew members.

### Areas of operation

Ocean Rover's main area of operation is the Andaman Sea off the west coast of Thailand and Myanmar. The 8-night, 10-night and 11-night dive cruises take you to the Similan Islands, Richelieu Rock and Myanmar's Burma Banks and Mergui Archipelago. During the off season, the Ocean Rover operates diving cruises in North Sulawesi (June-August) and adventure cruises in Malaysia (September-October).

### CONTACT:

Dominick Macan  
800-794-9767  
dom@reefrainforest.com

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



Reef  
Rainforest

# Ice-Diving

*Explore the Russian underwater world in the White Sea*

Text edited by Gunild Pak Symes  
Photos by Andrey Bizyukin, PhD.

**The White Sea has sublime water clarity. It forms indescribably beautiful ice and peculiar fantastical ice shapes. The water temperature hovers around 0-10°C and nurtures plenty of marine life, which makes the White Sea one of the best spots in Europe for ice-diving.**

Located about 1200 km (800 miles) north of St. Petersburg, in the Arctic region of the far northwestern part of Russia, the White Sea is an inland sea that stretches

540 km from north to south and covers approximately 91,000 square kilometers. It is an inlet of the Barents Sea. In the winter, the White Sea is covered with ice from December until April. It is a perfect place for ice diving.

At Nereis Dive Center in Chupa, located on the Karelsky Shore of Kandalaksha Bay, divers use snowmobiles to race to various dive sites on the frozen sea. Sledges full of diving tanks are transported across the lambent snow and ice while cold northern wind whips divers' ears which are defrosted in warm folding-houses at the dive site. Everything for the pleasure and comfort of divers is provided.



The White Sea shore line is a spectacular gallery of natural ice sculptures in the winter





INSET: A diver prepares to explore the underwater world under the icy surface

LEFT: nature's ice sculpture

RIGHT: A sunstar lifted from its watery bed

BACKGROUND: snowmobile tracks on the frozen snow-covered surface of the White Sea



The main attraction in this scenic land is the White Sea. There is a serene beauty in winter, with the sea's undulating coastline where glacier movement has carved the landscape, fishing boats frozen along the shore, weather-worn cabins with wood smoke rising from their chimneys and the clinking silence above the ice-covered bays.

The fauna of the sea is reflective of the

temperate to arctic climate. Life thrives in a vivid and peculiar underwater world. Rocks are covered with soft corals, actinia and hydroids. Cracks in between stones reveal lots of starfish, crabs, shrimps, hermit crabs and sleeping fish. Among the fish species are lancet fish, rockfish, flounder, herring and cod.

White whales, seals, Greenland seals, sea-hares can also be spotted at the

White Sea. The white whale is actually classified as a dolphin in Russia, even though Europeans consider it part of the whale family. Unlike dolphins, the white whale has active joints in the neck area that help it to easily turn its head.

Above water, one can spot squirrels and hares, bear, wolf, lynx, deer and elk. Bird watchers can find hazel-grouse, black-cock, partridge, wood-grouse,

ducks, sandpipers and nesting ember geese at various times of the year. Deep and extensive forests of coniferous trees cover the region and filter the air. It is amazingly clean and fresh air.

### Dive sites

A variety of dive sights and wrecks can be reached by one of the dive center's cutter ships within an hour or more from

the base. Depending on the dive site and your qualifications, you can see a range of things, such as flat bottom landscapes with large kelp, sheer walls with actinia, ascidium, soft corals and bryozoa, small sea-urchins and White Sea crabs, lots of small sea animals, starfishes and a grotto.

Divers reach depths from 15 to 35 meters. The deeper the dive, the darker



ABOVE: Light bursts through cracks in the surface ice creating an eerie frozen translucent roof over head



A diver gets ready to take the plunge in the first ice-dive of the day

and colder it gets, so appropriate gear is a must.

Wreck divers can explore a sunken fishing seiner on a shallow dive where numerous fish such as lancet fish, cod, rockfish, flounder, and small fishes make their home. Following are some of the most interesting dive sites to explore.

### **Chernyshov Island**

(OSTROV CHERNYSHOV)

Ten to 15 minutes from the dive center is a dive site where soft corals grow densely along a rocky cape extending from a sandy precipice. Depth is 30-35 m. There are lots of ascidians and starfishes.

### **Deer Island Shipwreck**

(OSTROV OLENIY)

At 18 m, there is a shipwreck near Deer Island 30 minutes from the center. The wreck stands upright on its keel. Divers can explore the interior of the ship.

### **Korovya Varoka (the rock)**

(KOROVYA VAROKA – MATERIK)

Here, divers find wolf fishes, anemones, soft corals, shrimps, sea spiders, snails, mollusks and sea urchins. A wall leads to a heap of big stones with holes where the wolf fishes live. At 20m, a precipice drops to about 30-35 m beyond which lies a sandy bottom.

## White Sea

### **Kartesh Cape**

(MYS KARTESH)

This dive is made from a cutter moored to a rock at a location near the Marine Biology Station of the Academy of Science where there is a beautiful stream. Divers follow a stone precipice below which wolf fishes make their home in a bunch of large boulders. Sea anemones populate the area, and at 22 m, there are densely packed soft corals growing on the smooth slime bottom. Depth ranges from 30-35 m.

### **Sidorov Island**

(OSTROV SIDOROV – MEZHOSTROVYE)

Another dive made from a cutter at a location one and half hours from the dive center, divers explore a strait between two big islands. One can dive there even during a storm. On the Sidorov Island's side there is a good stand. At 3-4 m depth, one will find lots of small fishes and a vertical wall leading to a depth of 18 m where ascidians and sponges grow. A bit further along, one can find wolf fish, cod, crabs and shrimps living at a stone precipice with big stones and holes. The maximum depth is 25 m.

### **Keret' Island – Dry Rock**

(OSTOV KKERET – SOOHAYA SKALA)

Listed as "an ideal diving site for beginners and wives," this location takes 40 minutes to reach by cutter from the dive center. At a stone precipice, divers can find lots of holes with wolf fishes. From 20 m, divers explore a sandy



RIGHT: Gear and divers are transported to the dive site by snowmobile







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and divers load their gear onto transport vehicles and drive across the ice to the dive site. Putting into sea and getting to the dive site usually takes about one and a half to two hours. It is also possible to dive close to the base, thereby saving time in transportation.

