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**POINT & CLICK  
ON BOLD LINKS**



Edited by  
Andrey Bizuykin  
& Peter Symes

# Gotta have it Equipment



## Vuvu

Now this is perfect for your Scuba Pup - The Dive Flag Dog Collar. And don't forget to pick up a matching Leash. Available in sizes S, M and L. Webbing Width is 5/8 inch, 3/4 inch or 1 inch. Neck Sizes: 8-13 inches, 11.5-19 inches and 15-25 inches. Price: US\$9.95 [www.amazon.com](http://www.amazon.com)



## Beuchat

The Beuchat Masterlift TEK BC has been designed to meet the high standards of technical dives. It is a single 35-liter bag BC with 1000-denier Cordura structure backplate with multiple fastenings for the structure, bag, tank, and accessories and a wealth of features including a maximum demand emergency regulator unit with dump valve. [www.beuchat.fr](http://www.beuchat.fr)

## Oceanic Viper

The new Viper is made for all diving and snorkeling skill levels and is extremely lightweight for increased performance and ease of travel. The Viper blade's Flexible Power Thrust Channel directs water off the tip of the blade for improved power and efficiency. The engineered channels and side rails direct water flow off the tips of the fin without allowing water to "spill" from the sides of the blade for uncompromising power and efficiency. Power Vents reduce stress while accelerating water over the blade. A generous yet streamlined foot pocket fits a wide range of boot styles while significantly reducing drag. Comes with easy adjust quick-release buckles. [www.oceanicworldwide.com](http://www.oceanicworldwide.com)

## Gravity Zero

The Zero Ranger TXT trilaminate is intended for the demanding user be it a commercial, technical, military or sport diver. A telescopic torso and elasticized waist design make for a perfect fit. The front diagonal zipper is non-magnetic and covered by a protective flap made in Cordura. Knee pads and other exposed areas are also reinforced with an extra layer of Cordura. The suit is fully taped and sealed on the inside with ADS 2000 Polymer Sealant that comes with a lifetime warranty. [www.gravityzero.it](http://www.gravityzero.it)

## Aeris T3



The elite T3 hoseless air-integrated dive computer from Aeris achieves a remarkable balance between features and usability. With Aeris' wireless transmitter, the diver can also monitor gas pressure from up to three independent cylinders - ideal for both technical diving applications with compatibility with up to three Nitrox mixes to 100% oxygen and recreational diving with their new Buddy Pressure Check™ feature. [www.DiveAeris.com](http://www.DiveAeris.com)

## Aquatec Aquastar

At 15cm, this AquaStar Led Torch Flashlight is not only sleek but also boasts an impressive 5-hour burn-time on standard AA-sized batteries while operated at high intensity. The nominal rated output is 23 Lumens. The rugged military style casing makes this flashlight practically indestructible and maintenance free. It is depth-rated at 100m. The electronics of this flashlight also include a constant current control circuitry that maintains the LED's brightness output throughout the entire life of the battery. [www.duton.com.tw](http://www.duton.com.tw)



## Oceanic

The Veo 100 Nx from Oceanic is a full-featured entry level Air or Nitrox Dive Computer. The Veo 100 Nx coordinates carefully arranged information with ease-of-use, oversized digits, bar graphs and intuitive icons. Loaded with features but still very user friendly with a single operating button. Features include Air and Nitrox Operating Modes, water activation, Safety stop prompt and a 12 dive log book. Diver-replaceable battery with Hot Swap memory allows battery change between dives.

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



## Aqualung

Aqua Lung's New Latitude XLT features the same proven mechanical system as some of the most technically advanced BCs on the market. Solidly constructed with the patented SURELOCK technology, the Latitude XLT features a balanced and integrated weight system that releases with one single instinctive action. The BC, available in red/black and black/gray/silver color combos, is made of the rugged Armorshield Cordura with the weight system "integrated" into the jacket, making it functional and comfortable. Other features include: two large zippered utility pockets, chest strap, grommets for knife attachments, right shoulder pull dump for quick and easy deflation. [www.aqualung.com](http://www.aqualung.com)

## Ocean REEF wants to know what you think about full face masks

Ocean Reef is conducting a survey to learn how scuba divers feel about full face masks and underwater communication systems. By participating in the survey, you will be entered in a drawing for a Limited Edition Ocean REEF ScubaDoRag! [www.oceanreefgroup.com](http://www.oceanreefgroup.com)



## MINI REVIEW



## Nocturnal SLX LED Dive/Photo Light

By Larry Tackett

I must admit that I am a creature of habit. I have been using the same aiming/focus light for my housed cameras for about ten years. It is a small plastic housing light with one tungsten (halogen) bulb and uses four AA batteries. It mounts on the macro port, moves up and down, and it works... always has. Never thought much about it. But recently, I had the opportunity to use one of Nocturnal Lights LED photo lights. What a joy! It was several times brighter than my existing light, having three LED bulbs, which are easily changed with different wattage bulbs being available. With the included diffuser it produced a wide, even beam of light which meant that I did not have to move the light every time my camera-to-subject changed. It is very durable with an aluminum housing and handle.

The light uses six AA batteries and the advertised burn time for alkaline batts is 4.5 hours. I used Lithium AAs and

changed them only twice in 16 days of diving. I was shooting supermacro for a pygmy seahorse project that required manually focusing in low-light conditions. The brightness of this light and its wide beam angle made it much easier to see focus points.

The handle is pre-drilled with two holes to fit readily available mounting options. My light came with a mounting ball that worked fine with my UltraLight strobe arms. My only complaint was with the very large knob used to hold the ball. It was so large that it made it difficult to hold the light by the handle. There are better ways to do this. As a suggestion it would be nice to have a red diffuser, or a filter gel that fits inside the diffuser, for night shots of crustaceans and other critters bothered by white light.

In all, this is a great light that has now replaced my previous one. Yes, even creatures of habit need to consider new ideas and products! ■

## Press release Halcyon Recalls some of it's Explorer wings

### Voluntary Recall of Select Explorer 40 BC's. (Serial Numbers Listed Below)

Halcyon is committed to manufacturing dive gear that exceeds the industry's highest standards. Nevertheless, they recognize that eventually

a component could be shipped to their customers that does not meet Halcyon's expectation of quality. Even as they do their best to ship only the highest quality gear, they will announce any recall in a timely manner, along with the procedure that will need to be followed to ensure a quick and unbureaucratic handling of the issue.

Halcyon Manufacturing has identified a very small number of Halcyon

Explorer-40 BC's sold after July 2005 that could develop problems over time. In these few units it is possible that the over pressure valve (OPV) could delaminate, causing the BC to leak. It is unlikely that most of these units will experience any problems; yet, given their rigorous desire to produce only the finest quality equipment, Halcyon would like to ensure this problem does not affect the safety or

convenience of their customers. This problem was identified during regular quality control evaluations in which a lamination machine (RF welder) showed slight inconsistency during production. The machine has been replaced and the few BC's affected have been identified by quality control. Halcyon is seeking to minimize any inconvenience to their customers. To this end, all Halcyon distributors

have been notified and are prepared to assist any affected customers. If you have an affected BC (see serial numbers below) please return the unit to any Halcyon dealer; you may also contact your local distributor for replacement. If you have any questions or prefer to work directly with Halcyon please contact Halcyon tech services via the contact information listed below.

Halcyon Contact Information:

1-800-HALCYON (800-425-2966) x307

[techservices@halcyon.net](mailto:techservices@halcyon.net)

EXPLORER 40 Serial Numbers

255015005 255015091  
355147031 355147058  
255015008 255015092  
355147033 355147059  
255015015 255015099  
355147035 355147061  
255015016 355147001  
355147036 355147062  
255015025 355147003  
355147037 355147064  
255015031 355147006  
355147038 355147065

255015035 355147010  
355147040 355147068  
255015053 355147011  
355147043 355147070  
255015054 355147013  
355147045 355147072  
255015057 355147014  
355147046 355147073  
255015061 355147016  
355147047 355147074  
255015062 355147017  
355147049 355147075  
255015063 355147018  
355147050 555603031  
255015067 355147019  
355147051 555603034  
255015068 355147020  
355147052 555603039  
255015073 355147022  
355147053 555603062  
255015075 355147023  
355147054 555603070  
255015081 355147026  
355147055 C44679024  
255015083 355147028  
355147056 255015085  
355147030 355147057

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



Filephoto of Halcyon Explorer CCR-35 (not the Explorer 40 in question)

## MB Sub

The two most successful diver's lamps of MB Sub are now also available with new high energy lithium manganese accumulators, which don't need protective circuits, don't self-discharge and retain high capacity also in the cold. The cells are rechargeable at any time regardless of the charge state and they don't suffer from memory effect.

The FUN Light LiMn comes at a lower priced as it uses an external charger, whereas the extreme LiMn can be charged without opening it.

