

Scuba Confidential :: UW Video in Black Water :: Avgerinos Vrazopoulos :: Yoshi Hirata



GLOBAL EDITION
May 2017
Number 79

Wrecks Lake Michigan & Presque Isle

Malawi Lake Malawi

Malaysia Tioman Island

Ecology Bluefin Tuna

Profile Becky Kagan Schott

NORTH AMERICA'S Great Lakes

COVER PHOTO BECKY KAGAN SCHOTT

DIRECTORY

X-RAY MAG is published by AquaScope Media ApS
Copenhagen, Denmark
www.xray-mag.com

PUBLISHER & EDITOR-IN-CHIEF
Peter Symes
Editor@xray-mag.com

PUBLISHER, MANAGING EDITOR
& CREATIVE DIRECTOR
Gunild Symes
Gunild@xray-mag.com

ASSOCIATE EDITORS
Scott Bennett, Toronto
Scott@xray-mag.com
Catherine GS Lim, Singapore
Cat@xray-mag.com
Michael Menduno, Berkeley
Michael@xray-mag.com

Russia - Moscow
Andrey Bizyukin, PhD
Andrey@xray-mag.com
Svetlana Murashkina, PhD
Svetlana@xray-mag.com

ASSISTANT EDITORS
Rosemary E Lunn, London
Roz@xray-mag.com
Barb Roy, Vancouver
Barb@xray-mag.com
Don Silcock, Sydney
Don@xray-mag.com

USA
Larry Cohen, New York City
Larry@xray-mag.com
Kelly LaClaire, Portland
Kelly@xray-mag.com

ADVERTISING
ASIA-PACIFIC
Juliette Myers, Sydney
Juliette@xray-mag.com

UNITED KINGDOM
Rosemary E Lunn, London
Roz@xray-mag.com

USA & INTERNATIONAL
Matthew Meier, San Diego
Matt@xray-mag.com

Contacts page: Xray-Mag.com

SENIOR EDITOR
Michael Symes, Ph.D. - *Science*

SECTION EDITORS
Scott Bennett - *Travel, Sharks*
Andrey Bizyukin, Ph.D. - *Features*
Larry Cohen - *Photo & Video*
Kelly LaClaire - *Marine Mammals*
Catherine GS Lim - *News, Books*
Roz Lunn - *Equipment News*
Michael Menduno - *Tech*
Ila France Porcher - *Sharks*
Don Silcock - *Photo & Video*

COLUMNISTS
Pascal Bernabé - *Tech Talk*
Rico Besserlich - *UW Photo*
Matt Jevon - *Opinions*
Steve Lewis - *Opinions*
Gareth Lock - *Training*
Andy Murch - *Shark Tales*
Mark Powell - *Tech Talk*
Simon Pridmore - *Opinions*
Lawson Wood - *UW Photo*

CONTRIBUTORS THIS ISSUE
Jim Abernethy
Scott Bennett
Josh Bernstein
Andrey Bizyukin
Jon Bojar
Antonio Busiello
Gerardo del Villar
Jeffery Gallant
Yoshi Hirata
Jennifer Idol
Matt Jevon
Mike Johnson
Steve Lewis
Catherine GS Lim
Michael Menduno
Brandi Mueller
Ila France Porcher
Simon Pridmore
Becky Kagan Schott
David Schott
Rich Stevenson
Trisha Stovel
Gunild Symes
Peter Symes

Diver on wreck of SS Florida, Lake Huron, Michigan, USA. Photo by Becky Kagan Schott



12
NORTH AMERICA'S
GREAT LAKES
BY STEVE LEWIS

52
MALAYSIA'S
TIOMAN ISLAND
BY JENNIFER IDOL

columns...

73
SCUBA CONFIDENTIAL:
AIR SUPPLY EMERGENCIES
BY SIMON PRIDMORE

14
SHIPWRECKS
OF PRESQUE ISLE
BY BECKY KAGAN SCHOTT

67
AVGERINOS VRIZOPOULOS:
REBUILDING GREECE'S
DIVE INDUSTRY
BY PETER SYMES

85
SHARKS: TURNING
FEAR INTO LOVE
BY ILA FRANCE PORCHER

21
LAKE MICHIGAN
SHIPWRECK MYSTERIES
BY BECKY KAGAN SCHOTT

78
ATLANTIC BLUEFIN TUNA:
FERRARIS OF THE SEA
BY ANTONIO BUSIELLO

88
TECH TALK: WRONG
TEACHER, WRONG HABITS
BY MATT JEVON

27
PROFILE:
BECKY KAGAN SCHOTT
BY MICHAEL MENDUNO

98
PORTFOLIO
YOSHI HIRATA
EDITED BY GUNILD SYMES

36
LAKE MALAWI: FRESHWATER
DIVING & AFRICAN SAFARI
BY SCOTT BENNETT

plus...
EDITORIAL 3
NEWS 4
TRAVEL NEWS 9
EQUIPMENT NEWS 64
BOOKS & MEDIA 84

Not yet subscribed to
X-RAY MAG? Sign up now!
It's FREE! QUICK! EASY!
Click here...

SUBSCRIPTION
X-RAY MAG International Edition in English is FREE
To subscribe, go to: www.xray-mag.com
COVER PHOTO: Diver on wreck of Windiate,
Thunder Bay, Lake Huron, Michigan, USA
by Becky Kagan Schott





**ASIA DIVE
CONFERENCE**
www.adcon.com.my

13 - 14 MAY 2017
10AM - 7PM
PUTRA WORLD TRADE CENTRE
KUALA LUMPUR • MALAYSIA

KNOW YOUR DIVING REGULATOR

*"Evaluate and Calibrate
Your SCUBA Open Circuit System"*



Main Speaker
WILLIAM ONG

ITDA Regional Director / Dive Scuba Technician Trainer

Brand Speakers:



AHMAT NAJAH RAHMAT
SDI Instructor Trainer
RAID Instructor Trainer
Cressi Distributor Malaysia



MICHAEL LIM
Project Leader, Producer &
Marine Sports Consultant



TAKUYA TORII
INON Inc.
Corporate Messenger



Y.K. SIM
Owner and Founder of
Rainbow Runner Sdn Bhd



RAJA RAZIS

PADI Scuba Instructor
Founder of Downtown Scuba
Partner at Oceanic Photolab



EPHRAIM ANG

Distribution Manager



Ipah UID

OWSI Scuba Instructor /
Underwater Photographer

DIVE INTO POSSIBILITIES

To register please visit : www.adcon.com.my

Close encounters

Few issues have remained so contentious as interactivity with wildlife. Should we keep a wide berth? Can we go close? May we touch? Do we harm animals if we do interact or change their natural behaviour in any detrimental way?

There can no longer be any question that many species benefit from, or may outright need, safe havens and reserves for their long-term protection or even survival as species, as human developments and infrastructure keep encroaching on their habitats or migratory pathways. That is the sad consequence of the abuse we have subjected nature to, in many regions across the globe.

And surely there have been plenty of instances in which ignorant city dwellers, intoxicated college kids on spring break, and other mindless abusers have engaged in irresponsible or reprehensible behaviour resulting in harm to wild animals.

But what about all of us who are mindful and able to go about nature in a respectful manner?

Should we be allowed to approach and even touch wild animals, say the manatees in Florida to name one ever contentious issue? As long as the animals have a safe haven to which they can retire and be left completely in peace, I would say, why not? If the animal approaches you and actively seeks your attention. It is a wonderful experience, which instils in us a much deeper appreciation for these gentle creatures, and with it, an understanding about why

they should be protected. Real harm can be inflicted if we lose interest and stop caring about how our natural resources are treated.

If we put up some virtual glass wall through which we observe nature, it becomes reduced to some reserve we can only observe from a remote distance. In which case, we could just as well watch nature shows on TV, comfortably seated in our soft couches, with a jar of cookies in our lap—which is unhealthy on so many levels.

What about baiting and feeding? There are plenty of valid reasons not to feed wild animals. My own main reservation is when it alters the natural behaviour of the animals and affects their ability to feed themselves. Feeding can cause death by preventing a species from migrating. It can also cause harmful interaction between species that usually do not compete for food. And so on.

Yet there can be little doubt that without food in the water, most species of sharks would not come close to divers, and the many close encounters with sharks enjoyed by thousands of divers, which has allowed them to learn through personal experience the true nature and beauty of the species, would not have been possible without the use of bait or some scent trail in the water.

I am not a great fan of sessions in which sharks are outright fed anything by morsels. Yet I have to admit to having immensely enjoyed and felt enriched by very

close encounters with majestic tiger sharks being lured in by scent trails and handed a few morsels.

So where do we draw the line? In the case of the tiger sharks, while they are obviously habituated to divers, they are clearly not dependent on the handouts given, and in between the dive seasons, they obviously go about their lengthy migrations, conducting their usual tiger shark business. I do not see that any harm is being done to the sharks, which seem to be getting something out of the encounter too.

Intriguingly, it may not even be about food at all. As Ila France Porcher reports in this magazine, Jim Abernethy—one of the pioneers of shark interactions—came to notice that if there was no food in the water, the sharks became calmer and friendlier and that sharks preferred affection to food. Who would have thought? And therein lies a point. We still have a lot to learn, and in this case, we would never have found out if we were not in the water and up-close, in the first place.

That said, always be mindful and careful, and don't act stupidly. There are plenty of other animals, some inconspicuous, that will bite or sting if approached or touched.

Stay educated and stay safe.

— Peter Symes
Publisher and
Editor-in-chief



News edited
by Peter Symes

NEWS

from the deep

Fish need friends too

Zebrafish exhibit less fear in a threatening situation when they can see and smell their shoal than when they are alone.

Social groups offer a safer environment in the presence of threats and the presence of members of the same species is known

scarce.

A new study led by Rui Oliveira, researcher at ISPA-Instituto Universitário, Instituto Gulbenkian de Ciência, and Fundação Champalimaud, demonstrated that zebrafish need social support to overcome adverse circumstances. In this study, the authors sought to identify the neural mechanisms that underlie the social support phenomenon in zebrafish.

First, the researchers showed that zebrafish exhibit less fear in a threatening situation when they can see and smell their shoal than when they are alone, revealing the presence of the social support phenomenon in this species.

Next, the investigators sought to determine whether visual or olfactory cues had more impact in minimizing the response of fear in a threatening situation. They

found the visualization of a shoal is more effective in decreasing fear response.

Regarding neural mechanisms underlying reduced fear behavior in the presence of other members of the same species, a few studies in mammals have shown a lower activation of brain areas involved with the experiencing of emotions. However, the neural basis of the buffering behavior has been poorly investigated.

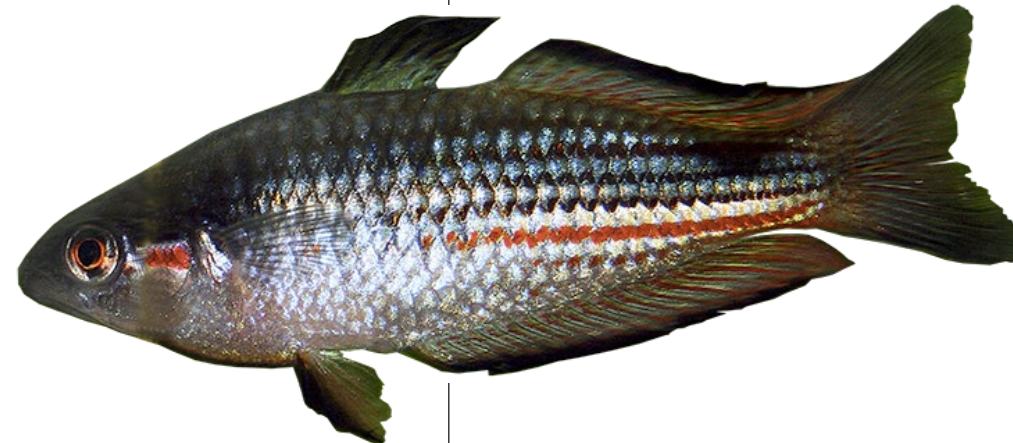
This study showed that the social support phenomenon in zebrafish triggers a specific pattern of activation in several brain areas (pre-optic area, amygdala) that are also involved in the same phenomenon in mammals. The similarities between the activated brain areas suggest zebrafish as a model organism for research on social support. Although zebrafish's social support does not have the complexity of the social support verified in humans, research in zebrafish will allow us to explore in depth the neural mechanisms involved in this social behavior. ■

to dampen the response to a detected threatening event, a phenomenon named *social buffering*.

This social phenomenon has been well documented in mammals, but its study in other vertebrate taxa such as fish is still

Zebrafish need social support to overcome adverse circumstances.

Fish are brainy



Fish remember

Animals that are familiar with their environment have been reported to have greater survivorship for a number of reasons related to their knowledge of the terrain, which they recall from memory. Many fish can recall details for a very long time. For instance, it has been demonstrated the crimson-spotted rainbowfish (*Melanotaenia duboulayi*) can remember escape routes to evade danger for at least 11 months.

Fish know time

Researchers have also trained goldfish to push a lever that worked for one hour a day in exchange for a reward. The fish learned to take advantage of this window of opportunity, demonstrating that they could keep track of time, learn and remember.

Fish solve puzzles

In another experiment guppies (*Poecilia reticulata*) demonstrated their ability to figure out a complex maze consisting of six consecutive T-junctions, and over a five-day training period, they got faster and made fewer errors. ■

Most aspects of fishes' cognitive abilities are just as good as most terrestrial animals, and in many cases exceed them.

— Culum Brown,
Macquarie University



GULEN
Dive Resort

Pheriphylla

Nudibranch

Wrecks

All year around

www.gulendiveresort.com
post@gulendiveresort.com

Photo: Alex Dawson

Following sea anemone theft, the fight was often followed by mating

Boxer crabs will steal another crab's anemone and rip it in half

When these crabs need an anemone, they will fight to steal one from another crab and then both crabs will split their anemone into two, creating identical clones.

Boxer crabs carry sea anemones around like pom-poms to use as stingers to protect themselves from predators. They also use the anemones to sting food, which they then bring to their mouths and eat. The crabs will even rip an anemone in two if it only has one. The anemones are so important to the crabs that even small crabs will start fights with bigger crabs to steal an anemone.

Battles

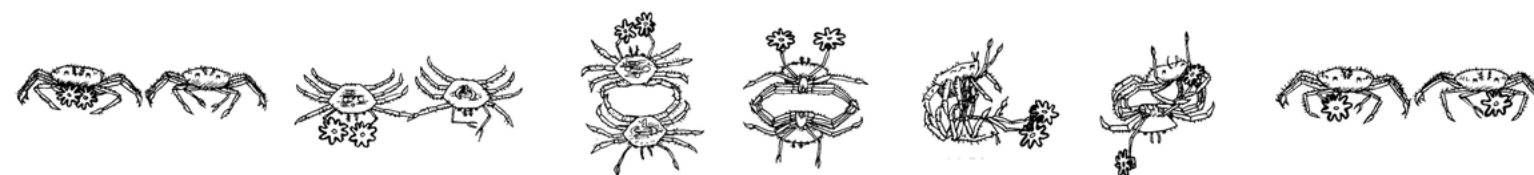
Experiments by researchers based at Bar-Ilan University in Israel

demonstrated, when two crabs are placed together, one holding sea anemones and the other without, sea anemone theft is a highly common behavior. Interestingly, the initiation of contact was irrespective of sea anemone possession. One might have thought that this would be less likely due to the ap-

parent "high value" of their sea anemones.

Feeling each other up

Upon initial contact, the initiator always "feels" the opponent's leg. In several trials where contact was made but no fight was initiated, the crabs separated after this leg contact phase. Pre-fight assessment is a well-known behavior, often dictating whether or not animals will commence fighting. Where battles occurred, they were at times quite violent in their appearance. However, in no instances did the researchers observe a crab being



Sequence of a fight and theft of anemone, as videographed by researchers. Video can be seen on [this link](#).

injured or killed. In fact, following sea anemone theft, the fight was often followed by mating.

Splitting an anemone

Sea anemone splitting appears to be a well-orchestrated behavior, conducted with apparent care for the final outcome, i.e., two new viable sea anemones.

The crab would typically hold the sea anemone across the column, with the pedal disc facing upward and the oral disc and tentacles facing downward. The crab then took hold of the sea anemone with its free claw, thus holding the sea anemone in the aforementioned downward conformation between both claws. Next, the crab slowly began stretching the sea anemone between both claws in an outward motion, utilizing its front walking legs in order to surgically tear the sea anemone in half. Occasionally, the crab momentarily ceased the stretching to re-grasp the sea

anemone in what appears to be the most centered conformation possible, so that the final splitting will produce two equal parts.