Then, there is the first dive, lunch at the island, second dive if desired and off you go back to base to a warm shower and a short snooze on a comfy bed in your cozy room at the hotel before it is time for dinner at the dive center's restaurant.

Of course, after dinner one must partake of the local customs and bond with one's fellow dive buddies by sitting together and sweating in the beautifully constructed Russian birchwood sauna on the ground floor of the center. Divers swap stories about diving the sea, and interest-



ing anecdotes and tips are shared.

### Personal accounts

Nobody tells a story better than those who experience ice-diving for themselves. Here are a couple personal accounts from local divers to give you a glimpse into the wonders of the White Sea ice-diving experience.

### Michael Vedekhin

Today, we went on a long trip to Cape Kartesh for a whole day. Snow scooters rode easily across the deep-frozen snow. Most of the way we rode through forest and finally found ourselves at the mouth of the Keret River. We were really amazed with the beauty of the non-freezing rapids, bright sun and blue sky. We ventured out to Chupa Bay on the White Sea where a friend of mine caught sight of several seals lying on ice blocks in the distance.

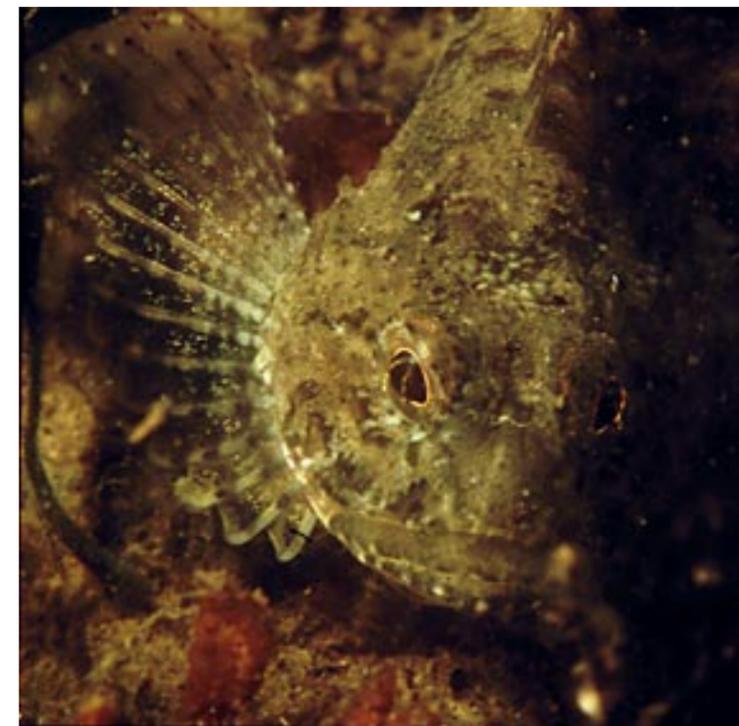
At Cape Kartesh, the support team welcomed us – five people from the maintenance staff. The lanes were made, safety-lines were prepared, diving tanks and gear were waiting for the divers. Nearby there was a small, warm and comfy house. To say that we liked that dive is to say nothing! It was absolutely unbelievable and gorgeous!

Above all, there was the great visibility, which was more than 30 meters. The crystal clear waters gave us an opportunity to

take in a view of an absolutely fantastic landscape – stony conglomerations with ledges, laminaria seaweed gardens to a depth of five meters, And, starting at 20 meters – a beautiful precipice (nobody knows how deep it is). From my position – I was almost at the end of the safety line – I could easily see other lanes and divers near them. Moreover, comparatively thin ice (25 cm) and bright sun striking through it makes wonderful enigmatic lighting effects. But the thing I really enjoyed was the shoreline. You cannot get the same view from the surface, but here there was an indescribable line of small and large pieces of ice broken up that created great patterns.

According to the computer, the water temperature here was about minus 1-20°C. That is why after 40 or 50 minutes in the water, one can feel a little bit cold.

After ascending to the surface, everybody felt amazed. We went to the house to warm up and have something to eat, and then hastened to make the next dive. There are so many things to look at



CLOCKWISE FROM TOP LEFT: Soft coral, Nudibranch, Stauromedusae, Sculpine  
INSET: Sea devil