The extreme LiMn uses halogen burners with separate, replaceable aluminium reflectors. These are available with an angle of reflected beam with 12° Spot, 80° (with hotspot) and 90° Flood as photo or video light.

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



## Tech 2G

Uwatec's Aladin TEC 2G is an easy to use two-gas computer which offers a predictive multi-gas algorithm (PMG) shared only with the Uwatec Smart TEC. The Aladin TEC 2G predictive multi-gas algorithm performs its decompression calculation taking into account all planned gas switches throughout the dive. This means that the decompression schedule shown on the display gives you the actual total time of ascent. In the background, however, the algorithm also calculates the decompression schedule for the currently active gas only, so that if you fail to switch to the "deco gas" at the planned depth, the computer can quickly revert to this calculation. You can look up the active gas calculation at any time at the press of a button. [Scubapro-uwatec.com](http://Scubapro-uwatec.com)



## Atomic Aquatics SubFrameMask Receives Prestigious International Design Award

Atomic Aquatics have been awarded the prestigious Red Dot Award, an international award that has been presented for the last 50 years in recognizing true product design excellence in a wide range of categories.

This year, there were more than 50,000 entries from more than 50 countries. With the selection of its SubFrame mask, introduced earlier this year, Atomic Aquatics became the first company in the dive industry to be recognized by the Red Dot committee in the sporting goods category.

More details on this honor and the worldwide competition can be found at: [en.red-dot.org](http://en.red-dot.org)



## Hangair

Divers and others who use a wetsuit have been trying for years to dry the suit before their next chance to hit the surf. After use, wetsuits often take several days to dry completely. Wetsuit users, and those who live with them, will testify that they often develop a strong, unpleasant and unique odor. Twenty-three-year-old Michael Appelman, an avid surfer and scuba diver, knew there had to be a better way, so he created the Hangair Drying System. The system was officially launched at expos in September and first shipments of Hangairs is expected to be arriving in stores the first week of November. [www.hangair.com](http://www.hangair.com)

## Keep fit with Suunto

SUUNTO t6 accurately records how your body performs during exercise, enabling later analysis and planning with Suunto Training Manager. By measuring your exercise load and relating it to your personal fitness level, Suunto t6 tells you if the session improved your condition or not. [www.amazon.com](http://www.amazon.com)



## Scubapro Panther

The all-new Panther N1 drysuits are made from 5mm high-quality pre-compressed neoprene insulates with little or no need for extra undergarments necessary, whilst ensuring buoyancy stability at depth. The Panther C1 (not shown) is a new membrane suit for warm or cold water allowing you to wear as many undergarment layers as necessary to stay warm and dry. Panther C1 is anatomically pre-shaped and the diagonal dry front zipper ensures easy access without requiring help from your buddy. Additionally the adjustable telescopic torso system provides the perfect fit and makes for easy donning; this is particularly beneficial to divers with slightly longer upper bodies. Both suits come with anti-allergic extra long latex wrist seals combined with nylon neoprene wrist cuffs. The self-draining two-sided nylon neoprene collar with Velcro closure and self-draining front valve protects the latex neck seal from water damage. [www.scubapro-uwatec.com](http://www.scubapro-uwatec.com)



Edited by  
Michael Arvedlund  
& Peter Symes

*Medicines unlimited from the Oceans*

# The Oceanic Cornucopia

Text by Michael Symes

For millennia, mankind has been obtaining nourishment from the oceans, not only from fish and shellfish but also from the various types of plant life. The oceans are also home to some of the most poisonous and deadly organisms in the world, for example the Banded Sea Snake, the Scorpion Fish, and even the humble cone snail. Yet these selfsame creatures may well be our salvation, in that they may eventually provide us with life-saving substances against many of the ailments that affect us.

There has long been folk lore about various prophylactic substances that can be obtained from the oceans. For centuries, coastal communities have used reef plants and animals for their medicinal properties. In the Philippines, for instance, giant clams are eaten as a malaria treatment.

Today, more and more research is taking place into the possibilities of obtaining pharmaceutically active chemicals from the oceans. The majority of marine-derived compounds are obtained from either microorganisms or stationary, bottom-dwelling organisms such as corals, sponges and tunicates.

There are already many of these compounds that can, for example, possibly provide cures for cancer, AIDS, malaria, herpes infections, etc., but can also act as pain-killers and sun-screens. The sources of these compounds are legion, rang-

ing from coral reefs, molluscs, sponges, to bacteria found in the sediments at the bottom of the oceans.

## Coral reefs

Currently, one the most important source of pharmaceutically active chemicals appears to be in the coral reefs to be found around the world. As readers of this magazine will know, corals are formed of polyps living within a hard skeleton of calcium carbonate. They are to be found almost everywhere in the world, not only in the warm tropical seas but also in the colder waters of the Atlantic. Although they mostly live in shallower waters they are also to be found in deep sea waters.

Coral reefs are also home to a diverse mixture of invertebrates such as tunicates, molluscs, bryozoans, sponges and echinoderms. These animals spend most of their time

attached to the reef and so cannot escape from predators. They therefore have to engage in a chemical warfare using bioactive chemicals to deter predation, fight disease, and prevent overgrowth by competing organisms. Some animals also use toxins to catch their prey. These chemicals may be synthesized by the organism itself or by the endosymbiotic microorganisms that inhabit its tissue. They can also be accumulated from the food they eat.

## Cancer medicines

Extracts of these chemicals, like histamines, hormones, antibiotics, and secosteroids have led to drugs such as AZ1, Ara-A, Ara-C, and Dolostatin 10, which combat AIDS, cancer, asthma, arthritis, and inflammatory disorders.

For example, Sarcodictyin is obtained from the coral *Sarcodictyon roseum*, found

at a depth of 100 m in the Mediterranean. The related compound Eleutherobin is obtained from the shallow-water *Eleutherobia* species in western Australia. They are both active against cancer in that they are cytotoxic.

Another example is the pseudopterosins obtained from a gorgonian coral *Pseudopterogorgia elisabethae*, found near the Bahamas. These have anti-inflammatory and analgesic properties, and are now in use in a commercial skin-care product to defeat allergic responses in the skin.

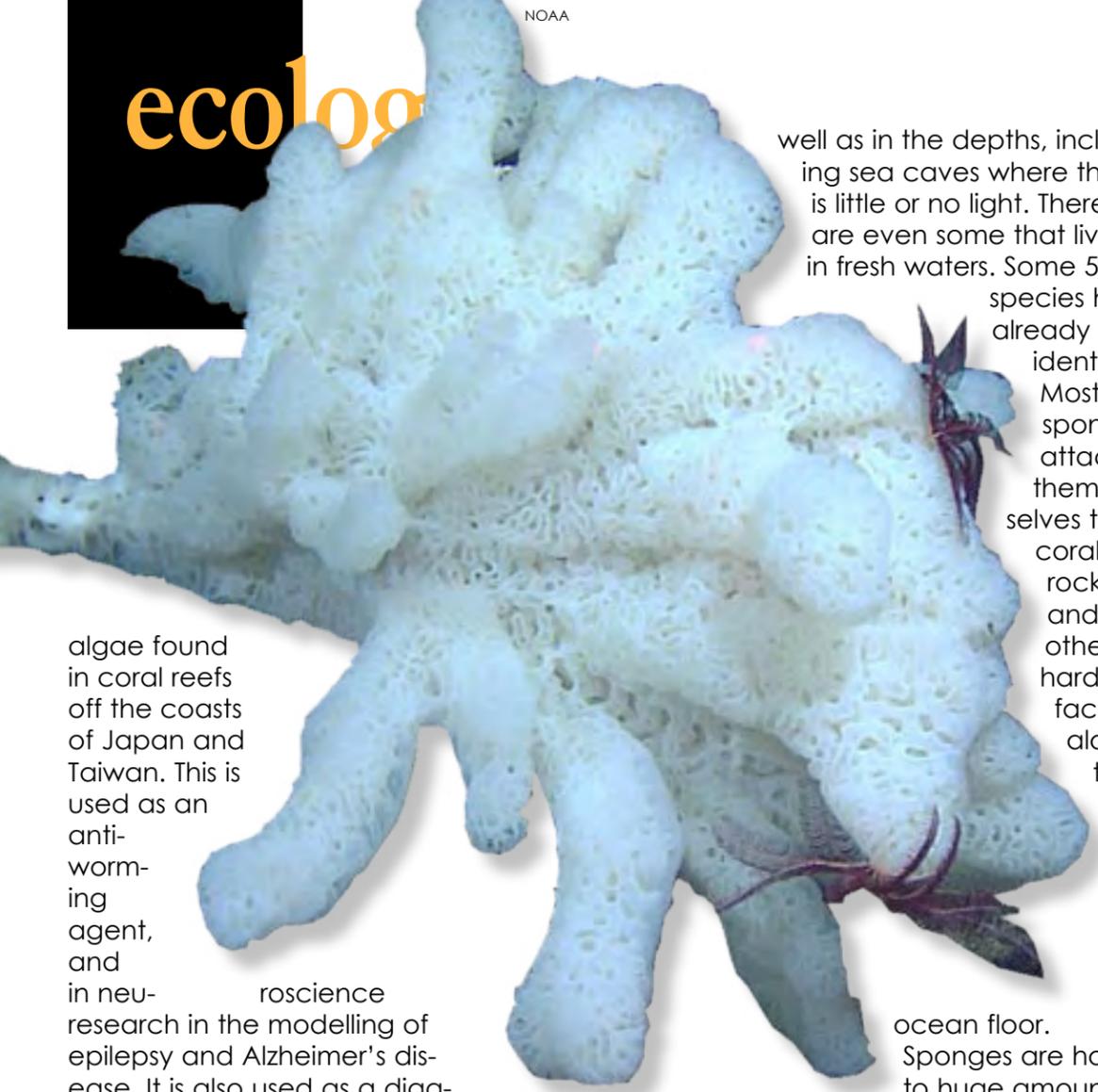
A chemical called Kainic acid was originally isolated from *Digenea simplex*, a red