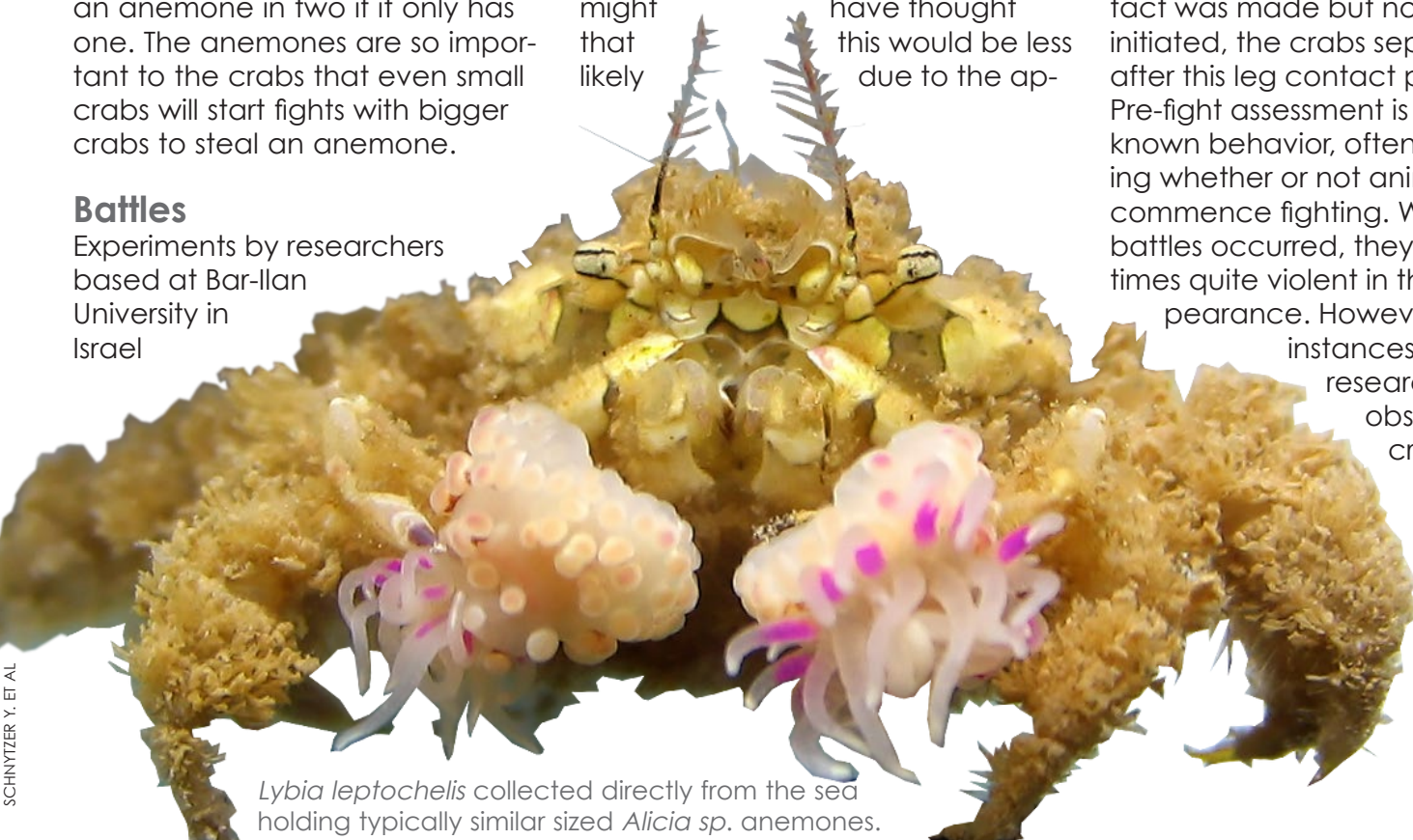
Pruning them to size

But it is not all bad for the anemones. In return, the anemones get carried around, which may enable them to capture more food particles with their tentacles. According to the scientists the crabs deliberately keep the anemones to a small size, stunting their growth to "bonsai sea anemones" so that they remain easier to hold.

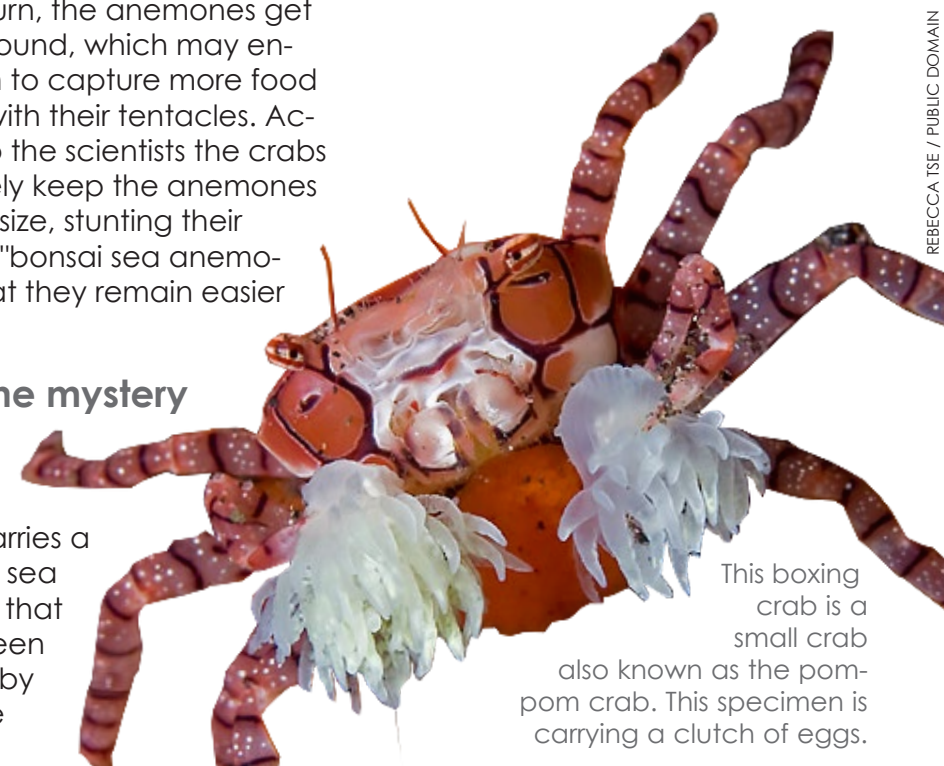
Anemone mystery

The boxer crab that the team studied carries a species of sea anemone that has not been observed by itself in the

wild. Because these boxer crabs are always observed with them, the researchers say they may all obtain them by stealing from each other—and it could actually be how the anemones reproduce. ■ SOURCE: [PEERJ](#)



Lybia leptochelis collected directly from the sea holding typically similar sized *Alicia sp.* anemones.



This boxing crab is a small crab also known as the pom-pom crab. This specimen is carrying a clutch of eggs.

REBECCA TSE / PUBLIC DOMAIN

Project Seahorse wants your seahorse photos

Photos by Brandi Mueller

Project Seahorse has pioneered citizen science for seahorses, releasing in 2013, iSeahorse, an app allowing divers and snorkelers to log their seahorse encounters.

This program currently has over 450 contributors from around the world with nearly 2,200 seahorse observations. The program has played a major role in extending the reach of scientists' understanding of where seahorses are found.



Identifying seahorse hotspots

One of the key goals of iSeahorse (iSeahorse.org) is to identify seahorse "hotspots"—areas where wild populations are threatened—and help establish local monitoring projects to track and protect them. As recreational divers, you can play an important part in monitoring a known population of seahorses.

Project Seahorse encourages you to establish your own local monitoring project, and will support you in getting started. To start your monitoring project, please visit iSeahorse.org/trends or email iSeahorse@projectseahorse.org.

SyngBio 2017 conference

Project Seahorse wants to expand its reach and engage more divers in these

critical outreach ventures. So, members of the staff will be speaking about the organization's work at an upcoming conference. Project Seahorse invites you to participate in SyngBio 2017, the third meeting of researchers and other professionals working to understand the unique biology of Syngnathid fishes (seahorses, pipefishes, pipehorses and seadragons).

SyngBio 2017 (Syngbio.squarespace.com) will be held in Tampa, Florida, USA, 14-19 May 2017. It is organized by the University of Tampa and co-hosted by Project Seahorse at the University of British Columbia, Canada, and the Florida Aquarium. Project Seahorse will be exploring the theme "Fantastical Fishes: Seahorses, Pipefishes and Seadragons into the Future," providing an opportunity for the wider scientific community


(including those in research, husbandry and aquaculture) "to come together and share stories and insights towards a better understanding and global management of these creatures".

Keynote speakers and presentations (Syngbio.squarespace.com/program/) at the conference will cover several topics in seahorse, pipefish and seadragon biology, including physiology, phylogenetics and phylogeography, genomics, syngnathid breeding programs and aquaculture, sexual selection and mating systems, behavior, conserva-

tion and management, and species identification and taxonomy. Participants will include scientists, aquarium and aquaculture professionals, students, members of the diving community, and government officials dedicated to understanding and protecting the unique biology of seahorses, pipefishes and seadragons. ■

For more information and registration, go to: Syngbio.squarespace.com.









Your Buddies dive into Summer!

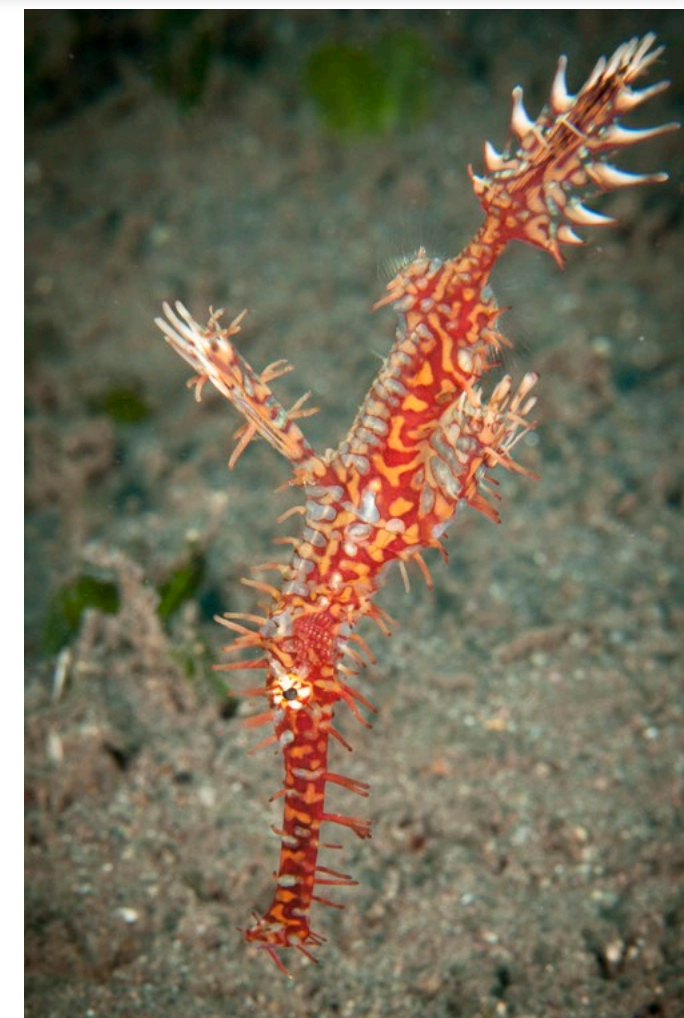
It's time for Summer Holidays;
book any of our packages and
get three 1-tank boat dives and
breakfast for FREE!

Start planning now on
www.buddydivedominica.com/summer



www.buddydivedominica.com
Toll free US/Canada: 1-866-GO-BUDDY
International Reservations: +599-717-5080



A Kids Scuba Malaysia instructor and Diveheart volunteer assist a visually impaired participant (right); instructors, volunteers and participants pose for a group photo (lower right), with director Hj Syed Abd Rahman standing in the center, during the Diveheart Scuba Diving Experience held in Kuala Lumpur in March.

Diving for the visually impaired

Photos courtesy of Kids Scuba Malaysia

Diveheart Malaysia provides zero gravity experience for visually impaired in Kuala Lumpur.

Diveheart Malaysia ambassador and director of Kids Scuba Malaysia, Hj Syed Abd Rahman, with the help of Kids Scuba PADI IDC staff instructors and volunteers from the Diveheart Kids Scuba Dive team, had the opportunity to train two visually impaired participants from University Malaya, during the Diveheart Scuba Diving

Experience held in March 2017, at the Maybank Training Academy swimming pool in Bangi, just 30 minutes from Kuala Lumpur.

Muhammad Firdaus, an executive with the Student Affairs and Alumni Division of University Malaya, together with En Yusri, a degree student—both visually impaired—had a pool area orientation and briefing, with familiarization of scuba equipment by touch, before they experienced zero-gravity buoyancy and breathing underwater on scuba for the first time.

A first for instructors too

This special program was made

possible with the help of friends, professional PADI divemasters and instructors from Kids Scuba Malaysia. For several of the volunteers, it was the first time they had dived with persons with disabilities. Roslan Wari, a PADI Divemaster with Kids Scuba and a Diveheart volunteer, said: "After more than eight years of diving, this is my first time diving with the dis-

abled, let alone assisting. It was an awesome experience. None will surpass this experience. No words can express how I feel. It was truly amazing. I will definitely continue to assist in the Diveheart program. Most probably, I will even take up the Instructorship course."

PADI Assistant Instructor with Kids Scuba and Diveheart volunteer Colin Murray reflected on the unique aspects of the event: "It was a great experience for me and something quite new," he said. "I know that the students really enjoyed it too. I think the best part was to appreciate that a visually impaired person can get so much benefit from scuba, even though we might think of it as a very visual sport. The sense of freedom and ability to move in three dimensions was particularly something I could tell that the students enjoyed. I would certainly recommend scuba diving to any visually-impaired person who wants to give it a try."

Another Diveheart volunteer, Hazmie HussienMoh, PADI Divemaster trainee with Kids Scuba, noted the infectious enthusiasm of the participants: "The best part was seeing their will; their actions really show that they are passionate with what they do and I would definitely recommend others to try joining a Diveheart program and experience it for themselves."



Director now national advisor

Diveheart Malaysia ambassador and director of Kids Scuba Malaysia, Hj Syed Abd Rahman, has recently been appointed to the position of Advisor to the National Recreational Scuba Diving Council (NDC) of Malaysia, specifically overseeing the diving standards, compliance and rating of all scuba diving agencies in Malaysia, in line with the ISO international standards on scuba diving. The NDC has recently been set up by and administered directly under the Ministry of Tourism, Arts and Culture of Malaysia, with the objective "to ensure that diving makes a significant contribution to the tourism industry."

Rahman said that the key issues that are to be addressed include: safety standards, environmental performance, marketing and promotion of diving in Malaysia, collection of industry data, policy



advocacy and industry development. Another goal of the NDC is "to ensure our Malaysia diving industry is sustainable and also beneficial for scuba diving stakeholders," said Rahman. ■

For more information, please visit Kids Scuba Malaysia at: **Kidsscuba.com**. Or visit Diveheart at: **Diveheart.org**.



Dive instructor gives hands-on briefing of scuba equipment to visually impaired participants of the event

Passport Diver

The story of the National Association of Underwater Instructors (NAUI) Worldwide begins with a shared vision of what quality scuba training should be and a commitment to "Dive Safety Through Education." In staying true to these values, NAUI continues to develop and implement new programs intended to introduce people around the world to the world of diving.

NAUI is excited to announce the revision of its NAUI Passport Scuba Diver program, with an effort to further promote dive education and engagement worldwide. This unique program is intended to allow Passport holders to dive during their very first training session!

"The NAUI Passport Scuba Diver program has existed for more than two decades, yet its full value has not been fully realized by most members," said NAUI's

Director of Marketing, Derik Crofts. "The program relaunch not only increases opportunities for the public to become better acquainted with the quality of NAUI training, but it also provides them an opportunity to experience diving in settings and at a pace with which they are most comfortable."

For first-time divers

The NAUI Passport Scuba Diver course is EUF/ISO certified and approved as a Level 1 "Supervised Diver" program. This makes the NAUI Passport Scuba Diver equivalent to the entry level "Scuba Diver" certification programs of several other training agencies. This program provides an opportunity to learn about the value of NAUI training in a flexible and cost-effective manner. To do this, the Passport contains log pages for divers

to use on scuba trips to conduct "supervised" diving activities.

With that in mind, the NAUI Passport Scuba Diver Program makes diving accessible and convenient for first-time divers. Upon successful completion, the student may continue to enjoy scuba diving at resorts worldwide under the direct supervision of a NAUI Dive Leader for up to 12 months. To keep their Passport active, students simply log more dives! In addition, individuals with an active Scuba Passport may be able to apply their Passport training and experience toward completing a NAUI Scuba Diver Certification Course.

Environmental awareness

To keep diving enjoyable and interesting, each log page contains a section for environmental awareness stamps.

Collecting these stamps helps promote diver awareness and continued education by encouraging participants to conduct dives in different environments and with various environmentally-focused objectives. One stamp, NAUI Local Awareness, is specifically designed to encourage diver engagement with their local NAUI dive operator and is only obtained by participating in a dive with a local NAUI Affiliate.

Flexible and cost-effective

NAUI strives to provide consumers with an opportunity to learn about the value of NAUI training in a flexible and cost-effective manner. To do this, NAUI includes a Passport in each of its renewed Affiliate packets; after which, additional Passports can be purchased at discounted pricing.

Passports are also distributed at consumer shows where NAUI participates. The intent is for the physical Passports and Passport Scuba Diver eLearning to be easily available to consumers and encourage them to pursue further training and NAUI Passport Scuba Diver certification alongside a NAUI professional.

The NAUI Passport Scuba Diver program consists of three components:

1. NAUI Passport Scuba Diver eLearning and/or academics

2. NAUI Passport Scuba Diver Confined Water Training
3. NAUI Passport Scuba Diver Open Water Training

Once all three components are completed, the diver's Passport agreement is signed by the certifying instructor and Passport holder. When registered by the certifying instructor, the NAUI Passport Scuba Diver is ready to explore a world of excitement, fun and beauty. So, what are you waiting for? Dive in and get your Passport to the underwater world today!

To learn more about the relaunch of NAUI's Passport Scuba Diver program, complete with a new logbook, certification card and support materials that include eLearning, go to Nau.org/certifications/introductory/try-scuba/ and/or contact the Training Department: training@nau.org or call: (+1) 813-628-6284.

Look for a NAUI Affiliate or Instructor near you at Nau.org/locate-dive-centers/.





Edited by
Peter Symes

Persona Non Grata

"What makes you think you have the right to take work away from an American teaching the same program?"

In early April, I was banished from the United States and forbidden entry for any reason for five years. My crime was having the wrong visa. Turns out, if you are conducting training in the US, you need a work visa specifically for the type of work you are doing. In fact, you may even need separate visas for every teaching trip.

Text by Steve Lewis

Now that the dust has cleared sufficiently for me to see again, I would like to share my experiences with you to perhaps make sure something similar does not happen to you.

For almost 20 years, I have conducted technical diving classes at US sites. In the early days, my students were about 50 percent Canadian divers. But over the years, my reputation grew south of the border and I would teach more and more Americans, seasoned with an assortment of Brits, Spanish, French, Dutch, Chinese, Thai and Germans—most of them at sites in north Florida, the Keys, the West Coast, New England and the Great Lakes.

Mea culpa

It turns out, that the visa I had for doing consulting work, gives no permission at all for teaching technical scuba diving, even though my company does both—consulting and training. So for 20 years, I have been illegal. Mea culpa! Finding out was not a pleasant experience.