# features White Sea

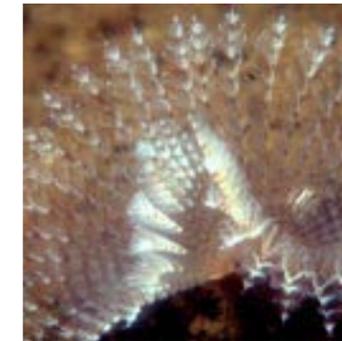
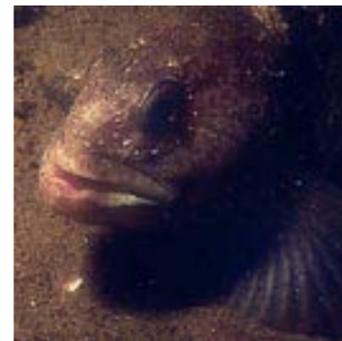
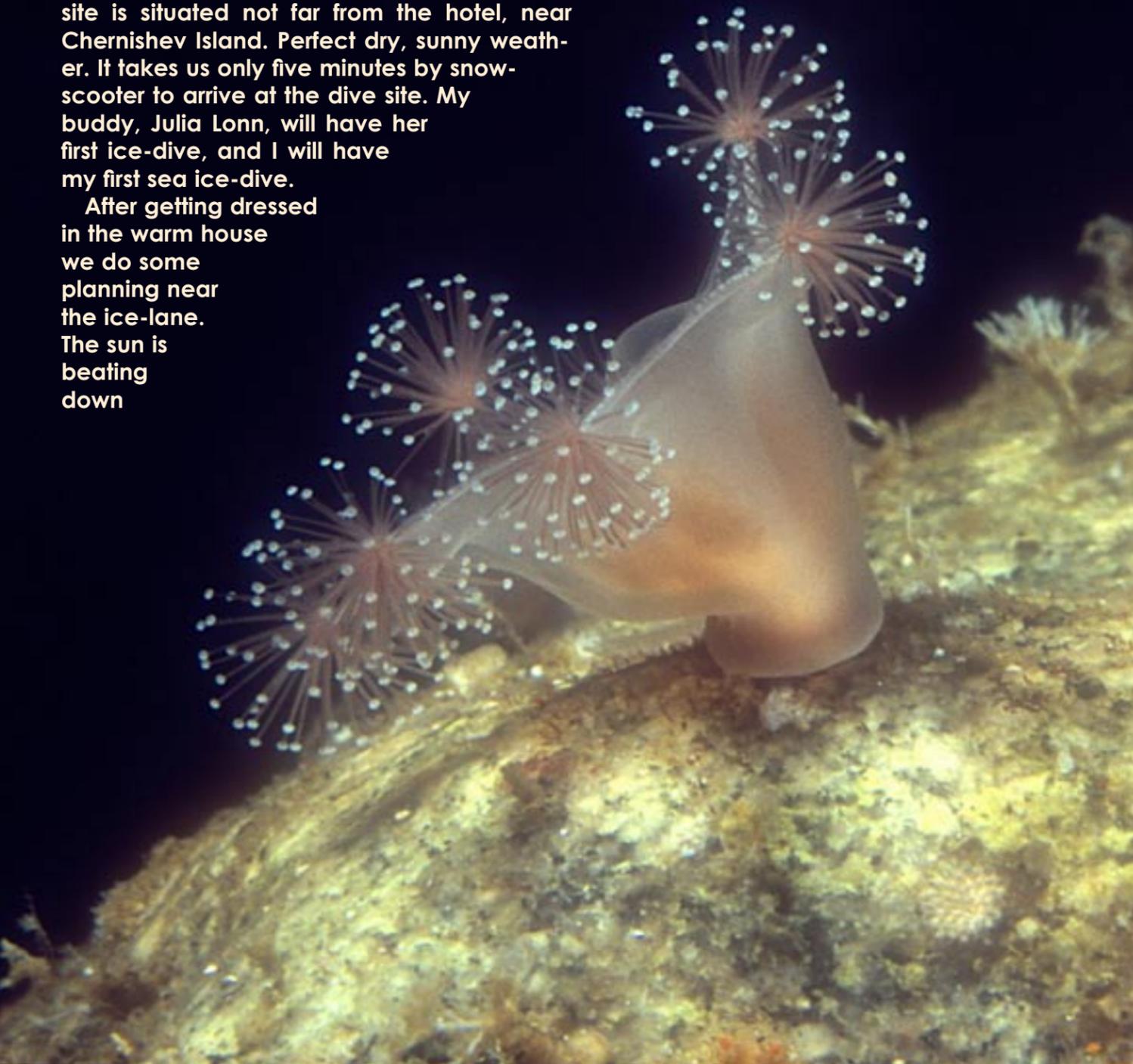
underwater! It was a really perfect, amazing and unusual dive.

## Alexandra Vlasova

March 8 is International Women's Day. Let's celebrate this day with an ice-dive! The dive site is situated not far from the hotel, near Chernishev Island. Perfect dry, sunny weather. It takes us only five minutes by snow-scooter to arrive at the dive site. My buddy, Julia Lonn, will have her first ice-dive, and I will have my first sea ice-dive.

After getting dressed in the warm house we do some planning near the ice-lane. The sun is beating down

unmercifully. The snow is sparkling and the water attracts us with its incredible clarity. We are seated at the ice-lane edge and start descending quickly while trying to take our first breath underwater.



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Going deeper along the wall and paying close attention to the kelp, one can see plenty of life around – starfish, actinia, polyps and soft corals. The purpose of this dive is not to go too deep, but to make an exploration of the ice (as much as possible). Because of ebbs and flows, the ice along the shore cracks and breaks, making underwater hummocks and small grottos. Sunshine is coming through the ice-cracks and shimmers with lots of colors. Air bubbles traveling inside the ice intensify the impression. We are so delighted! Let's have some fun. Turning upside down we show each other figure skating. Unfortunately time is up and we have to ascend.

On the surface, the guys from the support group salute us. Well done, ladies! We get changed, go back to the hotel and have a hot sauna. Fabulous, unforgettable memories, good friends and excellent vacations.

## Requirements

There are some things divers need to know and prepare before coming to the Nereis Dive Center for the ice diving experience including specific equipment requirements, certification requirements and special services available at the center.

It is recommended that divers be certified with one of the major dive education schools such as CMAS, PADI, NAUI or IDD. Divers are encouraged to bring their own dry suits, regulators (DIN or YOKE), BCD, fins, mask and snorkel.

There are convenient and very effective equipment drying rooms at the center, two compressors and a decompression chamber. It is possible to upgrade your qualification and get your next CMAS certificate at the dive center. One can also dive individually with an instructor.

The hotel, which was built by the owner-dive master, Yuri Borakov, and opened on July 15, 2003, offers double rooms, hot water, sauna and three meals a day in the hotel's restaurant. With a friendly and personable staff, the Nereis Dive Center and Hotel is the most comfortable and practical way to go when taking on the adventure of ice-diving in some of the most beautiful and awe-inspiring wilderness of the great northwestern arctic region of Russia.

As Nereis Dive Center is located in Chupa, a small Russian village with visible remnants of the Soviet past and multi-generational peasant life, visitors are treated with the greatest care and pride. All the staff are local and wish to share their joy in the natural beauty and culture of their region with divers from all over the world.

Not only will divers enjoy the natural beauty of the area and the White Sea, but divers will also experience the warmth and hospitality of the Russian people, their age-old customs and delicious hearty home-cooked meals, traditional folk song and dance, lively discussions and Russian wry wit and humor, as well as lots of the best caviar and vodka available to wandering adventurers on the planet. **Nostrovia!** ■



CLOCKWISE FROM LEFT: Stauromedusae, Wolf fish, Nudibranch, Tube worm, Grotto decorated with soft coral

# fact file



## White Sea, Russia



ABOVE: Map of Chupa and surrounding area  
INSET: Location of White Sea in relationship to Europe

**History** After 200 years of Mongol domination in the 13th-15th c., the Principality of Muscovy, which was established in the 12th c., was able to emerge and gradually expand with the conquest of surrounding principalities. The Romanov Dynasty continued the expansion across Siberia to the Pacific in the early 17th c. Territorial conquest continued with the Russian Empire through to the 19th c. The devastation left by the two World Wars led to the overthrow of the royal family in 1917. Soon Lenin and Communism came to power at the formation of the USSR. Russian dominance of the Soviet Union was strengthened by Stalin at the cost of millions of lives. Stagnation in the economy and society followed until Gorbachev introduced glasnost (openness) and perestroika (restructuring) in the 80's. Swift changes led to the splintering and fall of the Soviet Union in 1991. A struggle to establish a democratic political system and market economy has occupied Russia ever since. Recentralization of power and erosion of some democratic institutions have occurred under President Putin while guerilla conflict in Chechnya still plagues Russian leadership.