UNITED STATES GEOLOGICAL SURVEY

PETER SYMES





algae found in coral reefs off the coasts of Japan and Taiwan. This is used as an anti-worming agent, and in neuroscience research in the modelling of epilepsy and Alzheimer's disease. It is also used as a diagnostic chemical to investigate Huntington's chorea, a rare but fatal disease of the nervous system.

well as in the depths, including sea caves where there is little or no light. There are even some that live in fresh waters. Some 5000 species have already been identified. Most sea sponges attach themselves to coral, rocks and other hard surfaces along the

**Porifera**

The Porifera, more commonly known as the sea sponges, are multicellular marine animals usually occurring in complex sessile colonies in which the porous body is supported by a fibrous framework.



They are to be found in every ocean of the world, particularly the Antarctic, both in shallow waters as

ocean floor. Sponges are home to huge amounts of bacteria, cyanobacteria, and fungi, and because a single sponge can be populated by dozens of different symbiotic bacteria that produce an extraordinary range of chemicals, they are ideal candidates for bio-prospecting. These associated microorganisms have been shown in some cases to be responsible for the defensive chemicals produced by sponges. Many sponge species have elevated microbial populations.

An example of these chemicals



NOAA

are those that have been collected from the sponges of the Lithistid family, discovered at depths of 300 to 600 meters off the coast of Florida. Drugs extracted from them have been used not only to treat acute myelocytic leukemia and non-Hodgkin's lymphoma but also for the treatment of herpes infections using the antiviral drug Ara-A.

Another sponge with an elevated microbial population which is exceptionally bioactive is the Halichondria okadae sponge which lives in remote tropical waters off the coast of Japan. This sponge contains halichondrin B, a chemical which has been described as 'exquisitely potent' in killing cancer cells. A synthetic version of this chemical, E7389, has been produced, which is currently being tested in humans for the treatment of non-small cell lung cancer and other cancers. The drug functions by disrupting cell division. In a recent Phase II clinical study E7389 gave promises of a treatment for slowing and possibly reversing the spread of breast cancer. The deep sea sponge Lissodendoryx was later discovered at depths of 100 meters off the coast of New Zealand. This sponge contains halichondrins in greater concentrations than the shallow-water species. The deep sea sponge Discodermia dissolute is found at a depth of 140 meters off the Bahamas. A compound, Discodermolide, which interferes with dividing cells, has been extracted from

The sponge, *Discodermia dissolute*, contains agents against solid tumours

Microbes that live inside sea squirts produce two compounds thought to have anti-cancer properties

PETER SYMES



this sponge. It is an active agent against solid tumours, especially multi-drug resistant tumours. Phase I clinical trials have been completed

Furthermore, products from two other deep sea sponges are in pre-clinical development. These are Topsentin, which is an anti-inflammatory useful against arthritis and skin irritations, and also against colon cancer. It can also possibly be used in treating Alzheimer's disease. It is obtained from the sponge *Spongospirites ruetzleri*, found at a depth of 300-600 m off the Bahamas. The second product is Dicytostatin-1, used against cancer. It is obtained from a sponge of the order Lithistida, family corallistadae, living off Jamaica at a depth of 440 m.

## Tunicates

Tunicates, commonly called sea squirts, are marine animals that spend most of their lives attached to rocks or the bottoms of boats. The photosynthetic microbe *Prochloron didemni* lives as an

endosymbiont inside the sea squirt *Lissoclinum patella*. This produces two compounds called Patellamide A and C, which are thought to have anti-cancer properties. These patellamides are small peptides that appear useful in treating some cancers.

## Molluscs

These consist of the gastropods (snails, slugs), the bivalves (clams, mussels) and the cephalopods (cuttlefish, octopuses). One of the most interesting gastropods from the medicine point of view is the beautiful but deadly cone snail, of which there are more than 500 known species, found primarily in coral reefs in warm, tropical waters but also in mangrove swamps. They harpoon other invertebrates with a concealed hollow tooth, through which they inject conotoxin venom. Despite its small size, it is only a few centimetres in length, it has enough venom to paralyse or kill a human.

The most scientifically interesting venoms are those produced by *Conus geographus* and *Conus magus*. Their venoms contain substances called conotoxins. These are small peptides, normally only 20-30 amino acids in length. This short length means that synthetic derivatives are relatively easy to manufacture. There are a number of different types of conotoxin, each acting on different receptors.

The molluscs' venom was found to be able to block pain signals in the

*Conotoxins also have the potential to treat epilepsy and clinical depression.*

nerve synapses, so that transmission of the pain signal to the brain is blocked. Ziconotide, also commercially known as Prialt®, was isolated from *Conus magus*.

One of the most significant developments is from an omega-conotoxin of *Conus geographus*. Using the snail's natural conotoxin, a synthetic derivative called SNX-111 was produced. It has been shown to have analgesic properties, and has therefore the potential for being the basis for a new pain-relieving drug. Studies have already shown SNX-111 to be 100-1000 times more powerful than morphine, without many of the associated side effects

Conotoxins also have the potential to treat epilepsy and clinical depression.

*Synthetic derivatives are relatively easy to manufacture.*

Each species is able to produce more than a hundred unique toxins. Cone snails as a group may thus have more potential for new medicines than any other genus. So far, the venoms of only just over fifty species of cone snail have been investigated. As it takes 50-100

snails to obtain enough venom for analysis the environmental impact of removing cone snails must be considered.

## Bacteria

*Salinispora*, a new class of marine gram-positive bacteria, have been isolated in large numbers from many different ecosystems, including the Caribbean Sea, the Red Sea, the oceans around Hawaii, and the Sea of Cortez, together with such extreme environments as the sediment on the ocean floor more than 1000 m down in the North Pacific Ocean. A substance, *Salinosporamide A*, has been isolated from these bacteria, which shows strong anti-cancer properties against melanoma, colon-, breast- and lung-cancer.

human spinal cord. Ziconotide, developed from the venom, works by blocking the calcium gateways of the

## Plants

Just like the land plants from which we have previously obtained practically all our medicines, the plants that grow in and around the oceans have a potential as a source of biologically active chemicals. This potential, though, is nowhere as great as that for medicines produced from animal species.

One minor example is the extracts derived from the fruit of a mangrove species found on the coastal regions of the Andaman & Nicobar Islands, which shows both anti-diabetic and anti-diarrhoeal activities. Fractionation of the fruit can separate the anti-diabetic activity from the constipation-inducing activity.