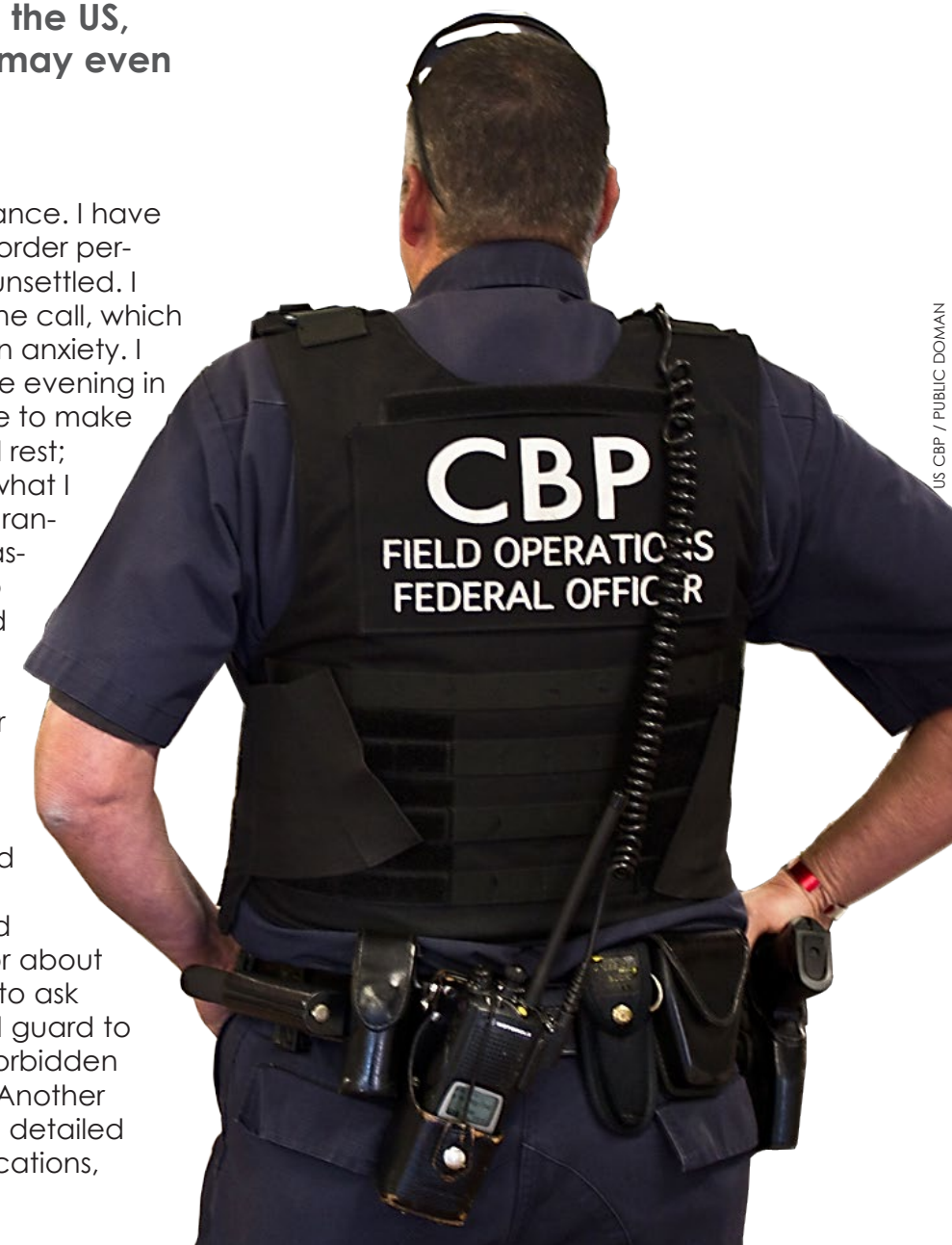
Friday, March 31, I stayed with a friend who lives on the west side of Toronto; and early the next morning—very aware it was April Fool's Day—drove out of her driveway to start a two-week trip to Marianna to teach a RAID Cave 1 class and a Hollis P2 user program. I was driving rather than flying because it was the time of year to bring back dive gear, which seems to migrate south piece by piece during the Canadian winter. My storage unit is not packed, but more full of gear, clothes and guitars than it should be.

Inspection not random

The border was busy by the time I made Detroit, and I could not see the NEXUS line. I waited. Sometimes I kid myself that I have a sort of spider

sense—a whiff of clairvoyance. I have crossed the US-Canada border perhaps 300 times, but I was unsettled. I put it down to a brief phone call, which triggered a little separation anxiety. I had a hotel booked for the evening in Tennessee, and lots of time to make it for check-in and a good rest; so having to pull over for what I figured was a routine and random inspection was no hassle. But when I walked into the inspection station, and the officer greeted me, it became very clear that this was neither routine nor random.

He had a copy of my teaching schedule, taken from my website. He asked me a couple of questions, asked me to sit down. And essentially disappeared for about an hour and a half. I had to ask permission from an armed guard to use the bathroom. I was forbidden to use my mobile phone. Another interview... with way more detailed questions: times, flights, locations,



US CBP / PUBLIC DOMAIN

US CBP / PUBLIC DOMAIN



US work visa applications can be a complex issue. Different types of visas include: H-1C (nurses), H-2A (agricultural workers), H-2B (non-agricultural workers), H-3 (special education training), D-1 (crew visa), L-1 (managerial visa), O-1 (extraordinary abilities), P-2 (temporary entertainer visa), Q (international cultural exchange), E (commerce or trade), R-1 (temporary religious worker), and so on...



TRAVEL.STATE.GOV / PUBLIC DOMAIN

students, dive sites. The kicker was a simple: "What makes you think you have the right to take work away from an American teaching the same program?"

I wrote the program

I explained, I wrote the program so it's maybe a special case, and in any event, surely consumers have the choice of which instruc-

tor they would prefer to have teach them. That did not sit well. More questions about friends, family (I have family in California and three step-kids with dual nationality), plus a large network of friends and colleagues in the States. I was asked why I knew so many Americans, did I ever have a Green Card, and what was the nature of my consultancy.

A tip-off?

He had a file in hand throughout the interview. It seemed to me the whole thing was a response to a tip-off. I started to think who could have been so pissed at me to tell the authorities to watch out for me. The list of names was short, but I simply let it go. Not worth the effort and grief of finding out. Interview over, another wait. This time for about five hours.

I had managed to get a text to my ex-wife explaining why I could not call our niece to wish her happy birthday. I wrote: "Locked up at border. Hours waiting. I think I might be going to jail." She asked if she could call me.

Freed back to Canada

After seven hours, fingerprinted, mug-shot, read my sentence of five years without permission to enter the US, the exceptions

"I believe you made a genuine mistake, but we have been told to throw the book at everyone... my hands are tied."

"You screwed up. Sorry to meet you this way, you seem like a good guy. Welcome to the new America..."

explained to me, I was finally told I was free... I was going back to Canada. I was calm. I was relieved. I simply wanted

to go home and decompress.

With his supervisor out of the room for a minute, the officer who had dealt with me from the very beginning told me that if it were up to him, he would slap my wrist, give me a \$200 fine, send me back to Canada with the advice to get my paperwork sorted before I came back. "I believe you made a genuine mistake, but we have been told to throw the book at everyone... my hands are tied," he said.

Back in my car, being directed by through a filter lane to get back into Canada, that officer's supervisor had me roll down my window, handed me a form to show Canada customs that I had not technically entered the USA, and shook my hand. "Steve," he said.

Technicolor Reefs, Plenty of Fish and Easy Drifts



Book Your Cozumel Dive Trip Today >

"I think you are telling the truth. You screwed up. Sorry to meet you this way, you seem like a good guy. Welcome to the new America..." It took me hours to drive back home. And frankly, I was in shock for most of it.

Lessons learned

So, are there take-home messages? Here are some things to consider. Be aware that all border crossings into the United States seem to have tightened up.

- If you are conducting training in the United States, you need a work visa specifically for the type of work you are doing. According to some interpretations, you would need separate visas for every teaching trip.
- Getting that visa may be difficult, time-consuming and

expensive.

- According to the officer who processed me and his supervisor, even an instructor taking a Canadian or non-US customer to any site in the United States to teach them has the potential to land you in hot water.
- The facts that I have a US bank account registered with the Treasury Department, a US tax number, and file tax forms every year, did me no good.
- I am gun-shy about teaching anywhere.
- I am looking into registering my company in Mexico so that I can dive and teach there.
- European and Asian caves have started to look pretty attractive to me.

Be safe, and have fun. ■



DENNIS YANG / CREATIVE COMMONS



Airlines react

Emirates introduces laptop and tablet handling service for US flights. Emirates customers travelling to the United States via Dubai will be able to utilise their laptops and tablet devices on the first part of their journeys, and also during transit in Dubai. They must then

declare and hand over their laptops, tablets, and other banned electronic devices to security staff at the gate just before boarding their US-bound flight. The devices will be carefully packed into boxes, loaded into the aircraft hold, and returned to the customer at their US destination. There will not be

any charge for this service. Qatar has not publicized this procedure, but the airline is currently checking electronics at the gate. Officially, passengers are required to check large electronic devices into their checked baggage at check-in—either in Doha or at their origin. ■

Egypt update:

Going to the Red Sea?

— Bans on electronic devices bigger than a smartphone

Text by Rosemary E. Lunn

In recent weeks, there has been a number of key announcements and events that concern the battered Egyptian tourism industry.

No price hike for single visa

On 22 March 2017, the ambiguity over the proposed March-July 2017 visa price rises was clarified. The newspaper *Egypt Independent* reported that the fee for the six-monthly multiple entry visa will rise to US\$60. As yet no date has been confirmed for when this price

increase will come into effect; how-

ever, I understand that it will be from the beginning of July.

The *Egypt Independent* reported better news for visiting tourists. The Egyptian Cabinet confirmed that they intend to hold the price of the single entry tourist visa at US\$25.00.

This news was welcomed by Ramy Rizkallah, a member of the Committee to Promote Tourism to Sharm-El-Sheikh. This is "a positive incentive for tour operators abroad to work with Egypt", Rizkallah said. He also confirmed that the tourism sector are hoping to increase the number of visitors to the country.

Devices banned

The British Government also made an announcement on 22 March 2017, hours after the US Department of Homeland Security **banned** all

electronic devices (bar cell phones) from the aircraft cabins of nine airlines operating from 10 airports.

The **British ban** states that, until further notice, passengers on all UK inbound flights from Egypt, Jordan, Lebanon, Saudi Arabia, Tunisia and Turkey now need to check in every electronic device that is larger than a smartphone. This means that

all laptops, iPads, hand-held gaming devices, DVD players, etc, longer than 16cm, wider than 9.3cm and deeper than 1.5cm must be carried in the aircraft hold.

"Evaluated intelligence"

It is thought that the ban on electronic devices has been imposed as an anti-terrorism precaution following "evaluated intelligence". In plain English, the intelligence services have either intercepted a discussion of a possible extremist plot or have been passed word of one by a human informant. The current fear is that terrorists are planning to smuggle a doctored laptop onto a commercial flight.

The idea that a laptop can be used as a bomb does have merit. Last year (2 February 2016) the Somali insurgent group al-Shahaab smuggled a laptop filled with explosives onto a flight that flew out of Mogadishu. The device detonated soon after the plane took off, blowing a hole in the side of the plane and killing the bomber. The Daallo Airlines plane and the remaining passengers returned safely to Mogadishu Airport.

Risk of damage

The implication of the ban for travellers is that a checked laptop can potentially be damaged when the relevant

luggage is being loaded or unloaded from planes or luggage belts. A laptop can easily be worth over GB£1,000, and most insurance travel policies will not cover such expensive items. The advice for travellers is "leave valuable electronics at home"; however, this is not always a practical solution, especially when travelling on business.

Unrest lurking

In the meantime, ISIS has targeted three Christian buildings. On 9 April 2017, the Egyptian president Sisi announced a three-month state of emergency after Daesh/ISIL terrorists attacked two Coptic Christian churches in northern Egypt on Palm Sunday. CNN reported that at least 45 people had died at the beginning of the Christian Holy Week.

Nine days later, on 18 April 2017, a policeman was shot dead and three people were wounded at St Catherine's—the 6th century Christian monastery and a UNESCO world heritage site located at the foot of Mount Sinai. The interior ministry stated that the shooting was claimed by IS. Egyptian security forces subsequently killed the gunman suspected of the shooting at St Catherine's on 19 April 2017.

As I write this, many media outlets are reporting that ISIS is threatening to carry out more attacks on the Egyptian Copts. ■



Rebreather Meeting 4-7 May 2017 Ponza Island, Italy

The fifth edition of the annual Rebreather Meeting will be held on Ponza Island, located in the Mediterranean Sea off the Italian mainland. Enjoy good diving, good food and presentations from leading researchers and technical divers, as well as a chance to do a try-dive with some new equipment. In addition, DAN Europe will set up a medical research station. Package deals include transfers from Rome.

SPEAKERS INCLUDE:

Pasquale Longobardi – Medical Director of Centro Iperbarico Ravenna and President of SIMSI
Mark Powell – CCR Instructor
Phil Short – CCR Instructor
David Thompson – One of the foremost experts in CCR design
Simon Mitchell – Associate Professor of the Department of Anaesthesiology at Auckland University
Alessandro Marroni – President of DAN Europe
Gabriele Paparo – CCR Divers
Claudio Carnello – on technical SIAD gas
Matteo Amadori – of MPS Technology will talk about gas boosters

During the dive, you can test:

- Scooters by SUEx
- Drysuit, heated vest and gloves by SANTI
- Torches by XDIVE

Register today! Go to:

Ponzadiving.it



Diver and captain
Jitka Hanakova inside
the cargo hold of
the schooner-barge
EMBA, built in 1890,
Lake Michigan

North America's Great Lakes

— A Haven for Wreck Divers

Text by Steve Lewis
Photos by Becky Kagan Schott

There are other areas of the world with well-preserved shipwrecks, but the Great Lakes of North America have the monopoly on sheer mass, variety and relative ease of access. Very few known dive-able wrecks are much more than a few hours' boat ride from a decent restaurant, a chain hotel or a decent-sized town. Isle Royale, in Lake Superior, is a notable exception, but most wreck dive sites in the Great Lakes do not demand an expedition set up to reach.

I had lived in North America for a few years before I gave the Great Lakes much thought. In fact, for more than a year in the early 1980s, I lived within walking distance of Lake Ontario, and my regular jogging route took me from a Toronto townhouse at King and Bathurst, along Lakeshore

Boulevard within sight, sound and smell of the lake to High Park and back.

During that time as a lake-sider, my father visited me. He had lived

in England for most of his life, near or on the ocean for a great part of it. He walked with me along my jogging route, and at a point where a pebble beach joins the

walkway to the lake, he walked to the water, dipped in his hand and put it to his lips.

I was about to explain the potential for E. coli infection, but

that would have destroyed his groove and his astonishment that Lake Ontario—as with the rest of the Great Lakes—are bodies of fresh water.

Wreck diving

At some point though, probably around the late 1980s or 1990, a friend asked if I was interested in wreck diving. I think I may have





Satellite map of Great Lakes (left); Diver at propeller of the car ferry, Milwaukee (far left), with train truck under it

or more on the surface.

This makes for some potentially extraordinary

pre- and post-dive preparations. In summer, wicking underwear and alacrity when dressing and deriving are essential.

Additional attractions

The Great Lakes also have some really interesting “side-bar destinations” worth visiting. At the eastern-most end of Lake Ontario, all the water collected from Lake Superior on down to the Laurentian Shield continues its journey to the sea via the St. Lawrence River, and on its way, travels through one of the most beautiful areas in the Great Lakes Basin—the

Thousand Islands. For my money, this place is a must-see.

Also, Lake Huron, always billed as one Great Lake, is, in reality, two. At the eastern side of the lake, divided into two by a long limestone escarpment, is Georgian Bay. Beautiful and relatively unspoiled still. Make the effort to see it if you can. ■

Steve Lewis is a British diver, instructor, dive industry consultant and author based in Canada. He teaches and lectures at home and abroad. His main focus is on dive safety and to make each of us aware of the things that will make us better divers than we are now. His latest book, Staying Alive: Risk Management Techniques for Advanced Scuba Diving, is available through Amazon. For more information, visit Techdivertraining.org or CCRcave.training.

said something about getting enough of cold water growing up in England—and probably punctuated my refusal to participate with a few carefully chosen expletives and descriptions of shrinking body parts.

However, eventually I did go wreck diving in the Great Lakes, and fell in love with what I saw.

Shipwrecks

The Great Lakes were the main highway for getting raw materials, manufactured goods, people, animals, food, and the general detritus of civilization and transporting humanity from point A to Point B. And traveling that highway were not cars of course but ships—wind-driven, steam-driven, diesel-driven, even solar-powered ships. And ships sink.

They hit things, weather happens, they get old and their pumps are either not strong enough or they fail. And occasionally, one group of people throw explosives and heavy bits of metal at ships

belonging to other groups of people. (It is also worth noting that the wrecks in the Great Lakes include dive sites not covered by the parameters of shipwrecks: planes, sunken villages, et al.)

Accessibility

I was asked once why I preferred diving the *Empress of Ireland* (Okay, NOT quiet in the Great Lakes, but in the outflow from them: the St. Lawrence River) to diving the *Andrea Doria* (100 nautical miles off Long Island, New York). I explained that I can log two relaxed dives on the *Empress*, get back to my room, shower, shave, change into grown-up's clothes and take my date to a nice lobster dinner with a chilled French wine in the evening, then spend the night with her rather than a bunch of smelly divers. That to me, is one of the bonuses of Great Lakes diving.

You will get a feel for the types of wrecks waiting in the Great Lakes from the articles in this issue, but please con-

sider that the guesstimate of the number of wrecks in the Great Lakes touches 10,000. So, it is somewhat redundant to tell readers that there are wrecks for all tastes, all certification levels and every season.

Conditions

Which brings us to a waypoint... seasons. The temperature of the water where most of the spectacular Great Lakes wrecks rest is a constant 4°C (39°F). If you recall from science classes, at this temperature water reaches its maximum density and sinks. Any colder, it begins to float, and when cold enough, turns into ice. So, for several months of winter, diving the Great Lakes is supremely challenging.

Of course, if water gets warmer than 4°C (39°F), it also floats, so that in the summer, this means that in large areas of the Great Lakes, time spent above the thermocline can be bloody heart-warming: 4°C (39°F) at depth and 22°C (72°F)



Diver on car ferry in Lake Michigan

An underwater photograph of a shipwreck in Lake Huron. The scene is dimly lit with a blue-green hue. A diver is visible in the middle ground, illuminated by a bright light. The wreck consists of large, rusted metal structures, including a prominent vertical beam and a large, curved section in the foreground. The water is murky, and the overall atmosphere is mysterious and historical.