The important port on the White Sea is Arkhangelsk. For much of Russia's history this port was Russia's main center of international maritime trade. Norwegian and Russian sailors, merchants and fishermen interacted in the region of the White Sea during the 18th and

19th c. During Soviet rule, the port became an important naval and submarine base and the White Sea was closed to Norwegians by 1918. The 1990's saw a reopening of the sea to Norwegian and other western scientists, plus trade and tourism.

**Government:** federation  
**Capital:** Moscow

**Geography** 17,075,200 sq km; Northern Asia bordering the Arctic Ocean, between Europe and the North Pacific Ocean. Regions west of the Urals are included with Europe; Terrain: broad plain with low hills west of Urals; vast coniferous forest and tundra in Siberia; uplands and mountains along southern border regions; Coastline: 37,653 km; Resources: wide natural resource base including major deposits of oil, natural gas, coal, many strategic minerals, timber; Formidable obstacles of climate, terrain, and distance hinder exploitation of natural resources; largest country in the world in terms of area but unfavorably located in relation to major sea lanes of the world; despite its size, much of the country lacks proper soils and climates (either too cold or too dry) for agriculture; Mount El'brus is Europe's tallest peak.

An inlet of the Barents Sea, the White Sea is located on the North Western coast of Russia. Karelia lies to the west of the sea and the Kola peninsula lies to the north.

**Climate** ranges from steppes in the south through humid continental in much of European Russia; subarctic in Siberia to tundra climate in the polar north; winters vary from cool along Black Sea coast to frigid in Siberia; summers vary from warm in the steppes to cool along Arctic coast.

**Population** The population of Russia is 143,782,338 (2004 est.). Ethnicity: Russian 81.5%, Tatar 3.8%, Ukrainian 3%, Chuvash 1.2%, Bashkir 0.9%, Belarusian 0.8%, Moldavian 0.7%, other 8.1%; Religion: Russian Orthodox, Muslim and other religions.

**Currency** Russian ruble (RUR). Exchange rates: 10 RUR = .27 EUR / .36 USD. **Language** Russian

**Diving** maximal depth of the White Sea (340 m); salinity varies from 0‰ in estuaries to 30‰ in places exceeding 200 m. Surface salinity in open sea is about 25‰. Upper water layer ranges 12-15°C and are inhabited by boreal spe-

cies. Deep sea areas are occupied mainly by arctic fauna.

What to see: Anemones, large soft coral, huge starfish and sunstars, but the enormous Russian sea kelp is seasonal and can only be seen in warmer weather. Dry suit required.

A deco-chamber is located at Nereis Dive Center in Chupa.

### Travel Agency/Dive Center

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[www.penguin.dk](http://www.penguin.dk)  
Nereis Dive Centre  
[www.nereis.spb.ru](http://www.nereis.spb.ru)

### Web sites

Russian Tourism  
[www.russiatourism.ru](http://www.russiatourism.ru)  
St. Petersburg  
[www.saint-petersburg.com](http://www.saint-petersburg.com)  
Hermitage Museum  
[www.hermitagemuseum.org](http://www.hermitagemuseum.org)  
White Sea Biological Station  
[www.zin.ru/wsbs](http://www.zin.ru/wsbs)

### Books

*White Sea Ecology & Environment*  
V. Berger and S. Dahle, eds.,  
Zoological Institute - Russian  
Academy of Sciences, \$34 USD  
Akvaplan-niva, Tromsø, 2001.  
[www.akvaplan.niva.no](http://www.akvaplan.niva.no) ■



**Day 1** Depart from your local airport. Arrive in St. Petersburg. A guide meets you at the airport after visa and customs

check and drives you to your hotel in St. Petersburg. The day and evening are for your own sightseeing plans.

**Day 2** The first half of the day is for your own sightseeing. Around 3pm, the guide comes to pick you up at your hotel and drives you to the train station where you take the Murmansk train around 3:45pm. You have quarters in the first class sleeper car. A host comes with small lunchboxes and serves tea and coffee. The train also has a restaurant car.

**Day 3** Just after noon, the train arrives in Chupa. Staff from Nereis Dive Center picks you up in their minibus and drives about 40 km to the dive center-hotel. On arrival, you receive a little snack and a tour around the center. Relax in room.

**Day 4** Breakfast at the center's restaurant. Dive trip with boat: First dive, lunch break, second dive optional. Return for dinner at the hotel.

**Day 5** Breakfast. Dive trip with boat: First dive, excursion to a little old village Keret of Pomors. Then lunch at a tranquil spot and a second dive. Return for dinner at the hotel.

**Day 6** Breakfast. Dive trip with boat: First dive, then a little hike on one of the small islands where the guide talks about the nature of the area. Lunch follows in a tranquil spot and a second dive. Return for dinner.

**Day 7** Breakfast. Dive trip with boat: First dive, excursion to the White Sea Biological Station. Lunch follows in a tranquil spot and a second dive. Return for dinner at the hotel.



**Day 8** Breakfast. Dive trip with boat: First dive, excursion to see wild birds, lunch break at a peaceful spot, second dive. Return to hotel for dinner. After dinner concert with local musical performing group.

**Day 9** Return to St. Petersburg: Breakfast at the dive center-hotel and a quick morning dive if desired. Depart dive center around 2pm on the minibus to the train station at Chupa. Take the night train back to St. Petersburg.

**Day 10** Arrive in St. Petersburg around mid-day. You are picked up and taken to your hotel. The day and evening are yours for your own activities.

**Day 11** Departure from Russia: You are picked up at your hotel in the middle of the afternoon and driven to the airport where you take a flight back to your local airport.

**Trip Extension:** St. Petersburg is a city to explore and experience! You can arrange for more sightseeing days in the city prior to or after the dive trip to the White Sea.