Mangrove  
(*Rhizophora sp.*)  
in Queensland



MURIEL GOTTROP

## Non-pharmaceutical Applications

### Corals

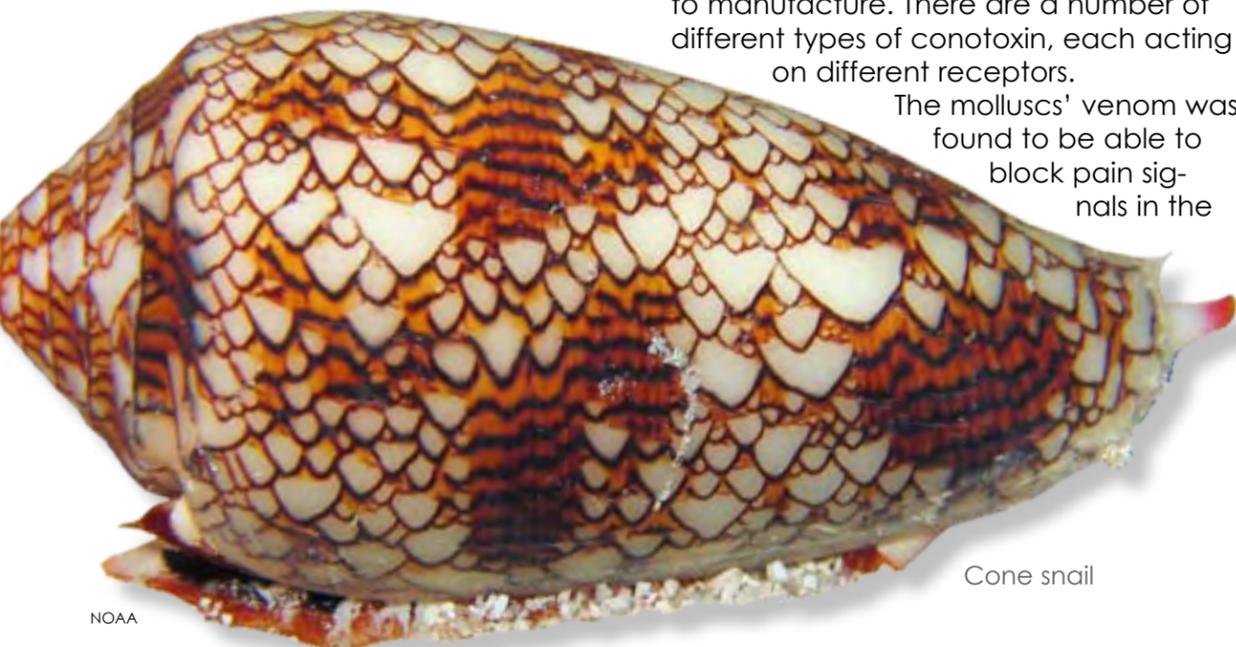
Corals have a skeletal structure similar to that of bone, with a hard outer sheath and a spongy inner core. They are therefore well suited to be used as orthopaedic implants in bone grafting. At the present time, the best for this purpose are found to be the tropical genera *Porites*, *Alveopora*, and *Goniopora*. The bamboo corals of the family *Isididae*, genera *Keratoistis* and *Isidella*, which live more than 1000m down in the North Pacific Ocean, are also being used, as the dimensions of bamboo coral are almost identical to that of bone. They are still in preclinical development but have already been found to reduce the risk of mammalian disease. The corals have also devel-

oped natural sunscreens to cope with long-term exposure to the high-intensity ultra-violet radiation penetrating shallow reef waters. This sunscreen, structurally unlike compounds in current use, has demonstrated great efficiency in absorbing and dissipating UV radiation in the damaging UV-B region of the spectrum. Luckily, these materials can now be synthetically produced, thus avoiding the destructive exploitation of natural resources.



### Actinaria

The Actinaria, better known as the sea anemones, belong to the phylum Cnidaria which also includes the jellyfish, corals and hydras. The jelly fish and sea anem-



Cone snail

NOAA



*Urticina sp* from the White sea, Russia

anemones can be employed to deliver important pharmaceuticals painlessly through the skin of a patient. Research is going forward into imbedding a drug such as insulin into the stingers which can be mass-culled from the sea anemones. These are then made up into a cream which, when rubbed on the skin, activates the stingers to inject the drug. These tiny injectors, which are invisible to the naked eye, can deliver up to more than 100 thousand penetration points per square centimetre of skin contact. It is hoped that the method can be used to deliver chemotherapy drugs, antibiotics and anti-rejection drugs after organ transplant operations.

#### Cure for AIDS?

It will be seen that the oceans are potentially a huge source of medically important compounds. It is therefore necessary that we protect them from destructive fishing practices such as the trawling of the ocean beds. Otherwise, we might lose the chance to find just that substance or mechanism that could cure cancer or AIDS. But that's another story. ■

ones have soft bodies and long, stinging, poisonous tentacles that they use to catch fish. They do this by paralysing the fish with venom sent out through stinging cells called nemocysts. The venom of some of the jelly fish is so strong

that it can kill a person. However, it is the mechanism of the sting that is of interest, for the nemocysts can be used to inject drugs through the human skin.

It has been shown that the minuscule stingers of the sea

### Scripps Institution of Oceanography and UC San Diego's School of Medicine have teamed up to hunt for new antibiotics on the ocean floor and get them to market

Bill Fenical, director of Scripps' Center for Marine Biotechnology and Biomedicine, is sorting out how to make the potential new antibiotic discoveries effort more

attractive to investors. He hopes an interdisciplinary approach to finding medicines from the sea could draw more resources. The biggest obstacle, he said, is that the largest donor of research grants, the National Institutes of Health, has stopped supporting antibiotic research. This lack of support extends from a 25-year-old agreement to keep the National Institute of Allergy and Infectious Diseases - an NIH arm - from competing with private enterprise, he said.

"It's completely out of date," Fenical said. "Where are we in terms of developing new antibiotics? We are in trouble. My colleagues believe it is a national emergency." Victor Nizet, associate professor of pediatrics at the Division of Infectious diseases at UCSD's School of Medicine, said more than 50 percent of strains of bacteria are resistant to common, first-line antibiotics.

A dozen researchers are working on the interdisciplinary push to find new antibiotics. ■

## ONE INDUSTRY. ONE SHOW. ONE MAGICAL LOCATION.

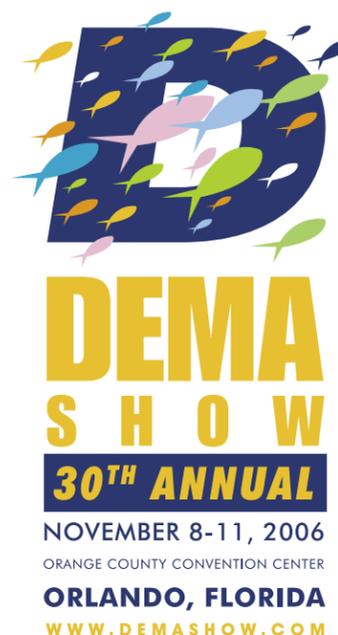


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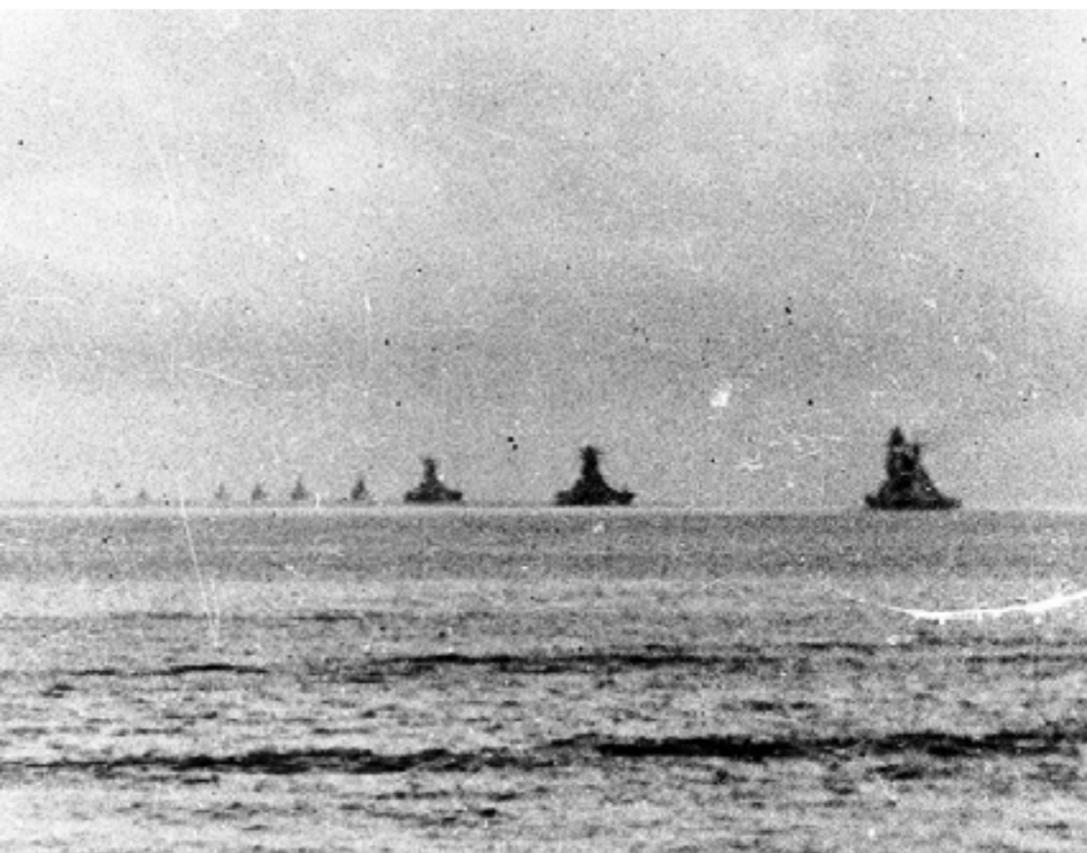




Vice-Admiral Shoji  
Nishimura

# Japanese Battleship

Text and images courtesy of Cedric Verdier



Japanese fleet leaves Brunei, 22 October 1944

*Is there anything more difficult in diving?*

Nowadays, the name Yamashiro could have different meanings depending on where you come from. If you live in Los Angeles, a huge pagoda near Hollywood is the oldest structure in California and hosts a famous restaurant named Yamashiro or "Mountain palace" in Japanese. If you live in Kyoto, Japan, Yamashiro is the name of an area close-by. And for the older generation, it's also the name of a never forgotten Japanese battleship lost during WWII during one of the major battles of naval history, the battle of Leyte, October 1944. Finally, if you're a scuba diver, you might have heard about the wreck of the *HIJMS Yamashiro* as definitely the most challenging shipwreck in the world, because of the remoteness of the location, the extreme depth and the very bad diving conditions.