Shipwrecks of Presque Isle

Time Capsules in Lake Huron

Text and photos by Becky Kagan Schott

Shipwrecks abound at Presque Isle in Lake Huron, USA. Here a diver comes face-to-face with the three-masted schooner wreck, *Typo* (right), built in 1873.

PREVIOUS PAGE: Diver on bow of the two-masted schooner wreck, *Defiance*, built in 1848

The year is 1880, and you are working on a wooden schooner, one of the most dangerous jobs during the time. It is late November and it is the last run of the season. The ship is overloaded with coal and the seas start to pick up. It is now dark and the icy waves are crashing over the sides, and all you can do is work to keep the ship afloat. Ice is now forming on the rigging, and out of the fog, the bow of another ship suddenly appears. Before you can react, it collides with your bow. In minutes, the schooner and everyone onboard disappears below the cold, dark waves descending into the depths—a watery grave and a ship that will not be seen again for over a century.

In 2011, I was fortunate enough to work on a documentary film for the Woods Hole Oceanographic Institution (WHOI), the National Oceanic and Atmospheric Administration (NOAA) and Sony,

called, *Project Shiphunt*. We spent a few weeks in the small town of Alpena Michigan searching for shipwrecks. The team found the schooner *M.F. Merrick* and steel freighter *Etura* in over 91m

(300ft) of water, and we were the first to lay eyes on the ships in over a century. I left Michigan a changed person, and a new obsession with diving the Great Lakes had manifested.

That year, I also visited Lake Superior, the wrecks of Isle Royale National Park, and recently Lake Michigan, but I kept finding myself wanting to go back to Lake Huron's Presque Isle. Drawn to

the perfectly preserved wooden wrecks in technical diving depths, just outside of recreational range, in the 50-55m (165-180ft) depths. I spent a week diving the recreational wrecks in the NOAA

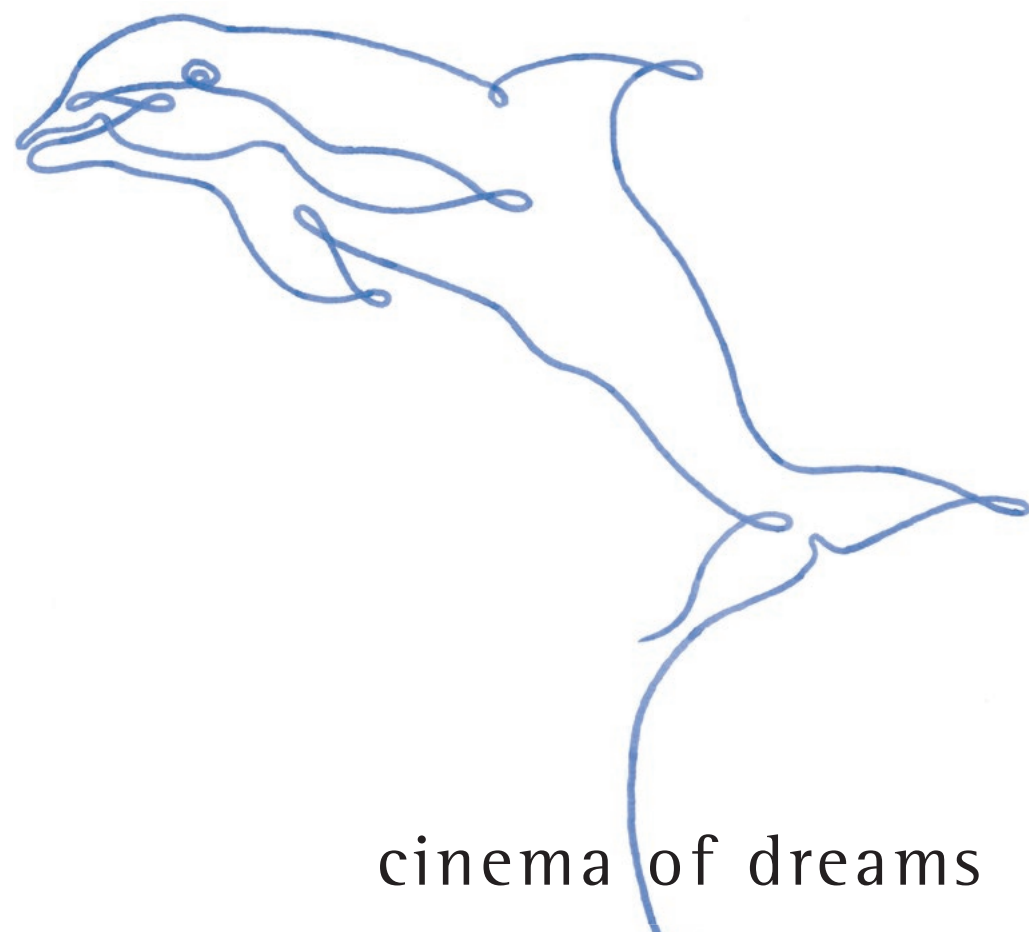
Thunder Bay Marine Sanctuary and another week just 30 minutes north of there, in Presque Isle. Both places differ from each other, but both offer excellent wreck diving and photography opportunities.

Presque Isle





silver



cinema of dreams



www.seacam.com



Diver at gauges and controls (above) on the SS *Florida* wreck; Diver illuminates name on the side of three-masted schooner wreck, *Cornelia B. Windiate* (right)

My goal was to photograph as many of the wrecks as I could in order to be able to share these extraordinary stories and histories with other divers and enthusiasts.

It is not easy to dive a new site and photograph it with out ever seeing it. I typically like to do a scouting dive first to familiarize myself with a site, then go back with the camera and a plan on how to shoot it. I did not have that luxury on this trip. Many of the wrecks I knew I would only get one dive on, so I had to make the most of it.

Preparation

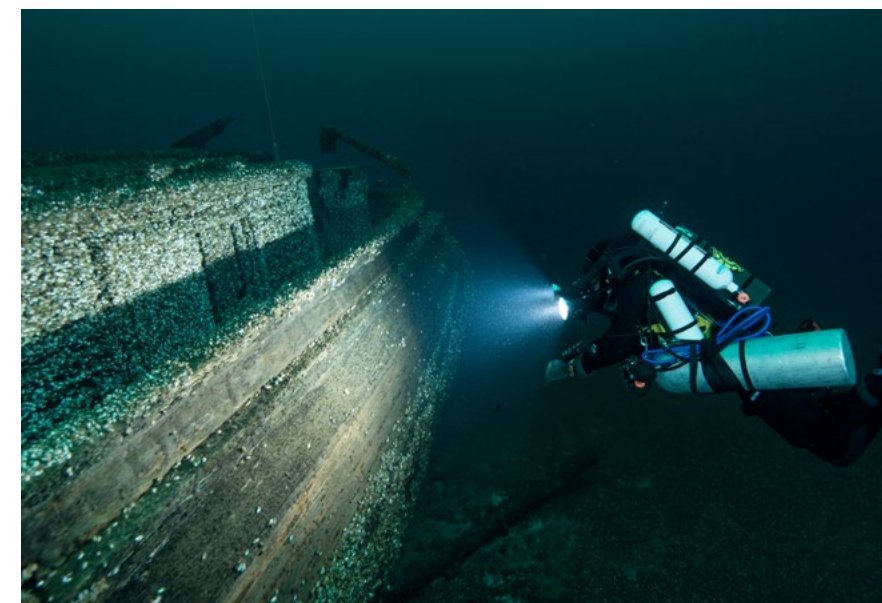
I did as much research ahead of time as I could, looking up information about each shipwreck—its his-

tory, its depth, its features and its story—to form an idea of what I wanted to get image-wise on each dive.

I also planned to spend as much time as I could on each wreck.

I brought my closed circuit rebreather and trimix to be able to spend more time in the 50-55m (160-180ft) depth range.

I factored in the water temperatures to be 2-4°C (37-40°F) on the bottom, so I also decided to utilize



my Santi heated glove system, which has been one of my favorite pieces of gear in the Great Lakes. I have always used dry gloves, but my hands would be terribly cold gripping the camera handles for so long. The gloves really help take





Join our school.

Even if you hated biology class you'll love learning to dive in The Florida Keys. In just three days you can be certified by the world's best instructors. Before long, you'll go down with the ships and come face-to-face with thousands of different species on America's only living coral reef.

fla-keys.com/diving



Presque Isle

Diver at bow of the wooden steamer wreck, SS *Florida*, built in 1889; Diver on wreck of the three-masted schooner *Typo*, built in 1873 (right)

the edge off, and now my hands are not the limiting factor, like on previous dives. I have really found that dressing properly in cold water has made the largest difference in the world and allowed me to stay underwater longer in order to capture the images I want.

The rebreather has also allowed me to expand as an underwater photographer. With only one opportunity to dive a site, it has been an invaluable tool to be able to spend time in a location to get the shot I want.

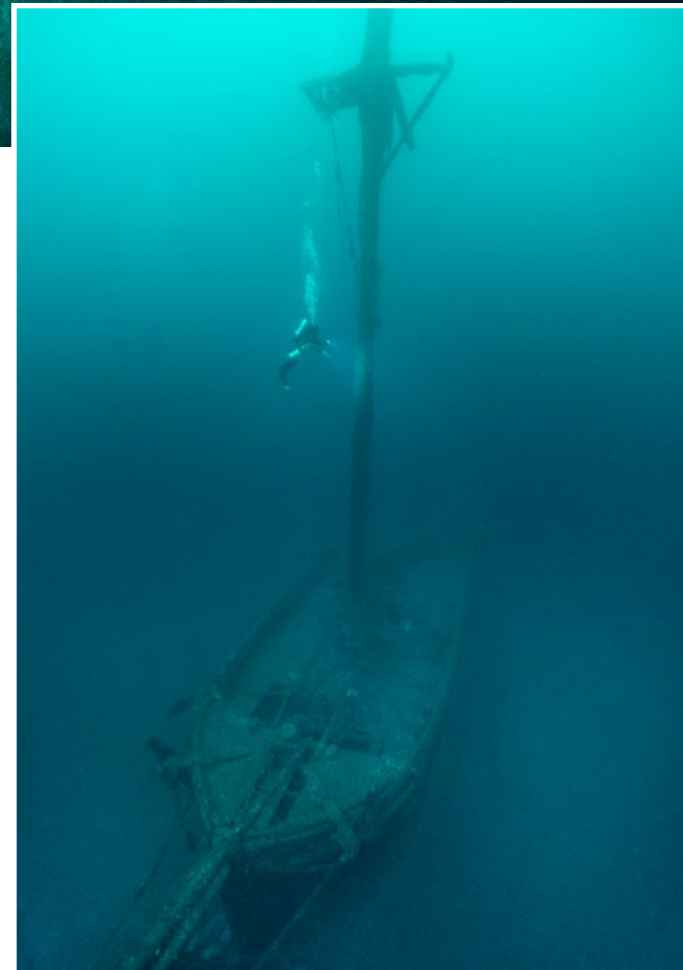
A good example that illustrates the point was a dive to one of the Great Lake wrecks in 27m (90ft) of water. My buddy and I had planned to shoot some cargo inside the wreck. When we entered, it accidentally silted out. We exited the wreck, to let the silt

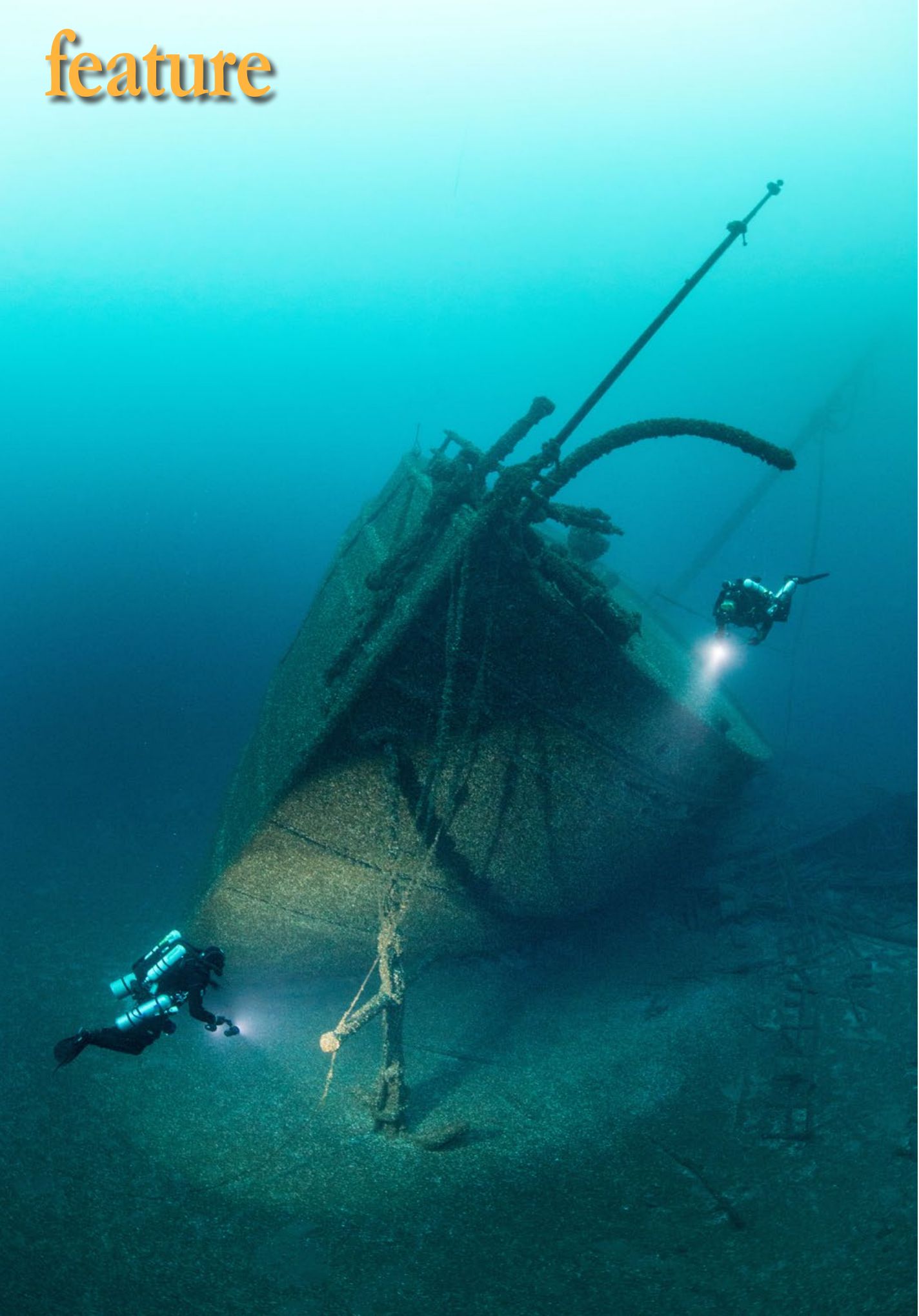
settle, and swam around shooting in other locations around the wreck. We came back to the cargo hold 30 minutes later and spent about 15 minutes getting the shot that I wanted. The bottom time was 70 minutes, plus decompression, and I went home with the shot I envisioned. I could not have done that in one dive if it was not for using a rebreather.

Diving the wrecks

Since we were diving the wrecks in Presque Isle in the 50-55m (160-180ft) range, most of our bottom times were around 40 minutes, which allowed me to shoot some

stills and mosaics around some of the wrecks.





Diver on the wreck of the *Cornelia B. Windiate* (above); Divers illuminate the anchor at the bow of the *Norman* wreck (left)

Cornelia B. Windiate. One of my most memorable dives, in particular, was the wreck of the *Cornelia B. Windiate*. The ship was lost in December 1875 in a storm. I had spent time looking at the model of the shipwreck at NOAA's Thunder Bay Sanctuary museum, to study its features and angles I might want to capture.

The day of the dive, I slowly descended down the line, tied off to the stern section. As the ghostly ship came into view, I could immediately see how intact everything was. It was sitting on the bottom, upright, looking like it was still sailing above the water.

All three masts were standing tall, its wheel bent backwards and rudder turned hard. It likely went down with a fight. The most touching image was the

yawl boat lying off to the starboard side, sadly reminding one that there were no survivors. To me this ship tells a story, and the fact that it disappeared and was thought to have sunk in Lake Michigan instead of Lake Huron, is also fascinating.

The cabin is also incredibly intact, and a spiral staircase can be seen. I swam around the wreck shooting stills and after making it to the bow, I decided to shoot some mosaics of the beautiful ship. I shot six to seven images that I later stitched together to show the true scale of the *Cornelia B. Windiate*. I swam about 21m (70ft) away from the ship, and used all natural light and slow shutter speeds to capture the images. Thankfully the day we shot, the sun did come out for a little while, which made a big difference.

DIVE the Great Lakes

Daniel J. Morell (ccr / trimix) - June 18-25th

Presque Isle (ccr / trimix) - July 1-8th

Straits (recreational) - July 11-17th



MegDiver.com
Becky@LiquidProductions.com



Divers on the steel steamer wreck, *Norman*, built in 1890 (above); Diver at bow and forward mast on three-masted schooner wreck, *Typo* (left)

Typo. Another wreck I really enjoyed photographing was the three-masted schooner *Typo*. The ship sank with all hands on deck in a collision on 14 October 1899. It is an incredible dive since the schooner sits upright with the bowsprit and all its rigging intact.