**Penguin Travel** is the Blue Horizons' agent for air travel to Russia.

**CONTACT:** [gunild@bluehorizons.dk](mailto:gunild@bluehorizons.dk)  
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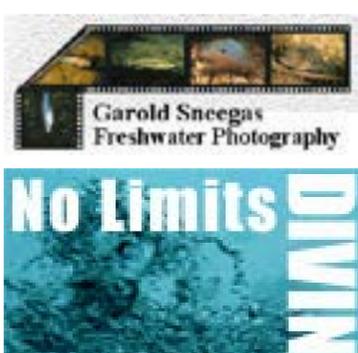
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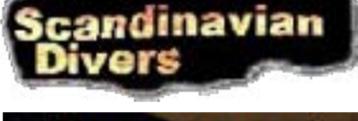
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# Todd Essick



Ole Siren

*“Goddesses, Sirens, and Mermaids” is an attempt to unite the grace and beauty of the sea with that of the female form and, in wedding the two, find a medium of expression capable of approaching the divine mystery all great art aspires to explore.*

--- Todd Essick

## Capturing Sirens

Recently named one of the top ten underwater photographers in the world by *Unterwasser Magazine*, award-winning American artist and photo journalist, Todd Essick, tells *X-RAY MAG* about his new book that is sure to appeal to the aesthetic tastes of many a diver, underwater art and marine life lover.

*X-RAY MAG:* Tell us about yourself and how you got into photography and into this particular style of photography.

TE: Well I had an interest in photography at a very early age. I think I had my first SLR when I was probably 12 or 13 which was kind of earlier than most. When I was in middle school, I managed to get the backing to do a yearbook even though the school was closing. So, here I was doing it even before high school. And then, throughout high school I always took pictures.

But then after high school, I didn't have the family support to pursue photography. They didn't believe it was a viable profession. So I went off to college to study biology, thinking that I might go into marine biology or something like that. And as I finished my first year of college, I found that I just really wanted to do photography.



So, I decided that I would go to a commercial art school. I went for two years and acquired an Associate's degree in commercial art doing advertising at the Art Institute of Fort Lauderdale. But in my last year of school, I got an internship with the Miami Herald and was bitten by the photo journalism bug.

I almost didn't graduate from art school because I was spending all my time at the 'M' out on assignment for the Miami Herald — going on drug busts, murders, football games, baseball, tennis... anything they wanted me to do, I did. Through this work with the Miami Herald, I built up a photojournalism portfolio. I just had to do it everyday.

Once I graduated from art school, I took my portfolio to the Associated Press in Miami. And the editor took a look at my stuff and said, "It looks pretty good. When do you want to start?" I said, "Tomorrow." He said, "All right."

So, for the next 7 to 8 years, I worked as a freelance daily photographer for them. I built up my reputation over the years with them, and it was really there that I cut my teeth at being a photographer.

When I first started shooting on location, I would shoot tons of film, and I really didn't know what I was doing — that was the proving ground. That was where I really learned. By the time I left, I was shooting very little film and still getting just as good pictures. It was one of those "less is more" things, where I knew what I was supposed to be getting and nothing else.

It's really kind of a funny story... When I first started with Associated Press, I would bring back ten rolls from an assignment, and my boss would be shaking his head and saying, "What are you doing?" He'd develop the film and would go through

the first roll and find a picture and say, "Here, print this. This is what we'll put out." But I'd say, "Well, what about the other nine rolls?" And he'd say, "I got the picture I need. I don't know what's on *there*, but I got this, so..." (Essick laughs) He'd say, "Just shoot what we need. You don't have to shoot *everything*."

I started figuring out what they needed and what the picture was. So, by the end, I was shooting one roll and a half a roll in another camera just in case the first camera didn't work. What's interesting, is that it's transcended to this project.

People ask me how much film I shoot. I really don't shoot that much. I might average turning over the camera one or two times a day, maybe 10-12 rolls a day if I'm lucky. It's not that much film. It's because of what my editor at Associated Press said... I was really taught to wait for the moment. Shoot the picture, not everything before and after it. Pick what you want, get it and move on.

Photojournalism technique works perfectly with this project because it is such a fast moving process. The animals move and everything comes together. You're watching it gel. You're anticipating it and watching. You go in thinking you want this picture — you have an idea of what you want — but it's not what you get. You can't predict how it's going to turn out. So, you're just watching and waiting for the moment. You think, "Yeah, that's a good picture" (click) and you take it. It's just grabbing the moment when you see it.

X-RAY MAG: So how did this project come about? Was it your idea?

TE: Oh, yeah. When I was a photo journalist, I was sent on a freelance assignment



Mermaid Ballet

*In choosing a subject, the artist must consider first what it is he wishes to convey to his audience, what secrets he wishes to divulge, what enigmas he wishes to demystify.*

--- Todd Essick



Siren Tale

*It is not surprising that two of the subjects artists have returned to time and again are the vast landscapes of the earth's oceans and the eloquent beauty of the female form. Taken together, these subjects represent all of the majesty, mystery and beauty one could ever wish to contemplate and ever fail to harness.*

--- Todd Essick

for a weekly newspaper in Miami to do a story on the dolphin swim programs in The Keys of Florida, starting in Key West and Key Largo —there's about five or six of them, I guess. I started at Key West at dawn, shot a portrait of this guy, Ron, who takes people out to swim with wild dolphins.

I was packing up my bag and he goes, "What? You're not going to go out with me?" And I say, "Well, I've got five other assignments." And he says, "Well you come back when you can, and I'll show what it's really like swimming with wild dolphins."

So, about two weeks later, I go down to see Ron, and we fast become best friends. Flash ahead for the next five years...

Now, I am a daily news photographer in Miami, but when I need to get away, I go to Key West and go swimming with dolphins. I leave my cameras at home. I always leave my cameras to go to Key West.

I'd go down there, sleep on the boat, be like a crew member, and basically go find dolphins for the people to swim with since I had become adapted to doing so. Over the years, I learned how to get them to come to us.