*When the dramatic story of a Japanese hero meets the dream of a few technical divers.*

## October 24th, 1944

Vice-Admiral Shoji Nishimura doesn't like the way everything goes. Nishimura is known for his high respect of the orders. No matter what orders he had, he would carry them out even though they could result in the annihilation of himself and his command. For the time being, he doesn't know that it's exactly what will happen in the next few hours in the Surigao Strait.

Only a year after being nominated as a Vice-Admiral, he is named commander

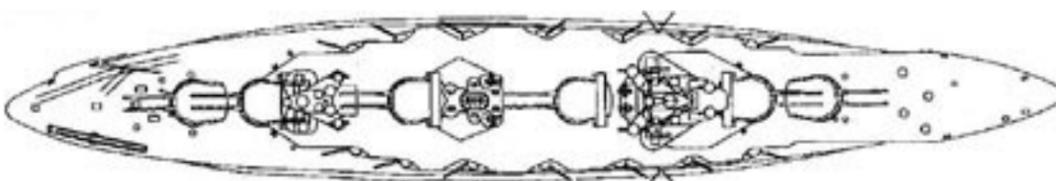
of the Southern force of the Operation Sho-Go, as the Imperial Japanese Navy Headquarters in Tokyo search for a final and decisive naval battle against the Americans in the Philippines. His force (named Force C) consists of battleships *Fuso* and *Yamashiro* (his flagship), heavy cruiser *Mogami*, and destroyers *Shigure*, *Michishio*, *Asagumo*, and *Yamagumo*. And now, he has to go through the Strait of Surigao to attack the Allied invasion shipping in Leyte Gulf.

## July 18th, 2006

Three technical divers and more than six hundred kilograms of diving equipment are boarding the boat that Rob Lalumiere, an



Ron Lalumiere's dive  
boat in the Philippines

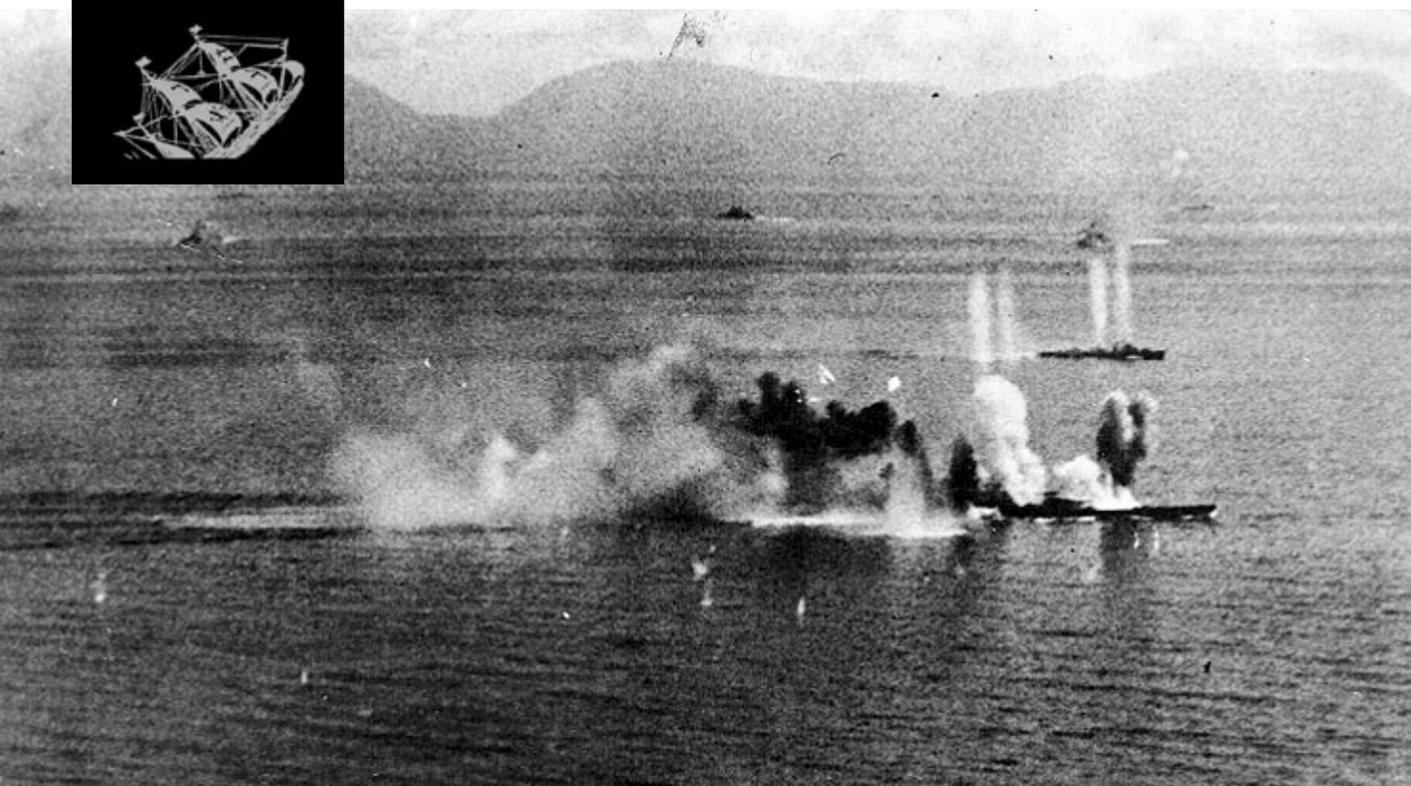


Top view of *Yamashiro*



## Yamashiro

Divers Bruce and Cedric prepare to dive the deep wreck *Yamashiro*



Japanese battleship *Musashi* under attack in the Sibuyan Sea, October 24th, 1944

or rent some equipment. There is no recompression chamber less than twelve hours away. The closest boat available for technical divers, a private boat owned by Rob, comes from Ormoc, fifteen hours north. The closest town, Hinundayan, has only a few houses on a small road that looks like it is constantly being repaired, and more than ten people talking together at the same time is a major event in this very quiet area.

Everything has to be brought from Europe, Thailand or Manila. Soda Lime and small tanks for the rebreathers, spare parts, Helium, Oxygen... in short, an expedition as easy to set up as a wedding party on top of Mt. Everest.



less than six battleships. Amongst them, the deadly *USS West Virginia*, *California* and *Tennessee*, recently equipped with the new Mark 8 fire control radar, an improved system that better discriminat-

ed narrow targets in close proximity. It's late in the afternoon when Vice-Admiral Nishimura heads to the Strait. He is now well aware of the trap that is waiting for him, as a scout plane from

American expatriate and an avid deep wreck diver, uses to provide the surface support to the Yamashiro Project team. A team made of three technical divers coming from very different horizons. I am originally from France but spend most of my time travelling around the world to teach rebreather diving. Pim van dem Horst does the same in his dive school in the Netherlands. Bruce Konefe, also an American citizen, resides and teaches

technical diving in Thailand. We all come to Leyte, a remote island in the Philippines, to dive the *Yamashiro* and the *Fuso*.

Bruce and I spent the last ten months gathering information about the wrecks and the logistics that could be used for such extreme dives. We quickly both came to the conclusion that it's a combination of heaven and hell.

Heaven because the wreck of the *Yamashiro* lies in pristine condition, still proud of her 213 m/699 feet length, her twelve heavy 14 inch guns and her famous 44 m/144 feet high superstructure nicknamed Pagoda.

Hell because the current is never less than 7 knots, the visibility on the bottom is close to 5m/15 feet, the maximum depth is almost 200m/656 fsw (only 160m/525 fsw for her sistership *HIJMS Fuso*, sunk in two parts only a few miles away). It also means that the team knows what a "Logistical nightmare" is.

There is no dive center to fill the tanks

### Shooting a fish in a barrel

#### October 24th, 1944

Since its departure from Brunei two days ago, Vice-Admiral Nishimura considers himself lucky, as his force has remained undetected by the US Navy. Unknown to him though, some aircrafts took off the *USS Franklin* to strike an attack on his ships. They are spotted a few minutes later, as they prepared to drop their bombs on the two battleships. Fortunately, the damages will be minor and nothing will happen for the rest of the afternoon. However, Force C has been uncovered, and US Navy ships from the 7<sup>th</sup> Fleet gather in the Strait of Surigao to welcome the Japanese fleet.