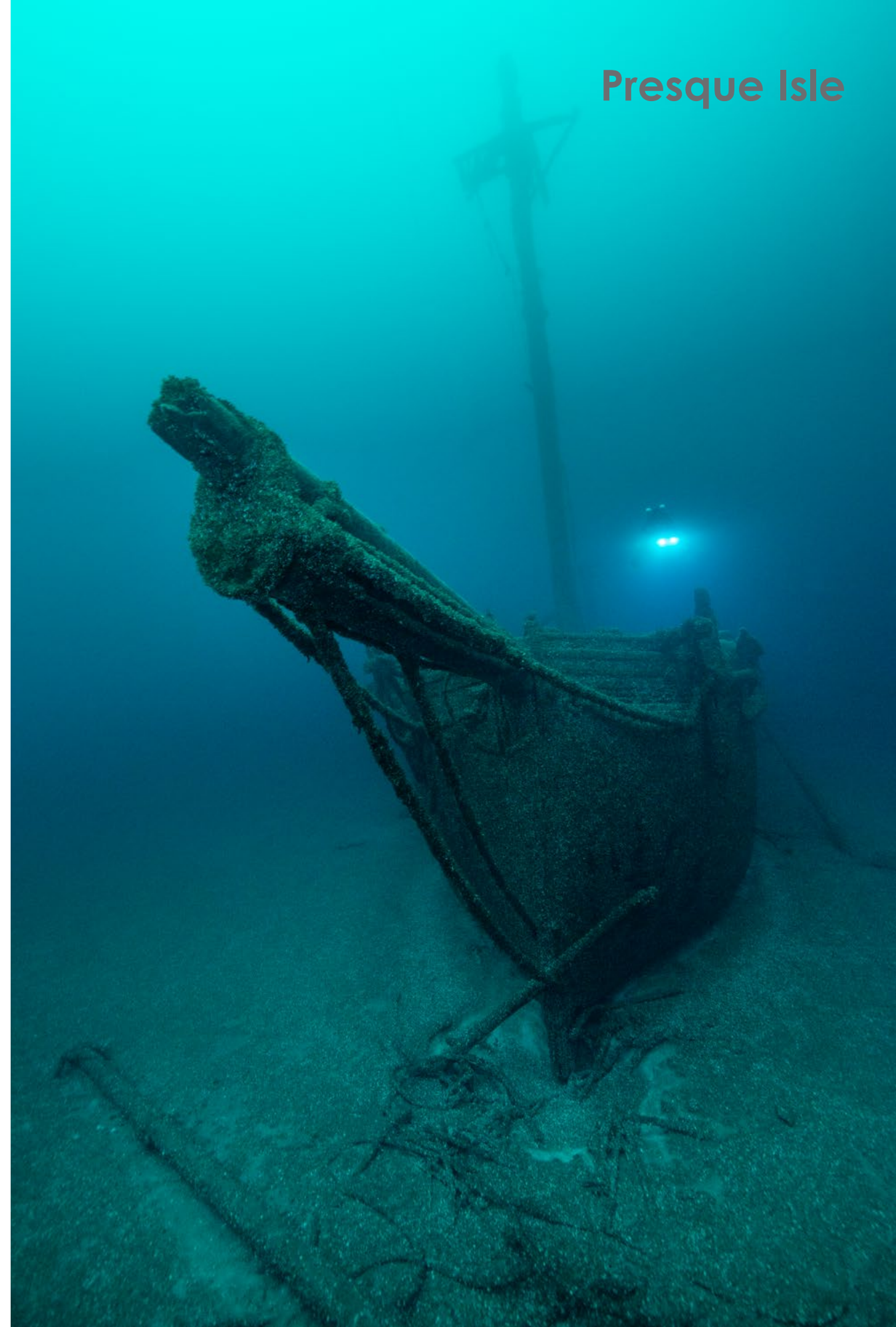
As I descended down the line towards the wreck around 90ft, the top of a very tall mast, coming up from the depths, appeared before me. As my eyes adjusted, I could just make out the silhouette of the shipwreck below. I moved from the line over to the tall mast and descended down towards the deck.

As I got closer, I thought I saw an unfamiliar object. I swam 3m (10ft) forward

and was face to face with the ship's bell. I do not see many of those on the shipwrecks that I am used to diving. As a photographer, it is an exciting sight to see and to photograph a shipwreck's bell.

The bow of *Typo* is also very elegant. As I descended into the sand to photograph my dive buddy, Blair Mott, on the bow, I could not help but put the camera down and stare at the ship with my own eyes. It almost looks like something out of a movie set, sitting so preserved on the lake bottom.

We worked our way down towards the stern, but unfortunately, it is not in as good a shape as the bow section. Coal litters the floor and one can actually



Diver on the wreck of the three-masted schooner *Typo*

Divers at bow of the *Norman* wreck (left) shed light on the wheelhouse at 61m (200ft); Diver on the wooden two-masted schooner wreck of the *Kyle Spangler*, built in 1856; (right); Stern of the wooden wreck of *SS Florida* (lower left)

buddy, Blair, to help show size and scale by modeling on the damaged bow and using his dive light to draw one's eye to the diver.

The ship is only 40.5m (133ft) long, so it is easy to swim around it and see most of the wreck, since the visibility is good at that depth. The name, *Kyle Spangler*, can still be seen etched into the wood on the port stern side.

part of the shipwreck. I will never forget looking down into that icy blue-gray-colored water and seeing the erie mast standing tall in the water column.

Other wrecks

The area also has other incredible sites like the wooden freighter *SS Florida*, the *Defiance*, and the *Kyle Spangler*. The *Kyle Spangler* was a two-masted schooner, which was carrying lumber. In 1860, it collided with another schooner, crushing its bow and sending it to the bottom in minutes.

The ship sits mostly intact, minus the crushed bow section. This was something I wanted to focus on in my shots. I used my dive

Afterthoughts

Each of the Great Lakes is unique and each holds so many shipwrecks, with both tragic and heroic stories. There are many hidden gems, both in recreational limits and in technical range, with new wrecks being discovered in each lake every year.

Every time I dive one of these wrecks, I cannot help but feel connected to each of their stories, and visiting them is like visiting a time capsule. While I was driving home after this last trip, I could not help but feel the obsession for these great shipwrecks growing. I thought by spending a few weeks diving them, it would be out of my system. Instead, I find that I cannot stop thinking about the next trip, and visiting more of the great wrecks in the Great Lakes. ■

swim through the cargo hold.

When it was time to leave the bottom, I ascended up the forward mast again and decided

to shoot some photos at different angles down the tall masts. I was excited to be able to start my deco stops and still be on a

Becky Kagan Schott is an Emmy award winning underwater director of photography, photographer and technical diving instructor based in Pennsylvania, USA, whose work can be seen on major networks including *National Geographic*, *Discovery Channel*, and *The Travel*

Channel. For more information, visit: Liquidproductions.com or MegDiver.com.

REFERENCES:

[HTTP://THUNDERBAY.NOAA.GOV/](http://THUNDERBAY.NOAA.GOV/)
[HTTP://WWW.SHIPWRECKEXPLORERS.COM/](http://WWW.SHIPWRECKEXPLORERS.COM/)



Lake Michigan

Shipwreck Mysteries

Text and photos by Becky Kagan Schott





Divers at the stern (above) of the wreck of the wooden steamer, *St. Albans*, built in 1868; Diver Erik Foreman with drum barrels (top right) on wreck of steel freighter, *Prins Willem V*, built in 1948; Explorer Capt. Jitka Hanakova at bow (right) of the steamer, *Alice E. Wilds*, built in 1883, found at 98m (300ft) depth. PREVIOUS PAGE: Diver at wreck of the wooden canal schooner, *Grace Channon*, built in 1873



My first dive in the Great Lakes was 20 years ago. I remember descending into dark green water and limited visibility. My joke for years was, “Do you know why they call it Lake Erie? Because it’s just that—it’s erie.” Soon after that, I moved to Florida with my family and forgot all about the Great Lakes because I had warm, tropical reefs in my backyard. Fast forward to five years ago and I had my next experience diving in Lake Superior. I was blown away by the wrecks, and it ignited a new passion for diving the Great Lakes.

I was then fortunate enough to work on a documentary in Lake Huron where we located and explored several new wrecks. I was amazed by how blue and clear the water was.

The unfortunate introduction of invasive zebra mussels has improved the water clarity dramatically in many of the lakes. Unfortunately, they now cover the wrecks in four out of five of the Great Lakes, but visibility can now push 30m (100ft) or more. The water looks Caribbean blue on most days, and the lakes are no longer as dark and murky like they once were.

The Great Lakes have quickly become my personal favorite diving destination, with wrecks in recreational diving limits and beyond. After traveling to many of the world’s top wreck diving destinations, I believe that the Great Lakes are among them, and are home to some of the most incredible

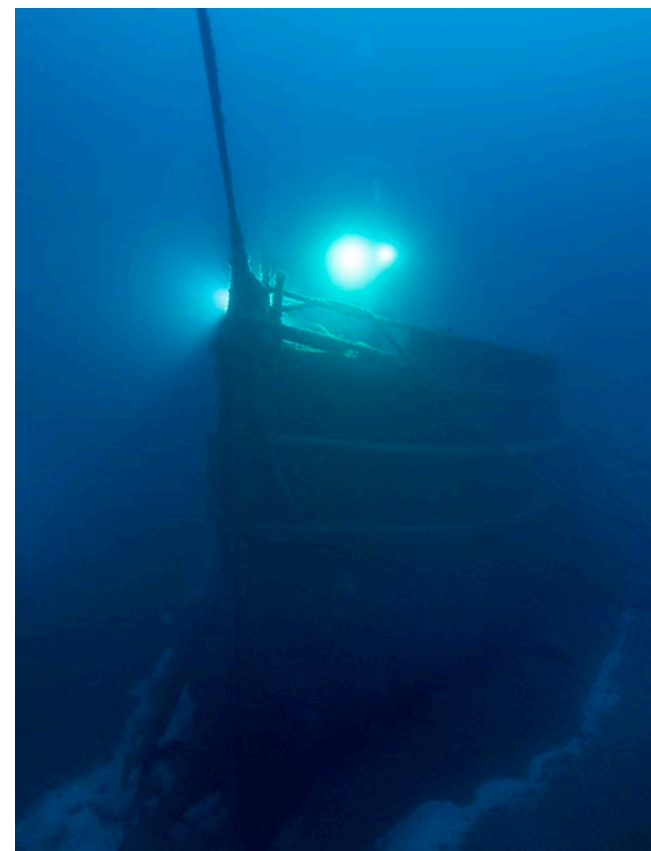




Chart house (left) sitting in the sand 30m (100ft) off the wreck of the *Milwaukee* car ferry; Steel reinforced bow (below) of *Milwaukee*; Divers at stern (lower left) and at bow (bottom right) of *Milwaukee*

Lake Michigan

reational sites are the Prins Willem V, the SS Milwaukee, and the SS Wisconsin.

SS Milwaukee. My first wreck destination was the SS Milwaukee, which was a train car ferry. Fifty-two people lost their lives when the ship went down in a storm on 22 October 1929. It was carrying 27 railcars, lumber, bathtubs and food. It was reported that the railcars broke loose during the storm, crashing through the stern's sea gate, allowing water to rush in and sink the ship. She went down just seven miles northeast



sites that do not require traveling half way around the world to a remote location to see.

Frozen in time

The wrecks here are really frozen in time and preserved in the cold, fresh water. Many of the wooden steamers and schooners have sat intact for over a century. These would no longer exist if they were in salt water. Instead, diving here is like turning back the hands of time and visiting a real-time capsule.

Here, you can see ships' names still led-gabled on the sides of wrecks; look at cargo, including automobiles from the 1920s; see intact schooners with rigging and much more. I have made a half a dozen trips to various locations in the Great Lakes, with one of the most recent destinations in Milwaukee, Wisconsin.

When most people think about



Milwaukee, they probably picture a bar on every corner, cheese and lots of American beer breweries. Milwaukee has all of these things, but it is also a wreck diving wonderland for those adventurous enough to take the plunge

into Lake Michigan and immerse themselves in Milwaukee's history.

Diving the wrecks

The dives range in depth from just 3m (10ft) of water to over 91m (300ft). A few of the popular rec-





Diver illuminates Chevy model T truck inside the SS *Wisconsin*



Ship's wheel on the wreck of the steamer, *Alice E. Wilds*, built in 1883, found at 98m (300ft) depth

Milwaukee, just three miles off-shore in 36.5m (120ft) of water.

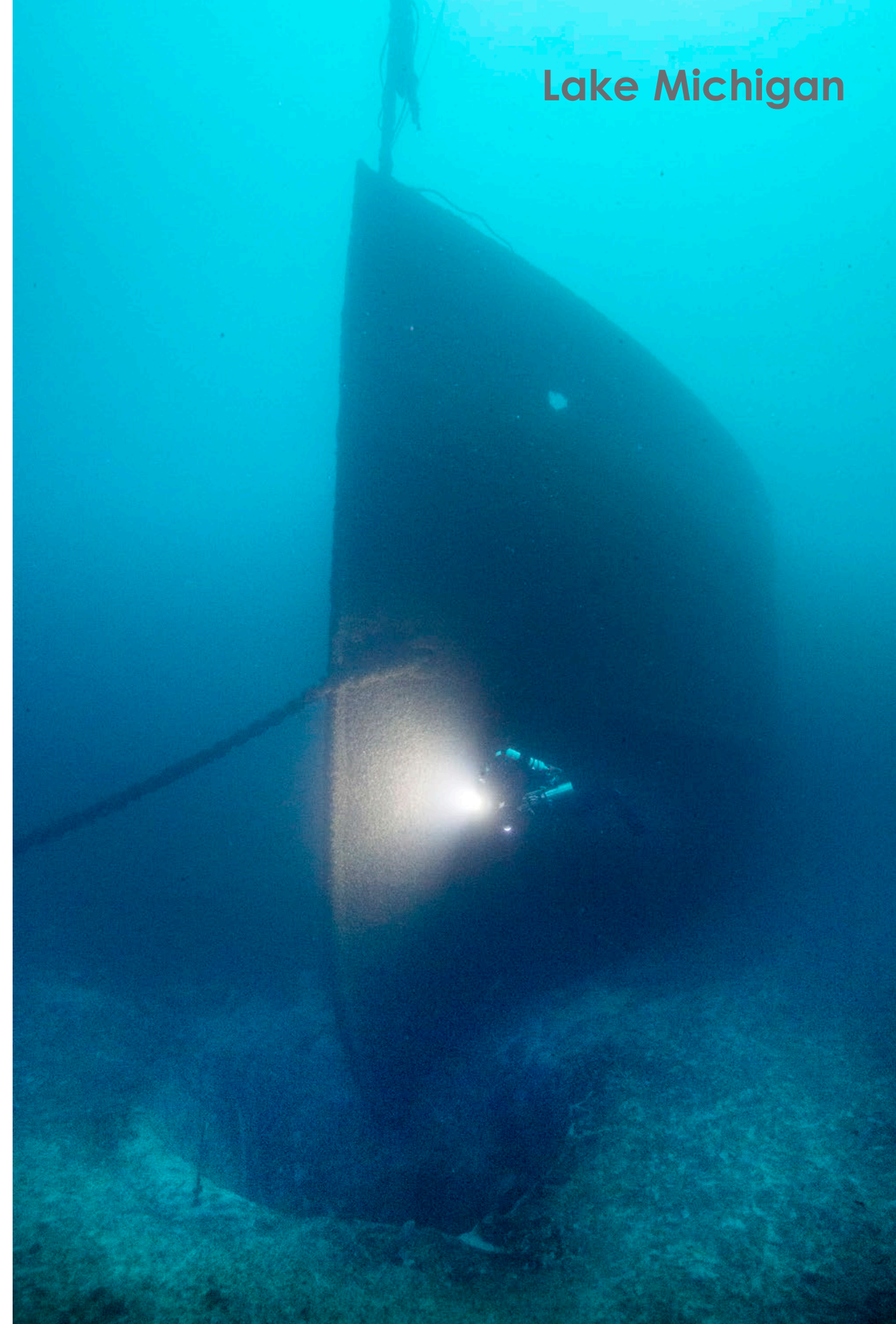
As you descend down the line, Milwaukee's large re-enforced steel bow comes into view, standing upright on the bottom. It is an incredible sight to take in at first. About 46m (150ft) off of the port side of the ship lies the ship's original wheelhouse, which was turned into the ship's chart room—the word, Milwaukee, still visible on it, after 86 years sitting on the bottom of the lake.

Further down the ship, divers will see train railcar trucks and some of her cargo of Kohler sinks and bathtubs. Milwaukee has two massive propellers. One of the propeller shafts on the starboard side sits

atop another train car truck that must have fallen out of the ship to the bottom, just before the ship sank on top of it. The U-shaped sea gate door on the back is bent and mangled, and reminds one of the violent end this ship experienced.

Depths range from 27-36m (90-120ft) and visibility can be as much as 24m (80ft). It is a fantastic dive, with a lot to see and explore.

SS Wisconsin. The SS Wisconsin went down in a violent storm just one week after as the SS Milwaukee sank. The Wisconsin was a 65m (215ft) steel freighter that went down in a storm six miles off the coast of Kenosha 29



Diver at bow at 65m (215ft) of the wreck of the steel freighter, SS *Wisconsin*, built in 1880



28 - 29 October 2017
Antwerp, Belgium

Ter Elst Congres Center
 Kattenbroek 1, 2650 Edegem

TekDIVE is one of the largest technical diving shows in Europe, featuring guest speakers and exhibitors from all the major manufacturers and organisations. Renown experts will give presentations on all aspects of technical diving, cave diving, wreck diving, dive medicine and technical diving equipment.

DON'T MISS THIS EVENT!

Reserve your tickets now, contact:
 Vic.verlinden@skynet.be
 Stefanis@hotmail.com

www.tekdive-europe.com

THIS PAGE: Diver Erik Foreman on the wreck of the wooden canal schooner, *Grace Channon*, built in 1873

October 1929. The ship sank with nine crew including the captain.

At the wreck site, the ship's superstructure is gone, with I-beams and supports still there. The wreck sits in 24-39m (90-130ft) of water. It was carrying a mixed cargo of automobiles, iron castings, and boxed freight such as shoes, and rugs. During the dive, one can see much of the cargo, including the three automobiles, a Hudson, Essex and Chevy model T. The cars sit just 4.5m (15ft) from a large opening outside of the wreck.

This is considered an advanced dive, and penetration should only be done by experienced divers. The stern and bow are very visual and make

for great photography locations. The ship is large and difficult to swim around in one dive, so doing several dives on this site is recommended.