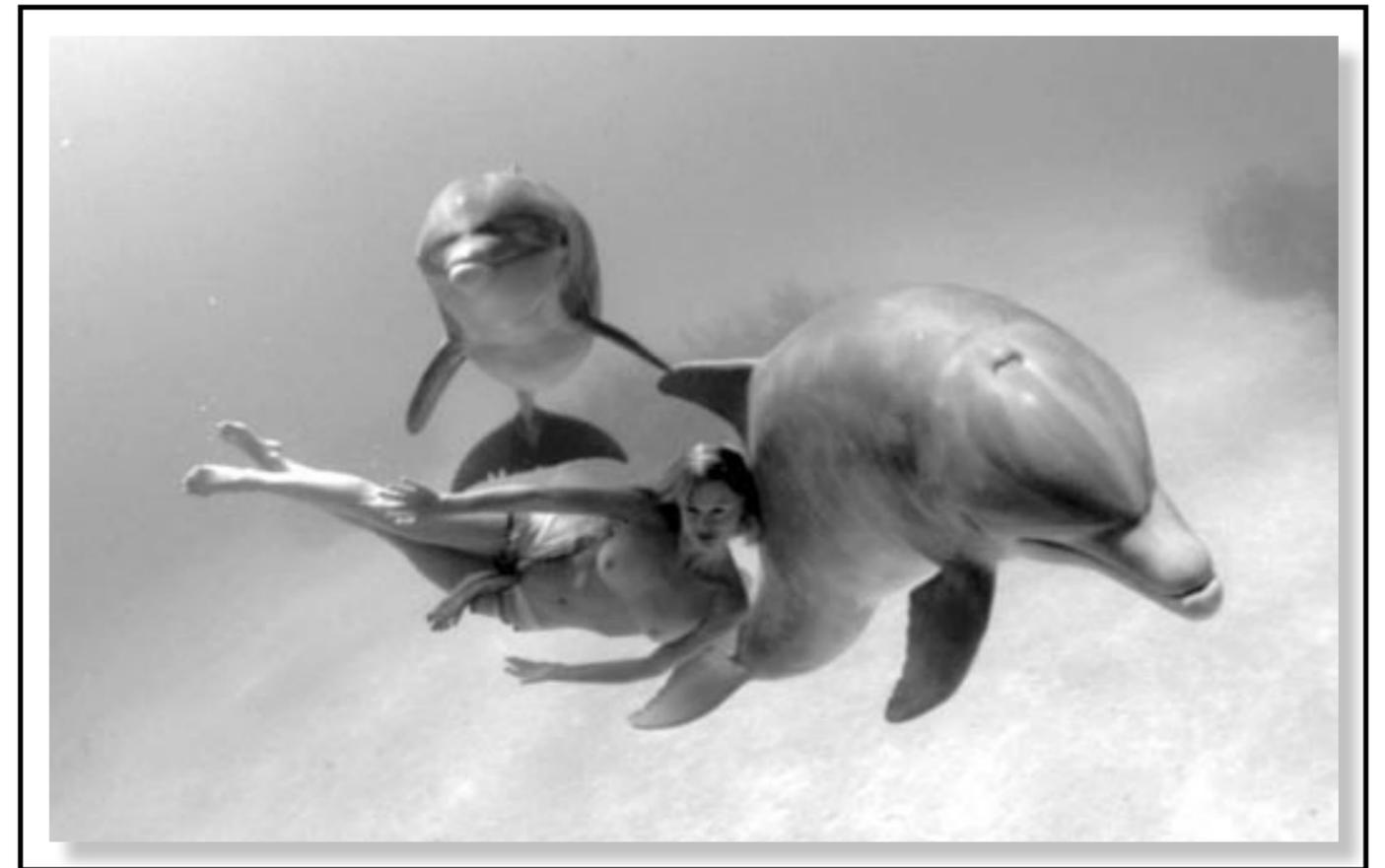
When we saw them in the distance, Ron would just throw me in the middle of the ocean, leave me and sail off. I'd be playing with the dolphins and they'd sail back and the people would get in the water. I was just

having the time of my life.

Well, five or six years of doing this, it had basically become my escape. I never took an underwater picture. I was just on my own having fun.

Then, I had a really amazing experience with the dolphins. I got in with a pod — first a group of young males that were fooling around. They were playing with me, and I was swimming really hard. They'd come up to me — and you're talking about me swimming as hard as I can, and they're swimming as slow as they can — and trying to say to me, "Come on, man, come swim with us."

One dolphin would keep introducing me to the rest of the



Mermaid Affection

pod, bringing others over to me. Then, I just had them all lined up beside me, and they were all saying in their dolphin way, "Come on, swim with us."

Then, they brought me to the rest of the pod. I was with 20 other dolphins. And there were moms and babies, dominant males and so on. They were just letting me hang out with the group and watch — I was just part of the group. One kept saying, "Come on, come over with us." Or they would come over and check me out, "Hey, what's he doing?"

This went on for about a half hour. It was just so amazing. I was just overwhelmed with awe.

Finally, the boat comes back and Ron is watching from the boat. He sees it. He knows what I am going through because he's had it happen to him before.

The boat shows up, and I am totally exhausted. I've been swimming with these things for half an hour, and I am totally spent. I crawl up on the boat as the people get in the water, and the dolphins really didn't stick around that much longer. I just turned to Ron — I really couldn't even talk — and he says, "So, they let you into the club today. They gave you the secret dolphin hand shake." And I said, "Yeah, they sure did."

On our way back to shore, I said to Ron, "You know, if there was a way to illustrate the connection we have with these animals, this would be amazing." I thought maybe a beautiful nude woman swimming with these dolphins would make a beautiful picture and show that connection. Ron said, "That's a great idea. You better do it. Because if you don't, I will."

So, that was the initial idea. I went home, and I wrote it out on the computer — figuring it as a project with multiple animals and multiple locations — trying to figure out exactly what it would take to do it. Then I read it, and I said to myself,

"It can't be done. It's just impossible." The tangibles were just too great — too much money, too many tangibles. It just can't happen.

So, it sat on my computer. And I actually, at that point, got out of photography. I got into the music business and some other businesses. I basically retired from photography. I ended up in Chicago with an Internet business. I was in love. Life was great — it was a great time. I was volunteering at the Shedd Aquarium swimming with beluga whales and Pacific white-sided dolphins — just having a great time. Then, the Internet boom went bust, and my business crashed. I fell out of love. There I was, sitting at one of those crossroads in life, and I said to myself, "What do I do now?"