Its American opponent, Rear Admiral Oldendorf, had deployed his overwhelming forces to gain the maximum advantage, barring the Strait with an incredible layer of PT boats, destroyers, and finally, the great guns of cruisers and no



Preparations for the dive

Philippine island



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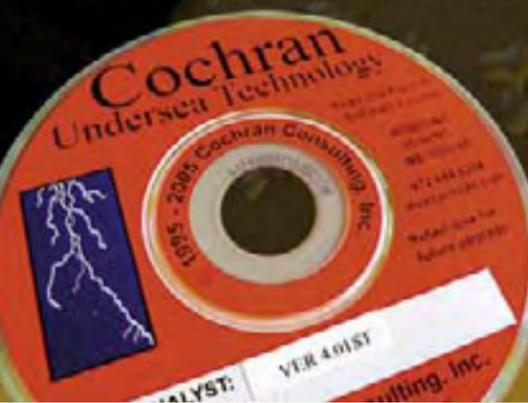
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## Yamashiro

the *HIJMS Mogami* has provided him with a report about the American forces and their location. Nevertheless, he knows that following the orders he has received will help Operation Sho-Go to succeed.

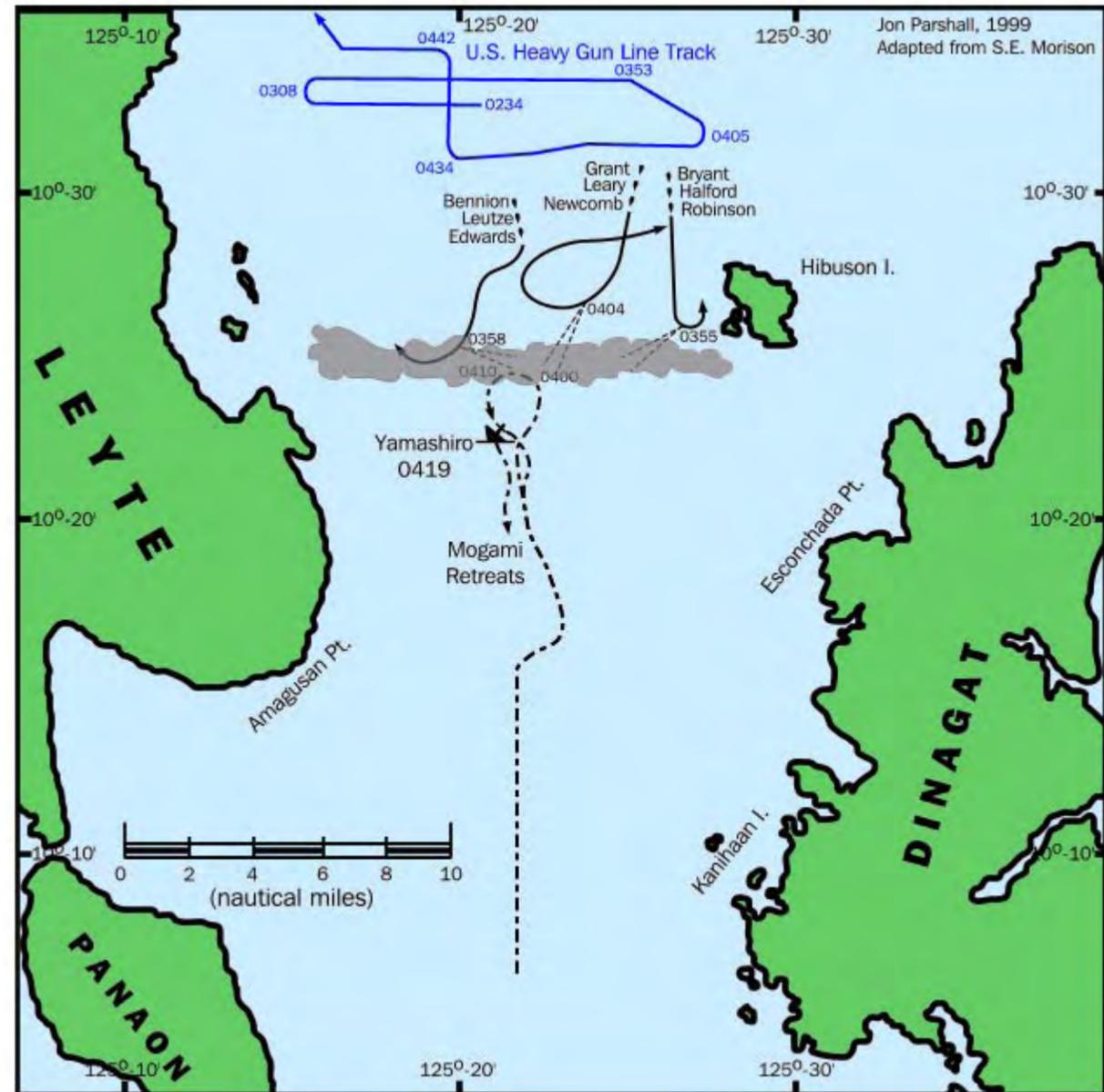
All of a sudden, US Torpedo Boats come from nowhere and directly aim at the battleships. As the night falls, the fight seems to last forever, finally ending around two o'clock in the night. But it's actually only a pause, waiting for the next phase of the battle...

Then, an hour later, the US destroyers start to launch their torpedoes, hit the *HIJMS Fuso*, breaking her in two parts. *HIJMS Yamashiro* also takes a hit but keeps on firing from all guns, trying to find the enemy in total darkness. Most of the Japanese destroyers are lost or crippled by this time.

Another hour and the remaining American force is within range of fire. All the battleships, some being veterans of the Pearl Harbour attack, start a terrific concentration of gunfire, and every size of projectiles, from 6-inch through 16-inch, come pouring into the few remaining Japanese ships.

Shells come down like rain all around Vice-Admiral Nishimura. Nevertheless, he relentlessly keeps his force on its course, trying to make it through the Strait, even if he knows now that his command is doomed.

In the chaos of the night surface battle of Surigao Strait, the *HIJMS Yamashiro* is shelled and torpedoed into ruin, dangerously tilting on one side. Only



a few minutes after the order comes to abandon the ship, the distressed ship suddenly capsizes and sinks stern first following a final hit from two torpedos in the starboard side amidships and aft. Aboard are Vice-Admiral Nishimura and most of her 1400 crew members.

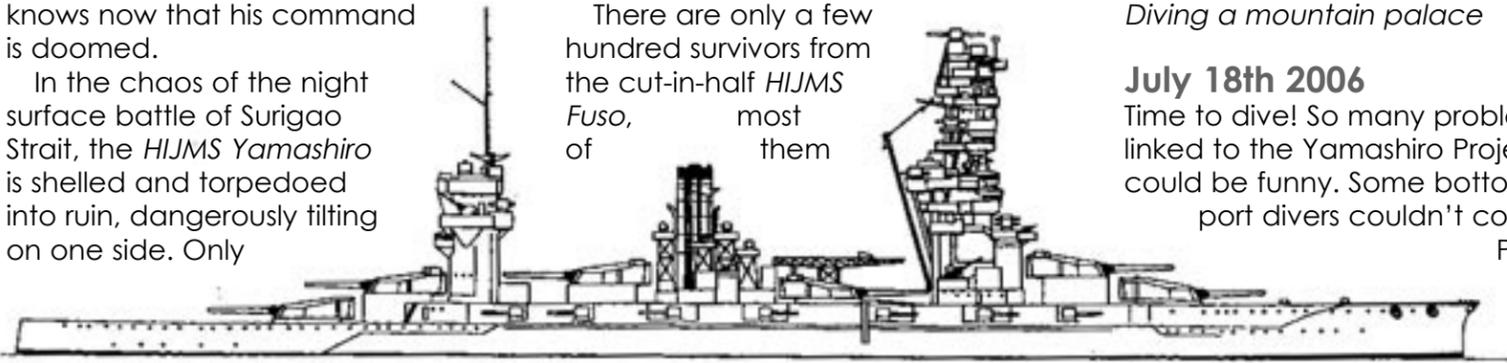
There are only a few hundred survivors from the cut-in-half *HIJMS Fuso*, most of them

refusing to be rescued by the US Ships, preferring to swim ashore to be butchered by the Philippines natives.

From all the Japanese Force C, only the cruiser *Mogami* and destroyers *Asagumo* and *Shigure* will remain operable. Every other ship had sunk.

### Diving a mountain palace

**July 18th 2006**  
Time to dive! So many problems are linked to the Yamashiro Project that it could be funny. Some bottom or support divers couldn't come to the Philippines,



*HIJMS Yamashiro*



Bruce doing his deco  
BELOW: Rob's dive boat

Yamashiro Project. The divers had to fight against it at the surface, during the descent and the ascent, and even on the bottom.