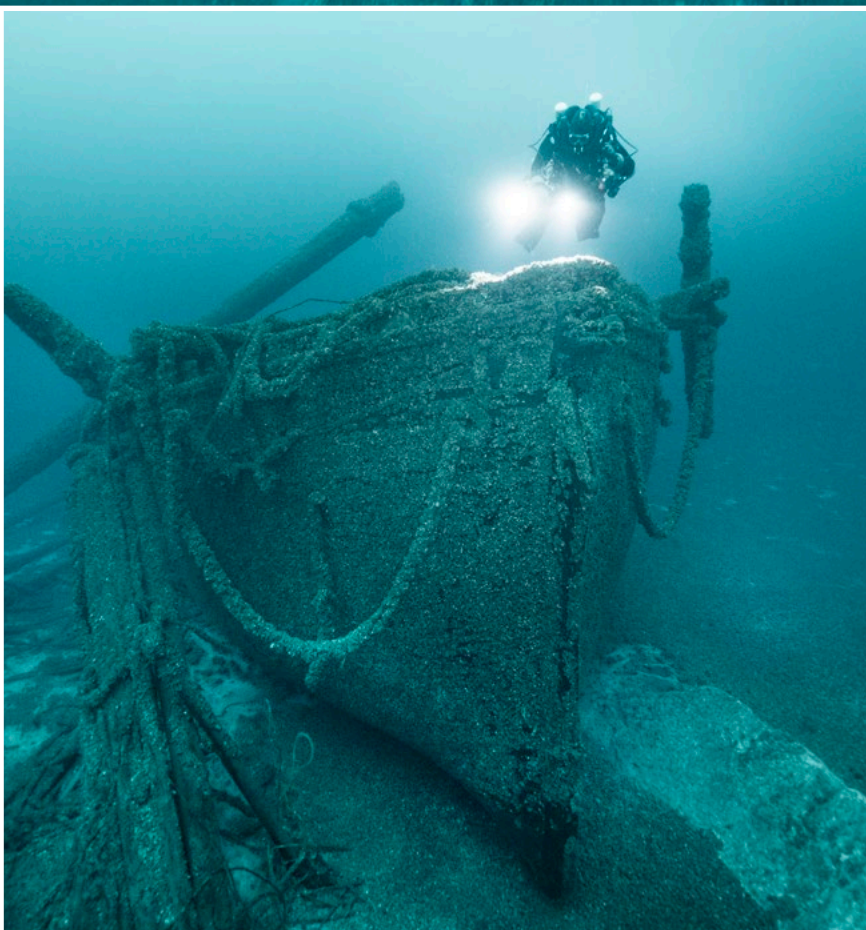
Prins Willem V. Next I visited the wreck of the Prins Willem V, one of the most visited wrecks in the area, which went down in a collision in October 1954. She collided with a barge called the Sinclair and floundered with a large gaping hole in her side.

The wreck now sits on its port side in 13-27m (45-90ft) of water about 6km (3.7mi) east of Milwaukee. The Milwaukee Coast Guard rescued her crew of 30. Unfortunately, when the ship went down, it also carried

with it its cargo of TVs, automobile parts, machine parts, leather and hides.

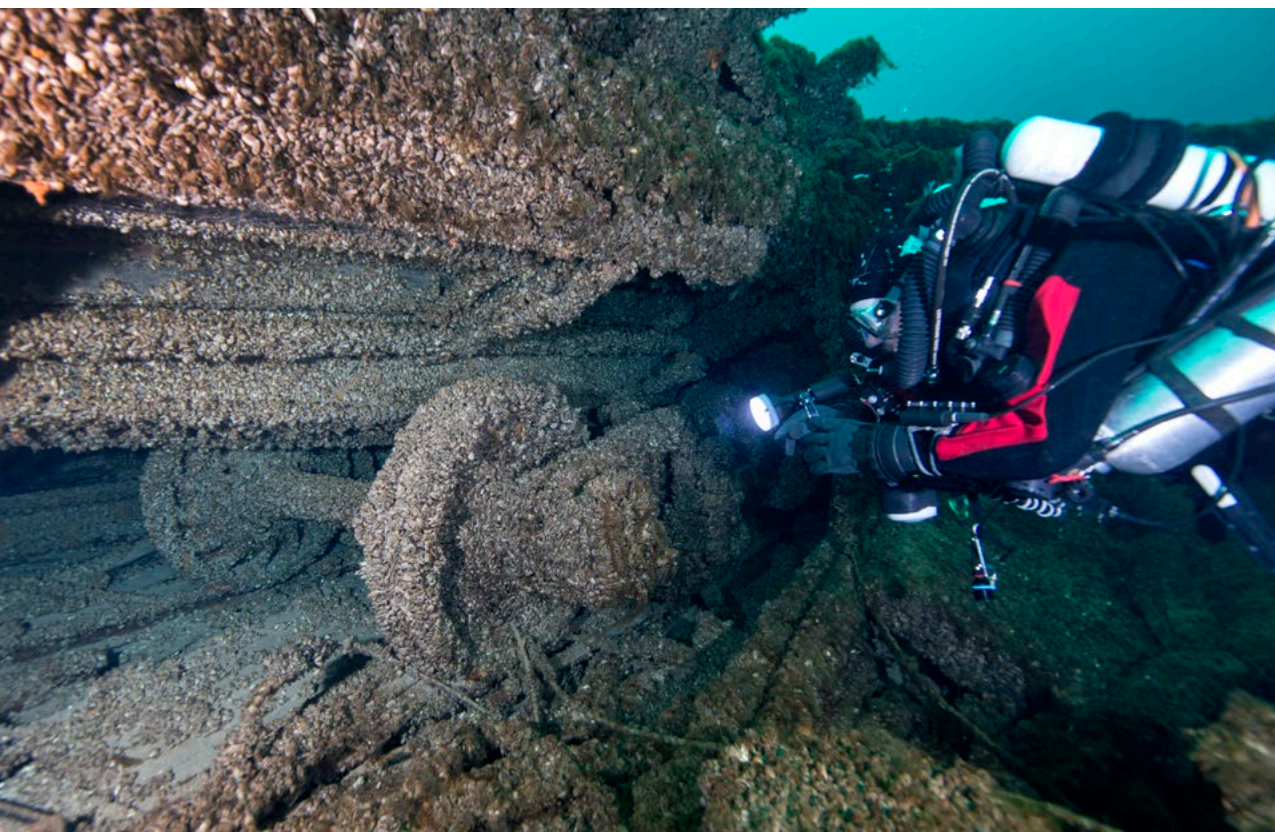
There were attempts to raise the Prins Willem V several times but all failed. The wreck is intact and has large open hatches, with large barrels that were used in salvage attempts. There are a lot of open areas through which to swim as well as machinery to see.

Grace Channon. One of the wrecks in technical diving depths that I visited was the Grace Channon—a wooden schooner built in 1873 and sank in 1877 over 138 years ago when struck in a collision with another ship on her port side. The ship only took one life. But unfortunately, it was





Diver and boat captain Jitka Hanakova at bow of the wooden steamer, *St. Albans* (left); Diver at stern of *EMBA* wreck (right)



Diver illuminates train car wheels on wreck of *Milwaukee* car ferry

the life of the owner's young son.

The wreck now sits upright in 55-61m (180-200ft) of water, with both masts broken. It is only 42.6m (140ft) long, so it is easy to swim around the entire schooner in one dive. The wreck is intact including the cabin, which is rare on schooners.

Because the water is so clear there is still ample ambient light at that depth. As you swim around the wreck, you will notice the collision damage on the starboard side, towards the bow. Visibility was over 30m (100ft) when I dived the wreck, allowing for excellent photography opportunities. It was incredible to see such preservation on a wooden wreck, over a century old.

Afterthoughts

There are hundreds of wrecks in this area, each with a story to tell—how they met their fate, ending up frozen in time at

the bottom of Lake Michigan. These are truly incredible wrecks to see to catch a glimpse of US history and shipping on the Great Lakes.

There are still missing ships. With advances in diving, ROV and side scan technology, a few new wrecks are found each year. So, diving in Lake Michigan has a rich history, photogenic shipwrecks and so many to visit, it can keep you busy for years. ■

Becky Kagan Schott is an Emmy award-winning underwater director of photography, photographer and technical diving instructor based in Pennsylvania, USA, whose work can be seen on major networks including National Geographic, Discovery Channel, and The Travel Channel. For more information, visit: Liquidproductions.com or MegDiver.com.

GREAT LAKES CONDITIONS

May through September are the best diving months. Air temperatures can be between 10-27°C (50-80°F), with varying conditions from a dense fog to full sun. Water temperatures vary depending on the time of year and depth. In June, expect water to be in the 2-7°C (35-45°F) range. Later in August, water temperatures can be 10-15°C (50-60°F). There is typically little to no current on the wrecks, and most wrecks have at least one mooring buoy for ascents and descents.

TOPSIDE FEATURES

There are plenty of things to see in Milwaukee. The *Denis Sullivan* at Discovery World at Pier Wisconsin is a replica of a 19th century three-masted sailing ship, similar to those one would see filling this area over a hundred years ago. There are museums, breweries, parks and excellent food too. ■

REFERENCES:

[HTTP://THUNDERBAY.NOAA.GOV/](http://thunderbay.noaa.gov/)

[HTTP://WWW.SHIPWRECKEXPLORERS.COM/](http://www.shipwreckexplorers.com/)

Singular Focus: The Life & Times of Becky Kagan Schott

Text by Michael Menduno
Photos courtesy of Becky Kagan Schott, with additional photos by Josh Bernstein, Jon Bojar, Gerardo del Villar, Jeffery Gallant, David Schott, Rich Stevenson, Trisha Stovel

Talent plus personality. That's how clients and colleagues explain 35-year-old Becky Kagan Schott's rapid ascent in the male-dominated, niche-filled world of underwater cinematography. "There are only a handful of people you can call if you need someone to dive to 350 feet, shoot and be creative," explains Evan Kovacs, director of underwater photography at Woods Hole Oceanographic Institute's Advanced Imaging and Visualization Lab. "There's probably only two women in the world that could pull it off and Bec is one." He calls her a breath of fresh air. "Even when she's not in charge, she's able to bring ideas to the table in a non-threatening way." No small thing in a field fraught with IMAX-sized personalities.

Colleague, British underwater cameraman Rich Stevenson said that her skilled and energetic "let's do this" attitude is the icing on the cake. The ex-Royal Marine conducted a series of two to three-hour dives with Schott to shoot shipwrecks more than 91m (300ft) deep in 1°C (34°F) water for a 3D film project in the Great Lakes. It was Schott's first cold-water assignment. "No matter how challenging our dives, she just cracked on without a complaint," he said. Schott's mask actually frosted up during deco.

DAVID SCHOTT





TRISHA STOVEL

Those are some of the reasons that the former Fox News cameraman has become the go-to-gal for clients like Woods Hole, Discovery Channel, National Geographic, the Military Channel, Current TV, the National Park Service's Submerged Cultural Resource Unit and others; and why the phones at her company, Liquid Productions Inc., that she started with husband, fellow cameraman David Schott, 10 years ago keeps ringing off the hook. The deep diving duo spent more than 200 days on location over the last 12 months diving and shooting in "challenging" aquatic environments—their specialty: caves, deep shipwrecks, cold water, ice, and swimming with big animals.

Schott's seeming overnight success is the result of nearly two and half decades of singular focus on

her twin passions of diving and telling stories with pictures. Her diving CV is a testament to her youthful enthusiasm and singular dedication—call it a predilection—to her craft. Open water certified at age 12, Schott got cavern certified at 14 after moving to Florida with her family. She became a Master Scuba diver and completed her "Intro To Cave" course at Ginnie Springs two years later while working in a local dive shop. She was hooked.

Schott logged more than 200 cave dives, including stage and scooter dives, by the time she was old enough to earn her Full Cave certification with the NSS-CDS at age 18. She completed her NAUI instructor course the same year, and did her TDI Trimix training the next year at 19. She started diving rebreathers six years later.

Shooting underwater

Her image making followed a similar tack. Having started toting a camera to her first scuba class, Schott went on to study photography and TV production in high school, and then earned her bachelor degree in journalism from University of Tampa in 2004. She landed her first job out of college as a news cameraman with CBS and later Fox News, while teaching scuba on the side.

Schott met her soon-to-be husband David online in 2006. The two had lots to chat about. He was an underwater videographer and avid technical diver with a rebreather and an masters degree in business from Widener University. They decided to test their budding relationship with a



FOURTH ELEMENT TEAM DIVER, Pete Mesley in Truk Lagoon, June 2010
Pete wears: PROTEUS wetsuit.

fourth element
EQUIPMENT FOR ADVENTURE

PROTEUS



RICH STEVENSON

Becky Kagan Schott (note ice in mask!) posing for a selfie with fellow cameraman Rich Stevenson (left) and filming sea lions in 6k resolution with her RED EPIC DRAGON digital cinema camera for a NatGeo project in British Columbia. (top left)

job that she had dreamed of holding for almost 16-years. In 2013, the couple won four more Emmys for their half hour CBS Special, "Cave Diving beyond The Limits." Since then, the dynamic duo landed two more projects for NatGeo: one

dive at Eagle's Nest cave system in North Florida. That cemented the deal. Within the year the two took the plunge. They moved in together and formed Liquid Productions in 2007, the year Becky got her first break as an underwater cameraman. The couple married two years later.

Awards

Some couples have a song. The

Schotts have a cave. In 2011, they received their first Emmy and an Edward R. Murrow award for the documentary of Eagles Nest Cave that they did for CBS. A year later, National Geographic (NatGeo) hired Liquid Productions to shoot their 2012 end-of-the-world special "Mayan Underworld: The Real Doomsday," and named Becky underwater director of photography, a

one shooting the caves of the Bahamas, the second filming sea lions in British Columbia. Both are expected to air in 2018. In addition, their Red Bull Explorer Series "Crystal Labyrinth" documentary featuring cave explorer Brian Kakuk, which they shot in 6k, was just released this year.

Where do you go, when you realized your life ambition and you are still only 35? Here is what





BECKY KAGAN SCHOTT

Dancing with dolphins, by Becky Kagan Schott, won the National Geographic Traveler photo contest in 2011

the diminutive, five-foot-five, techie image-maker had to say.

MM: Do you consider yourself a cinematographer, photographer or journalist? How do you view your work?

BKS: I look at myself as a photo-journalist. I really want to tell a story through images, whether it's video or still photography. I think that it's really important that it's not just an image. It has to mean something, or inspire someone, to tell some kind of story. I love to show people interacting with the underwater environment.

MM: That makes me think of the image you shot of a woman free diver suspended vertically in the water column facing three dol-

phins. Do you know the one I am talking about?

BKS: Absolutely. That image won the National Geographic Traveler photo contest in 2011. It was taken in the Bahamas. What's amazing about that image is that it looks like it's frozen in time, as if it happened in slow motion. But in reality it occurred literally in a split second when the diver turned and the dolphins turned upwards to face her and then they were gone. I probably took, who knows, 400 pictures of that pod over the couple of hours that they stayed with us. A bunch turned out good, but that one single image was really special.

MM: What makes that one so compelling?

BKS: People look at pictures of dolphins and might go, wow. But in this case, when you can show diver interacting with the dolphins, it's much more emotional. People look at it and go, that could be me, and I think that's why it's so powerful and draws the viewer in.

I don't know if that sets me apart from others, but capturing that interaction, whether it's between humans and animals or places, like caves or shipwrecks, is something that I feel in my work.

MM: Well, it's obvious that others are feeling it too! In addition to winning the Traveler photo contest, you and David won an Emmy and an Edward R. Murrow award in 2011 for your documentary on Eagles Nest cave



system, you were inducted into the Explorers' Club, you won four more Emmys in 2013 and were inducted into the Woman Diver's Hall of Fame, that same year you were the underwater director of photography spot for Nat Geo's

"Mayan Underworld: The Real Doomsday," and have gone on to do two more NatGeo projects. All that and before you were 30 years old!

BKS: I feel so young to have

received these honors. It really means a lot. And being the underwater director of photography (DP) for a NatGeo special! Wow. That was really a high point. I was walking around out there feeling like Wes Skiles [Becky smiles]. He was one of my role models. [Skiles was one of National Geographic's go-to photographic directors for caves before his passing in 2010].

To me, it was the ultimate dream job and what I have been working towards all these years. To have the opportunity to really be creative with lighting and shot composition and directing underwater scenes for NatGeo felt like a huge accomplishment. It was pretty amazing.

MM: It's a dream that you have been pursuing for a long time.

BKS: When I was very young, 10 or 11, I wanted to be an ichthyologist. My friends were like, huh? I memorized the names of fish in saltwater aquariums at the local pet shop. I loved sharks and was fascinated watching documentaries and seeing them on television. Now when I look back, I realize that's what sparked my passion to be an underwater cinematographer.



Becky Kagan Schott and David Schott with Emmy awards in hand





BECKY KAGAN SCHOTT

Photographs by Becky Kagan Schott of divers in underwater caves in Belize and Florida (left and bottom right); Becky Kagan Schott with husband David preparing for a shoot in Mexico (below). "A lot of equipment preparation went into filming Dan's cave system in the Bahamas for Red Bull," she said. (lower left)



my scuba instructor, Sue Smiley. She told me later that they didn't accept students until age 14, but I was so excited about diving that she couldn't turn me away. Thankfully she didn't. She certified me and started my whole career.

MM: Your dad passed away that next year and you and your mom moved to Orlando, Florida. Did it make it harder for you to go diving because of the association?

BKS: My life would have

been very different if my dad hadn't encouraged me to learn to dive the year before. Diving helped me through his passing. It gave me goals, something to focus on. I was doing something no one my age was doing and it kept me out of trouble. I was working to earn my next regulator instead of hanging out with the bad kids and smoking in the back of the schoolyard.

MM: Tell me about your photography. Was that also informed by your diving experience?

BKS: I started taking pictures when I was very young. I always had a disposable, even from my very first scuba class, but I probably

MM: And that's what got you started in diving?

BKS: My parents gave me a subscription to Skin Diver magazine when I was 10, which really opened my eyes to the world of scuba. Then two weeks before my 12th birthday, I was on a trip to Florida with my dad and the hotel we were staying at had a dive shop which offered resort courses. My dad paid for the course, and I knew from that first second underwater, that that's what I wanted to do for the rest of my life. I was hooked.

When we got home, I found a local dive shop, and begged my parents to drive me to scuba lessons. I did a lot of babysitting to pay off those lessons. [Becky chuckles]



DAVID SCHOTT

MM: You got certified when you were only 12 years old!

BKS: When I tell people I have

been diving for 18 years, they look at me funny, like: "Are you lying to me?" Nope, I started when I was 12. I still keep in touch with



BECKY KAGAN SCHOTT



got more serious about it when I was 14 because my family didn't dive. So I wanted to be able to show them what I was seeing underwater and why I loved it so much, especially my mom.