David Doubilet came and spoke at the Shedd Aquarium. His pictures were just so incredibly inspiring. A little light bulb in my head went off. I turned to my buddy and I said, "It's time to do my project. What ever it takes." This was four and a half years ago.

*X-RAY MAG: Doubilet's work tends to have that effect on people...*

TE: Yeah. But I wasn't intimidated. I saw his work and as great as he is, it wasn't like I felt that I could never do something similar. Rather, I thought, "I want to do that, and I want to do *my* work, *my* project."

Of course, I can't compare my work to his. All I can say, is that his work is inspiring, and it was really his images of the manta rays in Hawaii off the Kona Hotel where he used HMI lighting — heavy strong beams of light with the mantas and a diver — that inspired me. And I thought, "My God! You put a beautiful nude woman in that picture, and you *have* something."

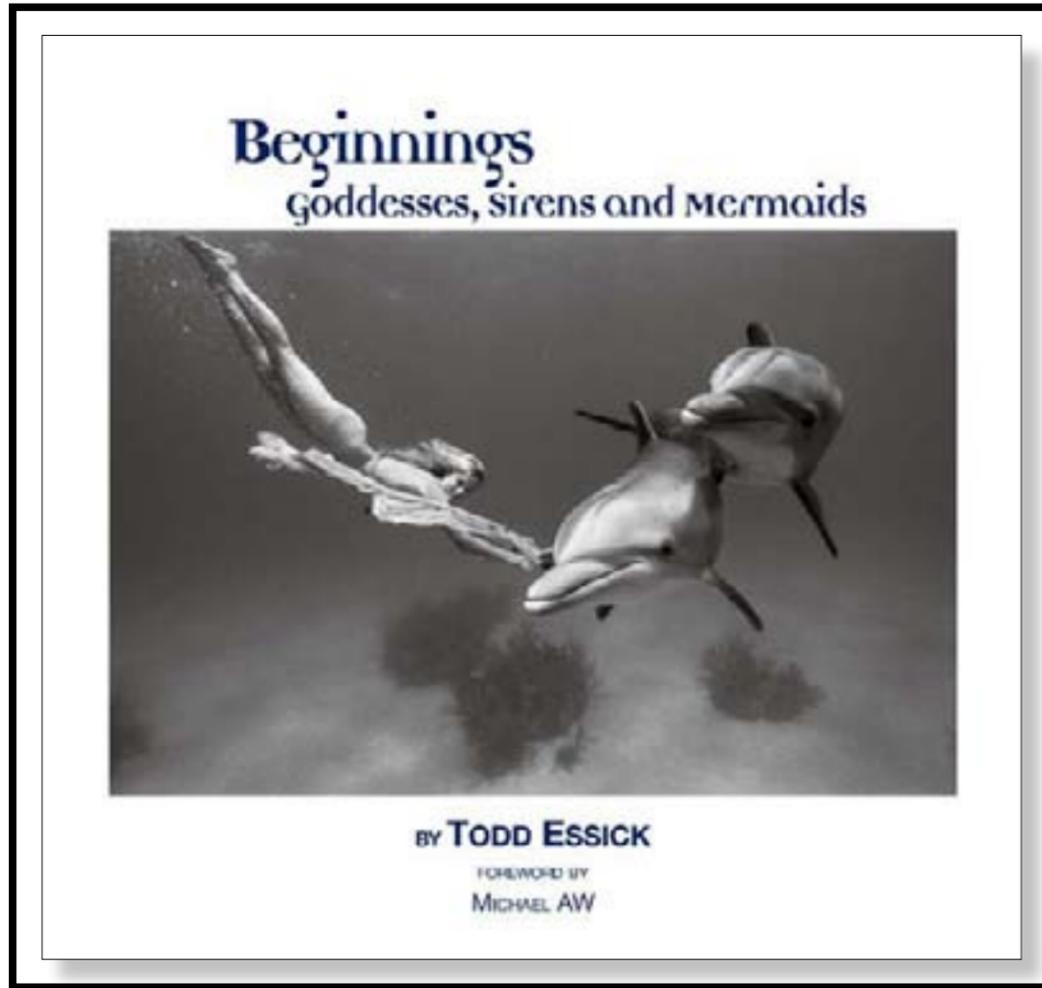
That's all I could think of. Every time I started looking at his stuff, I was thinking, "You know, if you put a beautiful nude



Connection

*Artistic expression, like poetic expression, has long sought to speak the ineffable, to define that which defies definition, to impose scale upon the majesty of the universe and a palpable medium in which to portray its beauty.*

--- Todd Essick



To order Todd Essick's new book, go to [www.essickphoto.com](http://www.essickphoto.com)

woman in that — now *that* would really be a picture." (Essick laughs) It's already an incredible picture, and here I am trying to make it better.

I think people can also think in that way, but that one drops the nudes in with Photoshop or something like that. It's one of those dream shots. You could never do it. Well, that is why I wanted to do what I do, because I also thought that it couldn't be done. I was doubtful that way up to the time I had already started the project. I thought it couldn't be

done.

When we first started, I went through a period of testing gear and films and models. We started in Crystal River, Florida, to get with the manatees, and then we did a few dry runs out in the Bahamas with the dolphins, and I didn't get any pictures. I said, "What am I doing! This is crazy." I'm thinking to myself, I might as well cut my losses now, because I have spent thousands of dollars and I don't have anything to show for it.

But I equated the situation to jump-

ing off a waterfall, and there's a beautiful deep pool of water and sharp jagged rocks at the bottom. Well, I am already over the waterfall, so I better be heading for the deep pool and not the rocks. I was committed, so I just kept going.

Thankfully, in our next time out to the Bahamas, even though the weather went bad on us, I started to see the pictures that I wanted — just a couple of images. I said, "We're close. This can happen. We are going to get there." And the models agreed. They started making suggestions.

I was worried about the safety issues for them, and whether we were pushing the boundaries too much. But, the models said, "No, no, we can do this!" So, we continued.

We finally went out there and we did it. And in the first real shoot, it was just amazing. I got just incredible images and built up on those. Our total trips out to the Bahamas were 4 or 5.

*X-RAY MAG: So did the models also build up relationships with the dolphins?*

TE: The dolphins in the images were those in the dolphin swim programs, because I needed to be sure I could get dolphins. But even in the best of circumstances, dolphins can be skittish. It took many sessions for the dolphins to get very comfortable and to move very slowly.