After a day of extensive search in the area, in order to avoid any confusion with other wrecks in the Strait of Surigao, the team was convinced that the huge profile on the echo sounder was the wreck of the *HIJMS Yamashiro*, as it also matches with side-scan sonar images and GPS locations found by previous expeditions (like the one conducted by the late John Bennett). None of these expeditions were able to explore the

wreck, mainly because of the current, but they all came back with a lot of useful information.

After several attempts to hook the boat on the wreck, Rob and the team decide to drop a shotline on the wreck. Quickly, Eveline Verdier, one of the support divers swims to the buoys to remove the excess line. There is no slack. The current pushes everything so hard that it will be very difficult for her to set up the deco line with the stage tanks.

Pim, Bruce and I start to gear up. A long process with the equipment used: dry suit, rebreathers (Ouroboros CCR for Pim, Inspiration CCR for Bruce, Megalodon CCR for myself), bail-out tanks, etc...

Even with the boat very close to the shotline, the strong current makes it very

hard for the divers to reach the buoys. At the surface, Pim has a 1st stage regulator O-ring that blows up at the last minute. The whole crew helps him to fix the reg, but it's already too late. After having swum hard against the current at the surface, he decides to abort the dive.

Bruce, who had some problems with the Hammerhead, decided to switch back to the normal Inspiration electronics, therefore limited in depth. He will stop at 120m/393fsw.

Only I can descend along the shotline that is now at a 45 degree angle. The only way to go down is to pull myself with the rope. That's the plan, but it's quite hard work even with all the tanks side-mounted and a configuration as streamlined as possible. Several times I had to stop for a few seconds to catch my breath, even with a very efficient pre-production radial scrubber in my Meg.

At 120m/393 fsw, I meet a big thermocline and the temperature drops from a comfortable 29°C/84°F to a chilly 22°C/71°F. It becomes darker, and the current does not decrease.

At 180m/590 fsw, the line is horizontal—well above the bottom. I follow it and discover a huge hull. My heart is beating as

Cedric learning to fly during deco



## Yamashiro

fast as a runaway train. My canister light has flooded and I now rely on a 10W HID light. The beam is narrow and hardly covers more than a small part of the impressive wreck. A quick check at my instruments will tell me that I just finished a very long 14 minute descent!

It's so dark and the wreck is so huge that it's difficult to have any clue about where I am. Some superstructures are

still intact, some are lying on the bottom. A tilted hull... It looks like the complete wreck sits on her side.

Unfortunately, after only a few minutes on the bottom, computers and tables clearly agree that it's time to start an ascent that will take 6 hours to complete.

The current is still there, the line still almost horizontal, and it takes quite a while to reach the first deco stop at 150m/490 fsw.

Above the thermocline, the water is warm and the visibility excellent. Bruce is still deco-ing some 40m/130 fsw above. Because of the current, we both use a Jon-line to relax a little bit while maintaining a constant depth.

The support divers bring down a plastic bag with drinks and magazines. They also visit the us to take some pictures. Everything looks fine, so far...

### 9m/30 fsw

The current is picking up big time, and I jump all over the place at the end of my Jon-line. It's made in Thailand but it doesn't break, fortunately, as other problems are waiting for me...

I suddenly notice that the oxygen level in my rebreather starts to drop. The oxygen tank is simply empty because of the high exertion level, much higher than



# wrecks



the worst case scenario. Another tank is plugged in the rebreather and the oxygen is now manually injected. But it looks like the injector leaks, even after having been checked multiple times. Buoyancy control becomes a problem. I have to exhale a lot, and I am losing quite a lot of gas. It becomes even worse at the shallower stops... Another empty oxygen tank, and one of the support divers has to bring a new one.

The last deco stop seems very long, filled with boredom and cold. The dry suit is full of water because of the last two hours of me spinning around at the end of the Jon-line like in a washing machine.

A very slow final ascent and I reach

the surface in a place that looks like it's in the middle of a storm... A lot of wind, big waves at the start of evening and a boat that tries to approach me is going up and down. A support diver jumps at the surface and catches all the tanks to help me to safely climb the ladder. As soon as I sit on the boat, everyone can see how tired I look. Nevertheless, they all want to congratulate the first (and only) diver on the *Yamashiro*.

The mood is quite good, even if all the divers have not been able to go to the bottom, this day or the next few. The team has done what they could to explore the *Yamashiro*. The spirit of the survivors just opened a window for us to visit the final resting place of the fallen. This window is now closed, and all divers have to respect that. There is no other explanation for all the problems that occurred during this expedition. In this trip were lost, broke or flooded:

- 1 Hammerhead Electronics for Inspiration CCR
- 1 video camera and its housing
- 1 Halcyon canister light
- 1 Poseidon regulator

- 2 anchors
- 550m of ropes
- 10 buoys and containers
- 2 dumbbells (??)
- 1 Otter dry suit
- 1 Decorder bail-out rebreather

The team also needed:

- 400kg of personal equipment
- 14 porters in various airports and ferry terminal
- 20kg of rice and chicken
- 54cans of Diet Coke and Pepsi Max

The tables used were designed by V-Planner and ANDI-GAP, with a 5/75 diluent and a progressive setpoint (1.0 on the bottom increasing up to 1.3 during deco). They were backed-up with VR3-VPM computers.

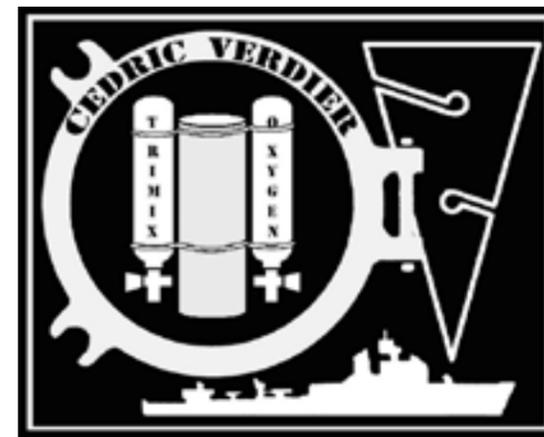
Thanks to Rob Lalumiere, Ross Hemingway, Eveline Verdier, the support divers. Congratulations to Anthony Tully for his so informative articles about the Battle of Leyte. Thanks to our sponsors: ANDI, PSAI, Golem Gear, Mermaid's Dive Center, OMS, Otter Dry Suit, Northern Diver, Cochran, RebreatherWorld Forum. ■

## About the Author

Cedric Verdier is the founder of the TRIADE Project, established in 1999, discovering and exploring more than 20 virgin wrecks located in the south of France between 70 and 130m (230 ft) and 430 fsw. In 2002, he was the first diver to identify and dive the British cruiser *HMS Manchester* off Tunisia. Amongst other dive firsts, he pushed the limits of the Sra Keow cave in Thailand in May 2006, using his Megalodon Closed Circuit Rebreather, to an Asia-Pacific cave depth record of 201m (660 ft). He is currently planning the *Yamashiro* Project, an international expedition aiming to



dive the Japanese battleship *HIJMS Yamashiro* sunk in the Battle of Leyte in the Philippines in November 1944 and resting at a depth of 200m (660 ft). Cedric is a PADI Course Director and a Trimix Instructor Trainer for IANTD, PSAI, ANDI, DSAT and TDI. He spends most of his time teaching cave and mixed-gas rebreather courses at the diver and the instructor level. He is a past Regional Manager for PADI Europe and DAN and has written five books and more than 150 articles about diving. As he is always travelling all over the world, you can mainly contact him by email at: [info@cedricverdier.com](mailto:info@cedricverdier.com)