MM: You studied photography in high school, got involved in the school's TV production program in your freshman year and went on to become the anchor for the school's daily news show.

BKS: The news show really gave me my first taste for television, editing and putting stories together. It also showed me that you could touch a lot of people by what you do. I would go shoot some-

thing, put together a little video and then broadcast out to four thousand students. People would come up and tell me that they really enjoyed it. It showed me how powerful media can be.

MM: So you stayed with it.

BKS: I went on to get my BA (Bachelor of Arts degree) in journalism at University of Tampa, where I did everything from documentaries to news reporting and ended up getting an internship at the local NBC station, which was right across from the school. That gave me my first start.

MM: Most people probably don't realize that you started your career in the news business.

BKS: I was lucky to get a job as a photojournalist right out of college and it allowed me really hone my topside skills. I don't think you can just go be an underwater videographer. You have to know a bit about cameras and how to shoot and what makes for a good shot and sequence and things like that.

I worked in TV news from 2004 until 2009. First at CBS in Ft. Myers and then at Fox in Tampa, and later in Philadelphia. I stayed in news, even after my husband Dave and I started our own production company, Liquid Productions in 2007.

MM: What was it like?



GERARDO DEL VILLAR

BKS: News was like an 80-hour a week job. I wouldn't want to be doing it now but it was great experience. In Florida, I did everything from covering alligators in backyard pools to shooting so many hurricanes and brush fires. I even reported on a few horrible crime stories when we moved back to Philadelphia and got to cover campaign rallies in the 2008 presidential election. But by 2009, Dave and I had enough work for me to leave and focus on our own company.

MM: You and David specialize in shooting in extreme underwater environments like caves, shipwrecks, or under ice. I imagine that's a difficult niche to fill.

BKS: It's not just being able to do the dives but being able to shoot and

handle yourself in those environments. There's a lot more that goes into that kind of shoot, a lot more planning, a lot more hazards, and it takes—I'm not tooting my own horn here—but I think it takes a certain personality to deal with the problems that come up. It's not just a dive trip.

Believe me, these things do not go smoothly. You're often in foreign countries. Equipment doesn't show up. You need batteries. Sometimes people don't always want you there depending on the shoot and the weather doesn't always cooperate. But you do whatever it takes to get it done and make the shoot successful. That's how you make a reputation for yourself and hopefully get called for more jobs in the future.

MM: It sounds like hard work.

BKS: We often work 20-hour days, for days in a row. There's no weekend, there's no, hey, I'm tired, I'm sleeping in today. It's just not how this job goes. Like that first Nat Geo job [Mayan Underworld] in Mexico. It was two shoots, 10 days each and it wasn't always pretty. I probably only got three hours of sleep a night by the time we were done reviewing the day's footage, production meetings and prepping the equipment. It was not a vacation.

MM: Tell me about it.

BKS: We were diving in some very remote locations in the Yucatán. Not Rivera Maya, but the Yucatán. A lot of the loca-



JEFFERY GALLANT



JON BOJAR

Becky Kagan Schott filming manatees in Florida

Schott

Becky Kagan Schott pulls a vacuum seal and tests settings on her rig; David Schott prepares a Gates Deep Dragon housing for a cold water shoot in Canada (below)



BKS: We ended up having to go back and film in a different location about a month later, and that went pretty well. But it was still high stress between managing the rebreathers, multiple cameras, lights, and coordinating the team to make sure everyone was on the same page. Fortunately, we had great weather, got all the shots we needed and then some and everyone went home feeling great about the show.

MM: Have you found it difficult to break

tions required 80 to 85 foot rappels to get down into the cenote and there was no land for staging. So we needed to float everything down there. We had zodiacs in the water to clip off our gear and then we'd dive to 150 feet in this giant cave and shoot Mayan remains, skulls and artifacts.

The problem was that the weather was getting worse because of an approaching hurricane and the cenote started acting like a giant drain. There was just mud pouring down on top of us, and swirling around in the water. It was like being in a giant toilet.

MM: What did you do?

BKS: It was very stressful because the producer was pushing to get the shots. He wanted to get them done. I had a team of 10 people in the water doing lighting, communications, cables and talent and second cameras. I was trying to hold it together but things were getting hairier with the mud waterfall, visibility and delicate artifacts that were thousands of years old that we didn't want to damage. It just wasn't safe for us, or for the artifacts, and I had to make the call.

MM: That must have been difficult, particularly on your first Nat Geo job as



underwater DP!

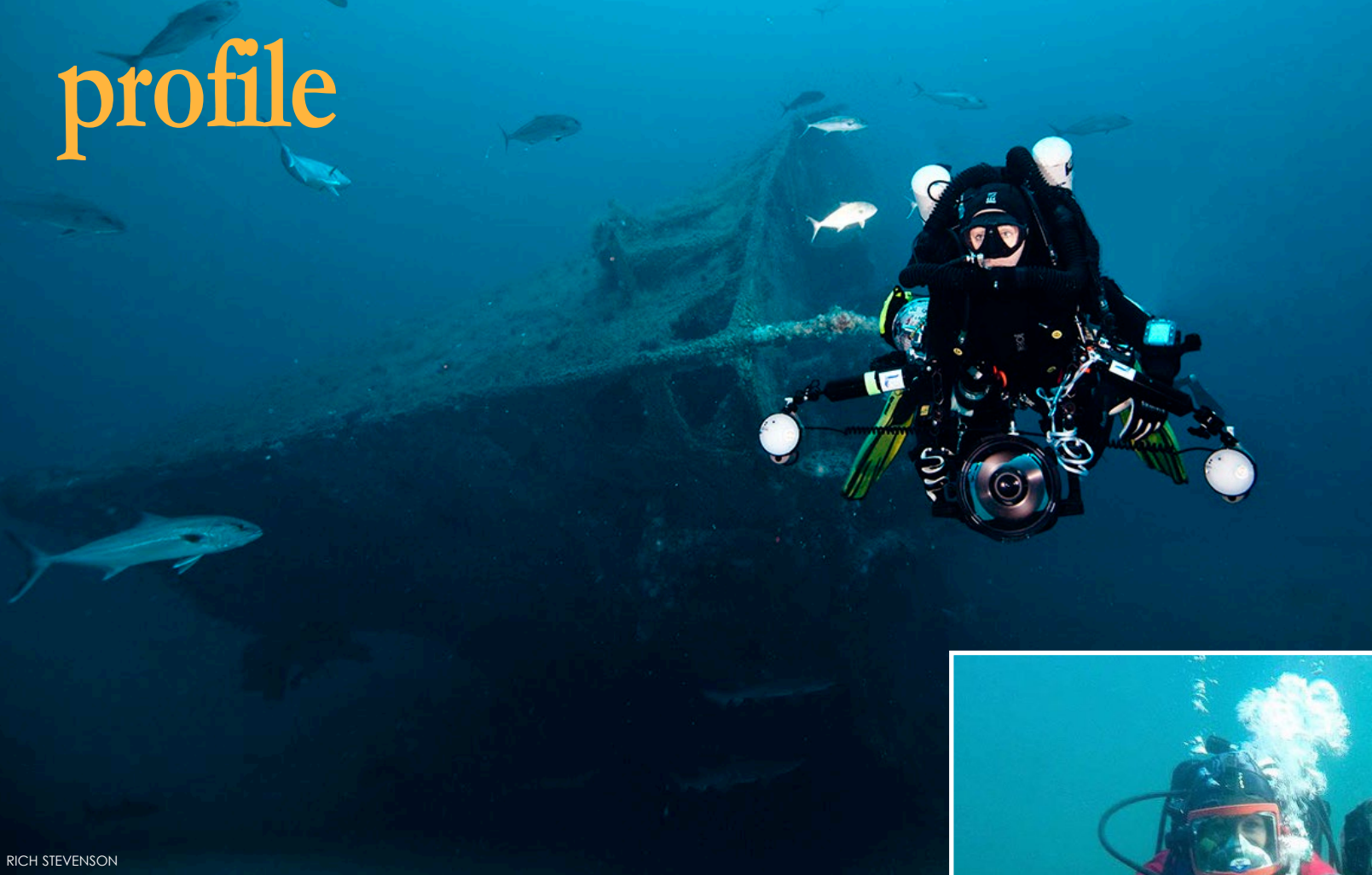
BKS: It was a tough call to make, especially when you're getting paid to be on the job and you've got a producer saying, we've spent hundreds of thousands of dollars for these shots, the host is here, the crew is here and we want to get it done. I hated to be the bearer of bad news, but I had to tell them, "It's not going to happen."

MM: What did happen?

into what has been a very male-dominated field?

BKS: It's a tough field to break into whether you're a male or female. But yes, I am a girl. Thanks for noticing [Becky laughs]. I do this because I love it and can't imagine doing anything else. I don't think about being a woman when I'm doing it.

When I was younger I worried about people taking me seriously. But now, I do all the tech dives, I carry the big



RICH STEVENSON

Becky Kagan Schott on *E.M. Clark* wreck off North Carolina (left) and on *Grecian* wreck in Lake Huron (bottom right)

(WHOI), which has become a steady client. I have done a lot of projects with them including documentaries and expeditions and working with 3D-video for TV. I shot topside for the 2010 Titanic Expedition for British TV, and worked on an amazing documentary called "Project Ship Hunt" in 2012 in the Great Lakes. Sony funded the project and it aired on Current TV.

MM: It was an educational program?

wreck. Some of them had never been on a boat before and they had no idea what was in their own backyard in Michigan. They thought everything had already been found. We really opened their eyes and hopefully viewers' eyes as well.

Every photographer dreams of inspiring someone, but when you can introduce the younger generation to our world and show them there's still so much to be discovered, it's really a thrill. It's been a passion of mine ever since.

BKS: Every time we get called for a job, it's something slightly different and unexpected, and I love that. Whether it's something that no one has seen before, like a virgin wreck, or something I've never shot before, like hump-back whales, which I got to do this year, or shooting great whites outside a cage near Guadalupe Island. Sometimes it's a personal challenge, or photographic challenge or challenges with depths and currents. I'm always trying to better myself, and my dive education and so I am interested in all of it.

MM: Any favorites?

BKS: One of my all-time favorites was a 3D shoot we did up in Isle Royale National Park for

cameras, I dive in challenging places and I come home with the images, so I just let my work speak for itself.

MM: How did you get your first break as an underwater cameraman?

BKS: It was in 2007. Dan Crowell hired me for a TV series called, "Quest for Sunken Warships" for the Military Channel. They wanted a female talent/underwater videographer. A friend of mine told them, "I know this girl." I was 25 at the time and had the look they wanted. They took me on and Dan trained me to dive a rebreather for the show, which was really cool. He was also the underwater DP for "Deep Sea Detectives" and I learned quite a bit from him.

Quest was my first TV series. Later Discovery picked up the show and it's still airing today.

When I look back now, I realize that I was so new at the time. I have learned so much in the last five years.

MM: That was your first introduction to rebreathers as well?

BKS: Yeah. At the time, I knew their benefits for filming, but I was also doing a lot of 300-foot open circuit dives and starting to feel that I was hitting the limit of what I could do. So I was interested in rebreathers to extend my range.

MM: And now they are a mainstay for you. I see you dive a Meg. [Megalodon made by Inner Space Systems Inc.]

BKS: I love my Meg but I am also certified on the [AP Diving] Inspiration and the KISS. They're fantastic tools that allow me to do so much more than I could ever do with open circuit scuba.



TRISHA STOVEL

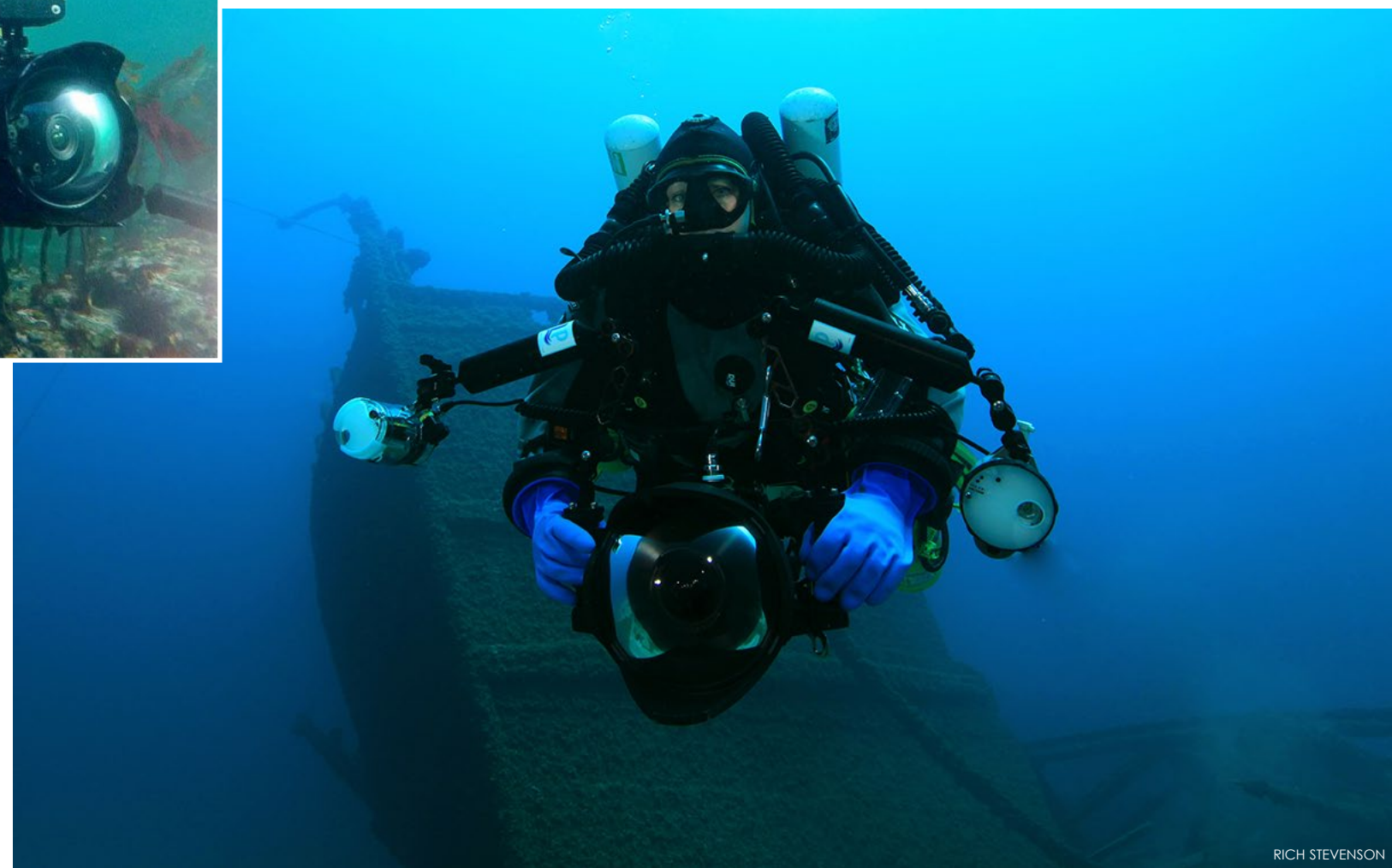
I'm able to stay down a lot longer, whether it's in 18-27m (60-90ft) of water, or spending an hour at 92m (300ft), get closer to most marine life, and even get clear audio versus hearing the sound of diver's breathing on the video. There are many benefits.

MM: What happened after Quest?

BKS: Dave and I started getting work from Woods Hole Oceanographic Institution

BKS: That's right. We took five students, ages 16 and 17, and taught them how to hunt for a ship-

MM: You've worked on a diverse array of projects from cave diving and shipwrecks to filming wildlife, to being underwater cameramen for Discovery's new TV series "Bering Sea Gold."



RICH STEVENSON



BECKY KAGAN SCHOTT

the National Park Service's Submerged Culture Resources Center. I had never heard of Isle Royale before. I had to Google it. It's a tiny island in Lake Superior and the water is 1-2°C (34-36°F). At the time, I hadn't done much cold water diving and I was a bit nervous, but I was like, all right, I'm ready for a challenge. Break out the dry gloves!

We were up there for three weeks that first time, and it quickly became one of the favorite places I've ever been. It's a graveyard for shipwrecks, many of which are intact and absolutely incredible to dive on.

There are wrecks from the 1800s to the mid-1990s, and the wood and artifacts are very well preserved in the cold fresh water, as if they had sunk yesterday. It's amazing. There are purses and boots and belts and porcelain hand mirrors strewn in and around the wreck. In the ocean, most artifacts are usually covered in

mud, or coral or just gone. It was just fascinating to see.

MM: You mentioned that Wes Skiles was one of your role models.

BKS: I've often thought that I wanted to be the female Wes Skiles. I've been enamoured with his work since I was 14. Later when I got into cave diving and began to understand more about photography, I could really appreciate how amazing he was.

Wes wasn't just a cameraman. He was also an amazing still photographer and director. He did stuff 20 years ago that would be difficult to replicate today.

MM: What kind of relationship did you have?

BKS: It's funny; I started emailing Wes when I was 18. You know, "Hi Wes, will

you look at my photos? If you ever need an intern or whatever, please call me."

He ignored me for years, which was fine. I get a lot of those emails now and I understand. So I just kept working towards my goals and getting more shows and building a name for myself.

A couple of years ago, he took notice and called. He said, "I'm working on this project and I'd like to get you involved." Of course, just having him ask meant the world to me.

MM: Did you get to work with him?

BKS: Sadly no. I never did. He passed away six months later. It's one of my bigger regrets. I really wish I could have. Wes died while diving a rebreather on NatGeo shoot in Florida. He was alone at the time.

MM: Has it changed the way that you

Photo by Becky Kagan Schott from Isle Royale National Park in Lake Superior where one can see the wreck of the *America* at the surface, as it starts just 1m below

dive your rebreather?

BKS: That year, I lost five friends and acquaintances over a 12-month period; four were diving rebreathers, one was on open circuit. And I've lost other friends diving rebreathers prior to that and since. It's really taught me to never be complacent, and to always, number one, watch the rebreather over everything else. I love my rebreather. I trust it. But at the same time, I don't trust it, and I'm always watching it, if that makes sense.

MM: You have a lot to watch with the rebreather and cameras and your crew!

BKS: That's why I love to have a safety diver with me. Someone who is competent and there to watch and help out if there is a problem. Because you know what? It's easy to make mistakes. So, I just think it's smart to have somebody there watching my back.