*What were the technical considerations you had to have underwater?*

I had a safety diver assigned to each model. It was their job to keep each woman safe. Get her air, make sure

she doesn't panic, make sure she is comfortable. For me, it is so important that each model is relaxed and comfortable, because it transcends into the pictures. I had about ten staff members.

*And how did you get it into the publication stage?*

It actually started out as a PR piece. I was going to do a booklet. Then, some of my friends in publishing started looking at it, and they said, "You know, a few more pictures and maybe some writing, break it up right — this could really be a book."

So, then I approached the project in a whole different way. It graduated to a book. Then it all became about what to write for it and how to break it up, how to edit the pictures.

My original design was far from what this book is now. I'd given a friend of mine, who is a book and magazine designer, the specs of what I wanted the book to be. He basically laid it out the way I wanted it. But when I got to Singapore to look at the proofs, he said, "I want you to look at this idea I have. I laid it out in a different way, and I want you to look at it with an open mind."

He pulled it up on the computer, and I went through it. I looked at it again. I didn't say a word. I looked at it one more time, and then I turned to him, and I said, "It's yours. The book's not mine anymore. It's yours. It's beautiful." So, that's how the design came into being.

*X-RAY MAG: The book has a very classical look to it. It is not something you would normally see on the American market. This seems more likely to be something one would see in Europe.*

TE: In fact, I get a better response when I go to Europe. America has

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not really embraced my work as I thought they would or could. I guess I am a very open-minded liberal person, and this type of art to me is just natural. But to middle America, it's not. It's a little bit over the top.

Now, I guess the best explanation I can give, or an example, is this: I did a show in Chicago and a thirteen-year-old girl started paging through my work. And her mother came by and looked over her shoulder and pulled her away from the book. Then, I was in Antibes, (France), and I had my portfolio out and this mother is looking at my portfolio and telling me how incredible, how "magnifique" my work is, and her thirteen-year-old daughter walks by, and she grabs her and pulls her over to look at my work. That pretty much explains it right there.

The attitudes are completely different. I find that the Europeans understand what I am trying to do and appreciate it. I am not saying that people in America don't understand it. It just isn't their taste. But I think that the Europeans that I have met embrace it whole-heartedly. Not only do they get it, they love it. They love what I thought up and how I executed it, and they understand how it was done.

Immediately, when people see my work in America, all they see is the nudity.

*X-RAY MAG: They can't get passed it?*

TE: Right. And they are not thinking what it took to get it, the concept, and putting it together, how much technical skill it took. Not to say that it happens every time; there are plenty of people that understand, that get it and the difficulty and are very impressed. But on a whole, it just seems like every time I go to Europe, I never get a negative response.

*X-RAY MAG: Your work shows that Classical Greek ideal of beauty.*

TE: Yes, that's actually what I was going for.

*X-RAY MAG: You can also see the*



Mermaid's Smile

*behaviour between the two species so clearly and so beautifully.*

TE: The reason why we chose the picture for the cover — and we had plenty of choices obviously — was because it had that "Come and join us" message, "Come and have fun."

*X-RAY MAG: Thank you for sharing your*

*process and the technical aspects behind your work. We are so inundated with images, we often take it for granted how difficult it is to do something like this. This is definitely not Adobe Photoshop.*

TE: Yes, right. It was so funny... when I did my first show in the United States with a bunch of other artists, I had a few pictures up and yeah, they immediately thought it

was Photoshop.

At first, I was just heart-broken. I thought, "Do you guys know what it took to get this?" And then, I had a very philosophical friend who said, "Oh, that was a compliment. You have to take it as a compliment. They just don't even think you can do this. It has to be Photoshop, because nobody could do it. And you've gone and done it."

So, now that's how I approach it when somebody says something like — "it must be Photoshop" — I just have to laugh, because I think back to that first time when I was so upset that someone could even think that way about the work. I figure, if they think that, then I must be doing something right.

Then when they do finally find out that it was not done with Photoshop they get taken to that place, "Oh, my God! I can't believe you really did that!" They are so convinced that it is really Photoshop, that once you dispel that fact, they are just really thrown on the floor. It's amazing, and I still get satisfaction out of seeing that happen.

*X-RAY MAG: And you did not do any special printing techniques as far as contrast, dodge and burn?*

TE: Right. It's all straight. No manipulation at all. And as you notice, we really worked hard at having no bubbles. There are very few pictures where you actually see bubbles. I think it is the reason why people think that it was done with Photoshop, because it looks like I just took a picture shot on land and stuck it right onto the water.

*X-RAY MAG: No back-scatter. Excellent technique...*

TE: For me, I like to show the expanse of the ocean. In a lot of images, I like to leave negative space to show infinity, which is very important in a lot of the pictures. A lot of stuff is not shot very tight. There are very few images that are. I really like that sense of infinity — just out there, where everything just disappears.

*X-RAY MAG: What is your next project?*

TE: This is actually the reason why the book is called "Beginnings" because I wanted to get some of the images out there now and show people what I am doing, because it is a lot more difficult to do this than I thought it would be. The amount of time it took to get to this point was a lot.

I want to continue with this project. I want to work with bigger animals. I think I have another book in me that may include these images or may not. I want to do humpback whales, whale sharks, manta rays, numerous kinds of sharks, bigger animals and more dangerous animals. Some stuff with wrecks. So, there's a host of ideas that I want to try before I completely move on from this project. This is merely the introduction.

*X-RAY MAG: Other underwater photographers who work with large animals such as whale sharks say it is very demanding work as you may have only five minutes with the animal before it moves on. These large creatures swim very fast compared to us humans.*

TE: Yes, and that's what's been really great. I get to meet these people at the shows such as DEMA who appreciate my work that have been nature photographers for a hell of a lot longer than I have and are much better at that type of work than I am.

I don't consider myself a nature underwater photographer at all. I am merely an underwater artist. I do underwater fine art. My medium just happens to be photography, and I just happen to do it underwater. I can't compare myself to a David Doubilet or any of those guys. I am no where near them as far as nature photography. I just had an idea for a project and these were my tools. ■

To order Todd Essick's book directly from the artist, visit: [www.essickphoto.com](http://www.essickphoto.com). Captain Ron Canning, Dolphin Watch: [www.dolphinwatchusa.com](http://www.dolphinwatchusa.com)