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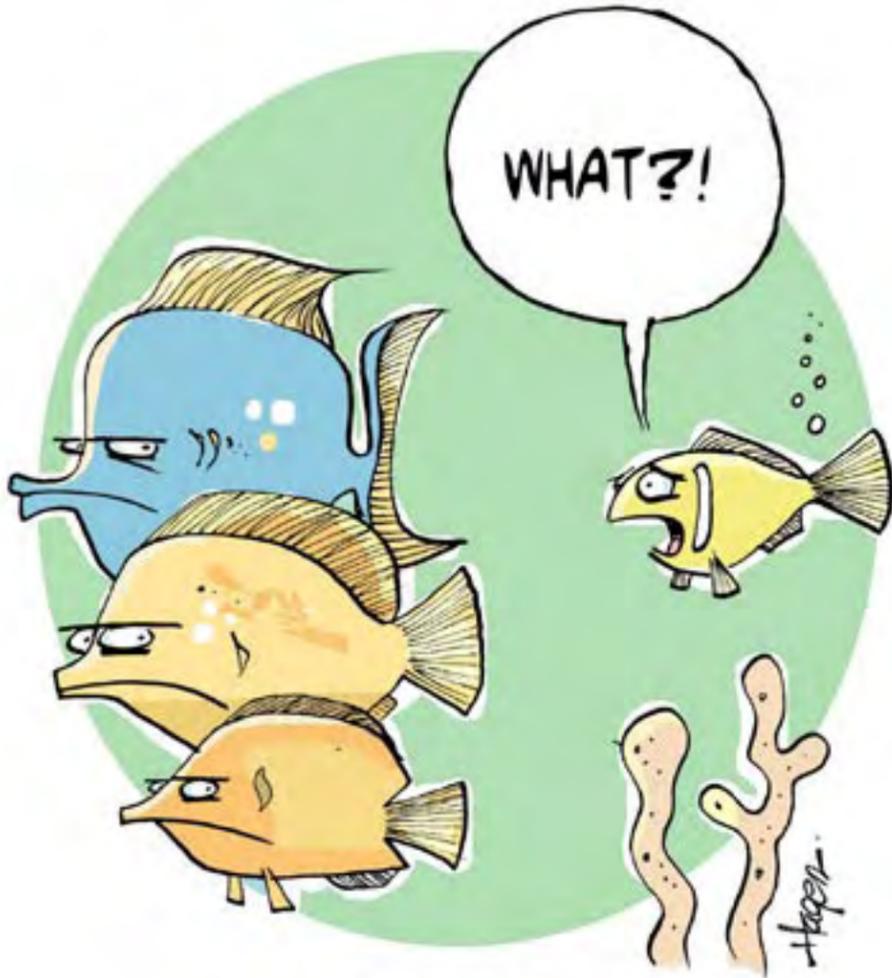
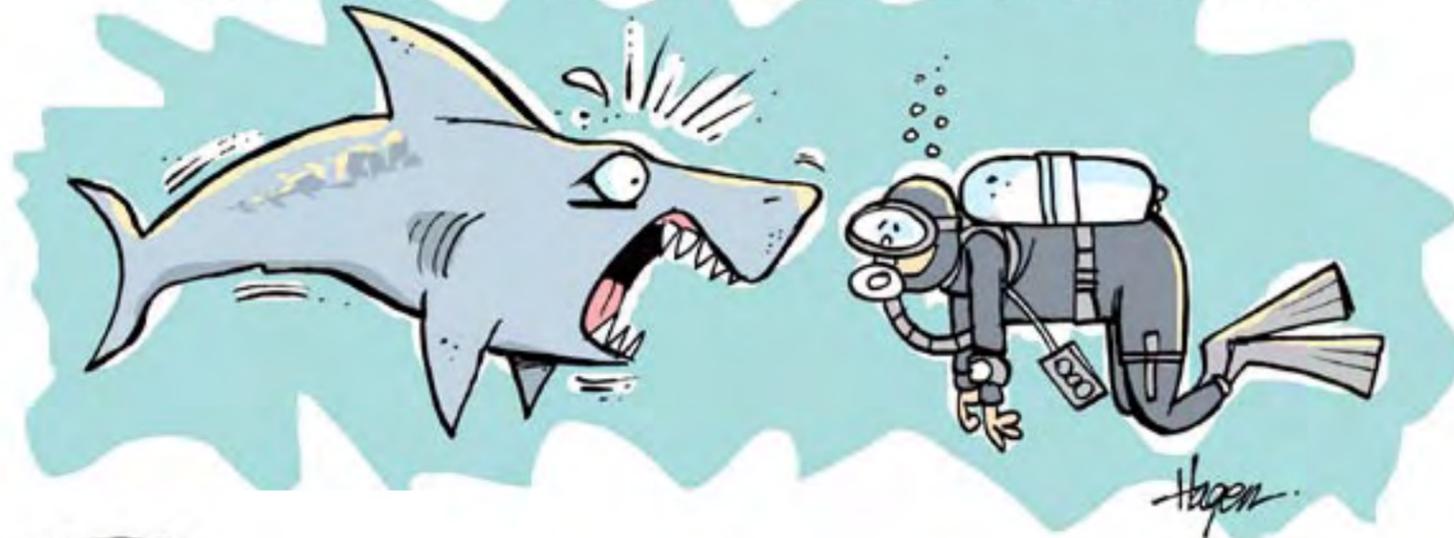
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## Ralph Hagen

### Canadian Syndicated Cartoonist Dives to a Different Toon

Ralph Hagen can remember the actual moment he started cartooning as if it were yesterday. Hagen says that he was about four when he saw a cartoon pencil sketch hanging on his grandfather's porch drawn by a second cousin of his, who eventually grew up to become a commercial artist. The drawing was a rendering of Alfred E. Neuman of MAD Magazine, exclaiming, "What, me worry? "

Hagen spent hours just staring at that cartoon, "trying to figure out how someone could use just an ordinary pencil and a piece of paper and come up with that". From that day forward, all he did was cartoon.

The young Hagen would cut open paper grocery bags for drawing paper and draw until there wasn't an inch of space left. In first grade, Hagen would turn over the handouts and draw before he had done the school work on the other side. "Now, why wouldn't my teacher and her wooden yardstick approve of that?" he kids.

Hagen sold his first cartoon at age 17, and thought, "Cool! People will pay money for these?



Bonus!" He was hooked and couldn't stop cartooning if he tried. Hagen said that if he lost his hands, he would draw with his feet — "those cartoons would just have to come out".

Hagen has been procartooning since 1976 when he landed a job as editorial cartoonist at his local paper. Hagen also did the color work on the strip, 'Mudpie' for renowned artist Guy Gilchrist, of 'Nancy' and

'Muppet Babies' fame. Hagen says that he owes Guy Gilchrist many thanks for entrusting him with his panel and all the support Gilchrist gave him over the years. "He truly is one of the best", says Hagen.

In the early years, ideas and punchlines were harder to come by said Hagen. He really had to work at it. But after 23 years of professional cartooning, Hagen seems

## Ralph Hagen Dive Toons



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to have taught himself a different way of thinking, "one that comes naturally now," says Hagen, "without effort." In fact, now he says it's hard to shut it off.

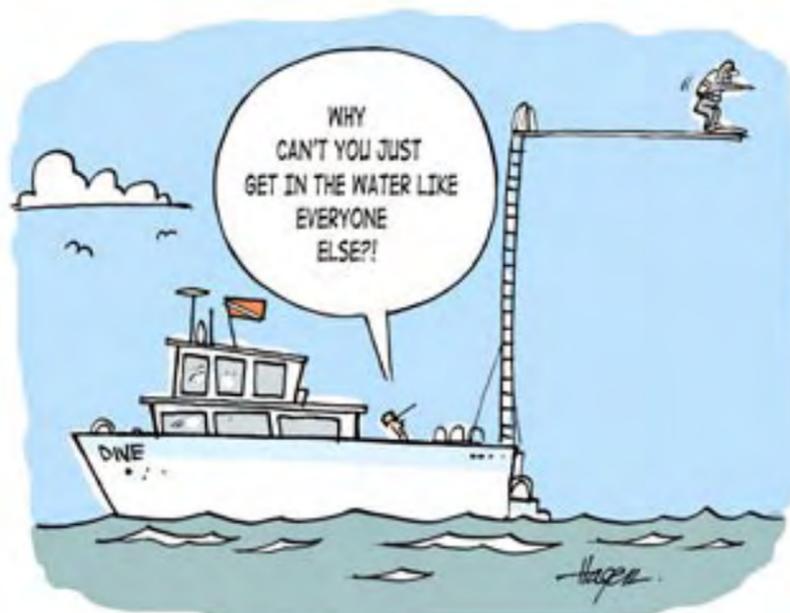
Currently, Hagen does editorial work for two papers as well as his panel SCREAMS syndicated by DBR Media. He freelances and has been published in hundreds of magazines and papers such as The Saturday Evening Post, The Reader's Digest and The Birmingham Post Daily. Hagen has also done illustration work for preschool books as well as assignment work for clients and businesses throughout the US and Canada. Hagen says, "I produce qual-

ity work and believe the customer's needs come first."

Ralph Hagen lives north of Edmonton, Alberta, Canada, with his wife, three kids, two horses and "the odd moose".

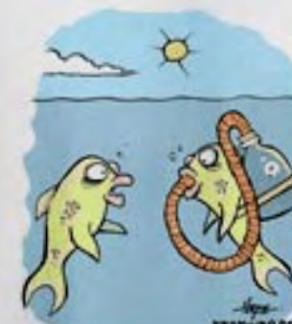
See the hilarious dive cartoons Hagen creates for X-RAY MAG on t-shirts, calendars, posters, mugs and tote bags. Visit X-RAY MAG's new online store at: [cafepress.com/xraymag](http://cafepress.com/xraymag)

For more information about the cartoonist, please visit Ralph Hagen's own website at: [www.hagenstoons.com](http://www.hagenstoons.com)



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