So many of the fatalities in the past few years have involved solo diving, whether they've been on rebreathers or open circuit. I believe that those people would have had a better chance of surviving if they had someone with them, and even if they still passed away, we might know more about what happened.

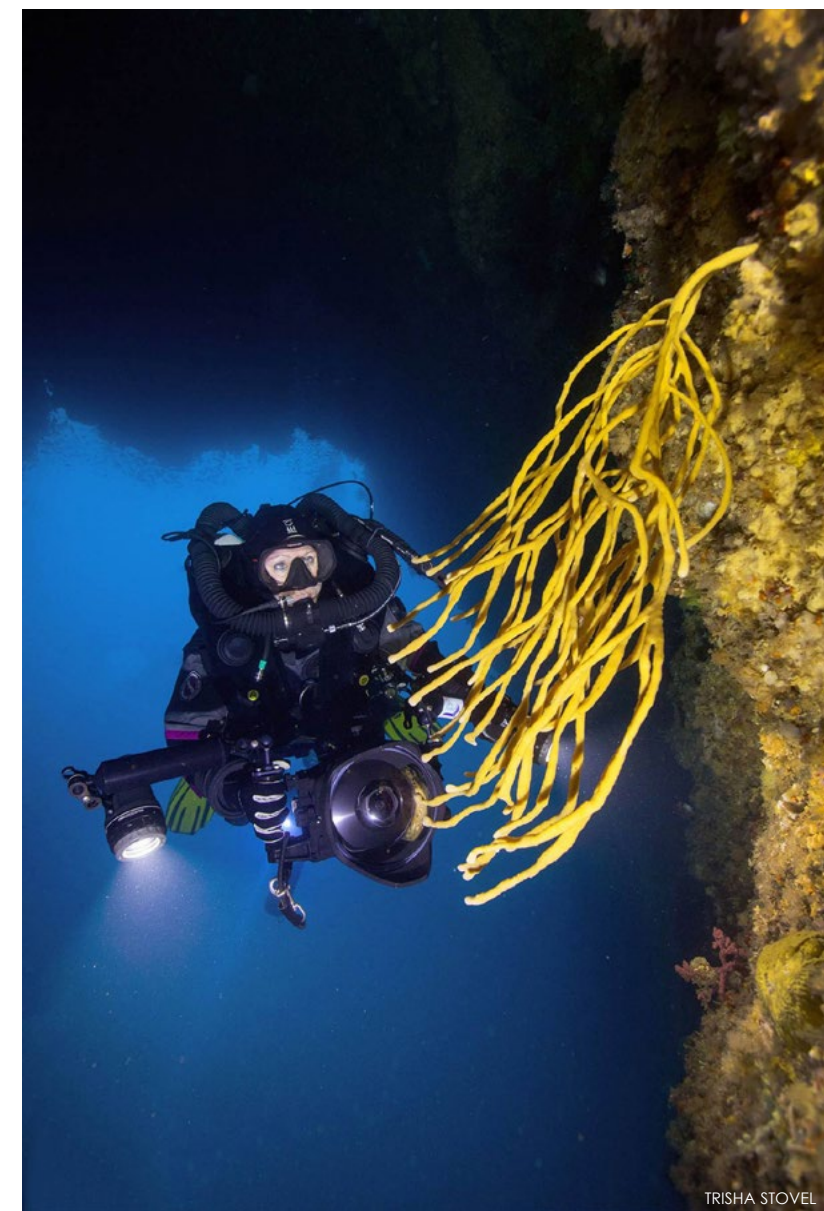
MM: Have you ever had an incident?

BKS: I've never had to bail out on my Meg, but I had a close call. I was shooting in about ten feet of water pushing a very big camera around and fighting the surge. I was on and off the boat a lot and a safety diver was snorkelling above keeping an eye on me.

I couldn't see my heads-up

display very well because there was so much ambient light, but I was adding a lot of oxygen manually. Suddenly, I felt light-headed, which never happened before. I felt like I was going to black out. I immediately knew something was wrong.

I looked at my handset and my PO2 read 0.16 [Hypoxic levels]. And I was like, "Oh My God!" I immediately flushed the loop. I found out later that my solenoid wasn't in all the way. It probably got knocked loose getting on and off the boat, and it wasn't adding oxygen to the loop. Scared the living daylights out of me. All I could keep thinking for the next



TRISHA STOVEL

Becky Kagan Schott photographing caverns in New Zealand



BECKY KAGAN SCHOTT

THIS PAGE. Photographs by Becky Kagan Scott of dive buddy Jitka Hanakova with ship's wheel (left) on the first exploration dive on the *Alice E. Wilds* wreck, found at 98m (300ft) in Lake Michigan; Diver on the *Cornelia B. Windiate* in 56m in Lake Huron (center)

been working on in between jobs. Would you share one that's in the works?

BKS: One of the projects we've been working on over the years is an hour-long documentary about

and flowing out if it. It's dangerous. You can only enter the cave when there's a severe drought and the water pressure is very low, and that only happens a couple of months every decade. It took a team of ten of us to get all of our cameras, lights, DPVs [diver propulsion vehicles], and safety bottles into the system for a single video dive.

We are also working on a short film on shipwrecks in the Great Lakes, which we are shooting with our new 6k Red Epic Dragon camera, that we'll probably use to pitch to the networks. As a bonus, I have had my Great Lakes

shipwreck images published in 12 magazines!

MM: *I have seen some of them. They are absolutely stunning. What advice would you offer to people who want to get into the business?*

BKS: I would say just get out there and shoot, no matter what kind of camera you have. You don't need the biggest or fanciest camera, but practicing is everything. Getting out there and diving and shooting, and even practicing on land will really make a difference.

Do it because you love it. You can't just go, "Wow, I think being an underwater cameraman would be a fun career." That won't work.

It has to come from passion. You have to eat, live, breathe it and want to do it, whether you're getting paid or not. ■

Michael Menduno is an award-winning reporter and technologist based in California, USA, who has written about diving and diving technology for more than 25 years and coined the term "technical diving." He was the founder and publisher of aqua-CORPS: The Journal for Technical Diving (1990-1996), which helped usher technical diving into the mainstream of sports diving, and organized the first Tek, EUROtek and AsiaTek conferences, as well as Rebreather Forums 1 and 2.

year was it's as easy as that. One tiny mistake and that could be it.

Since then I have been even more diligent about watching, slowing down and doing things right, no matter how hard we're pushing on production.

MM: *Checklists?*

BKS: I do my checklist on every dive, no matter what. I have it written in my wet notes. It gives me a little peace of mind. And I actually do everything on the checklist, not just look at it go, yeah, I think I did that. If I can't remember if I analysed my tanks, I go back and I re-analyse them, because that's how you catch problems.

I also make checklists for my cameras so I can make sure that everything is plugged in and good to go there before I hop in the water. It's often the little things like remembering to put fresh batteries in the monitors or formatting the cards that can trip you up.

MM: *You've accomplished so much at a young age. Do you and David have a goal or vision of where you'd like to go from here?*

BKS: I absolutely love what I do and I'm very lucky to have hit my original goals so soon. So being an overachiever, I've had to re-evaluate what I want to do in the next 10 years, what our goals are for the future.

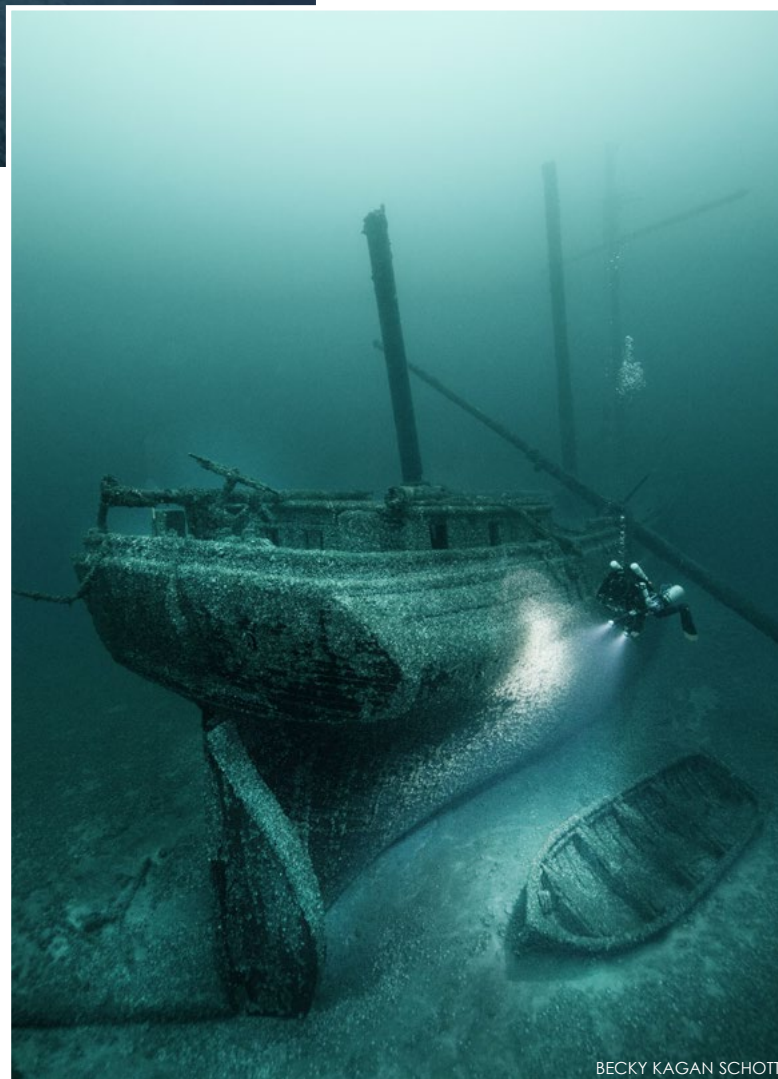
For one thing, I'd like to do more television series versus doing single documentaries, like the "Bering Sea Gold" stuff we shot for Discovery. You show up and you're in one place for a month and shoot several episodes versus just doing a week or ten-day shoot.

But I also see us growing as a company. I'd like to see us pitching our own documentaries to the networks and producing shows in the future. That's the next logical step.

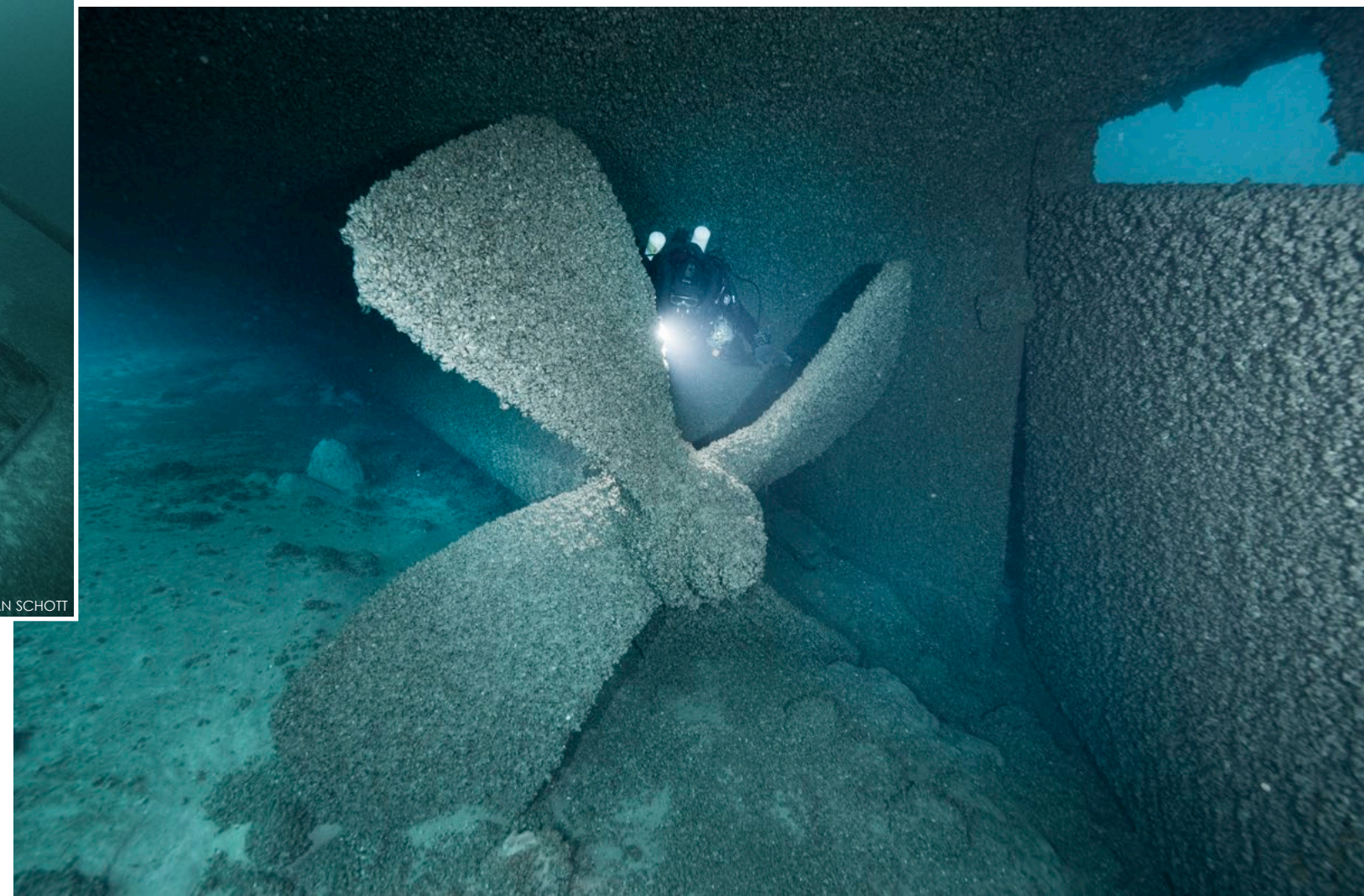
MM: *You mentioned to me that you have some of your own projects that you and Dave have*

the Weeki Wachee Springs Cave. It's a passion project. It's one of the deepest cave systems in the United States, at over 122m (400ft) deep and and extremely challenging cave to document because of the violent entry.

There's a small shift that has over 3m³ (100ft³) of water per sec-



BECKY KAGAN SCHOTT



Diver at propeller on car ferry wreck in Lake Michigan



Lake Malawi

— *Freshwater Diving & African Safari*

Text and photos by Scott Bennett



Elephant (left) and hippos (above) at Liwonde National Park in Malawi
PREVIOUS PAGE: Snorkelers in Kaya Mawa Lagoon of Lake Malawi



Bushbuck in Liwonde National Park

“I’ve heard of Malawi... Isn’t that where Madonna adopted one of her babies from?” queried one of my clients before my departure for Africa. I winced, but at least she had heard of it. Up to that point, all responses to my intent of visiting the small African nation consisted of confused looks or furrowed brows. Sandwiched between such safari heavyweights such as Tanzania and Zambia, Malawi gets overlooked by most visitors to Southern Africa.

For some reason, many people attach an unwarranted stigma to Africa. Whenever there is trouble somewhere, be it political strife or Ebola, many assume the entire continent is hazardous by geographic association. As African nations go, Malawi remains refreshingly innocuous. Celebrity adoptions aside, it does not make the news for the wrong reasons. Make no mistake, however, the country’s small size belies its multitude of attractions. Known as the warm heart of Africa for its friendly people, I quickly realized it could also be called the land of surprises.

My departure point was Johannesburg, where I caught a two-hour flight to Blantyre, the country’s main city and business center. Despite being home to a million inhabitants, the tiny airport belied the city’s impor-

tance, although a sizable new section was under construction. There was no visa fee, but it was the first time I had ever been fingerprinted. The queue was sluggish, but I finally got through and collected my bags, which had already come off the conveyer belt.

Waiting outside was Christopher from Wilderness Safaris who would drive me the three hours to Mvuu Lodge in the Liwonde National Park. After all, one cannot visit Africa without doing a safari! With such wildlife icons as Zambia and Tanzania sharing its borders, Malawi is often overlooked as a wildlife destination.

With a population of 15 million, Malawi is one of the poorest countries in Africa. En route, the three most well constructed structures were churches,

mosques and petrol stations. Fortunately, Malawi seems to be avoiding religious strife, a sad reality in many countries worldwide. “No problems here,” said Christopher with a smile.

Liwonde National Park

Several hours later, we arrived at Liwonde. Upon paying the park fees, we set out for Mvuu, the sole lodge located within park boundaries. My third trip to Africa, this was my first visit during the dry season. Dry and dusty, the landscape was dominated by a profusion of baobab and candelabra trees, the latter named by their array of cacti-like branches sprouting near the top, giving the appearance of a candelabra. En route, game was abundant with impala, bushbuck, waterbuck and kudu. A herd of elephants was an unex-



Western banded snake eagle



Yellow baboons (left), warthog (below) and herd of elephant, with egrets and hippos wallowing in watering hole at Liwonde National Park (lower right)

local Tonga language, and the name could not be more fitting. Approximately 2,000 hippos reside in the Shire River, and seeing them is a 100 percent certainty. To me, their snorting and bellowing

is a sound synonymous with the African bush.

Being at the very end of the property, it was a bit of a trek to my tent. Passing a cluster of canelabra trees, I startled a troop of yellow baboons, which promptly scattered. Boasting quintessential safari décor, my “tent” was a revelation. The roomy interior featured traditional thatched construction, accented with African art and a huge canopied bed. The



mosquito netting was not actually tucked into the mattress but cascaded to the floor away from it, allowing easy maneuverability. In many years of travel, I had never seen this before. Genius! A verandah overlooking the river completed the picture. I even had a welcoming committee in the form of a bushbuck. Sitting absolutely motionless, she allowed the opportunity for frame-filling portraits.

There was no time to waste, as I had arrived in time for sundowners—that most essential of safari pastimes. A short drive brought me to a lookout over the Shire River, where I enjoyed a glass of wine, as the setting sun burnished the still waters to liquid gold.

pected surprise, with quite a few juveniles present.

Mvuu Wilderness Lodge. Arriving at Mvuu, I met resort manager, Sarah Glyde, who gave me a quick tour prior to check-in. A month earlier, the jetty had to be relocated after a colony of white-throated cormorants took up residence in a tree alongside the walkway. It was moved far enough away to prevent guests from getting “frosted”.

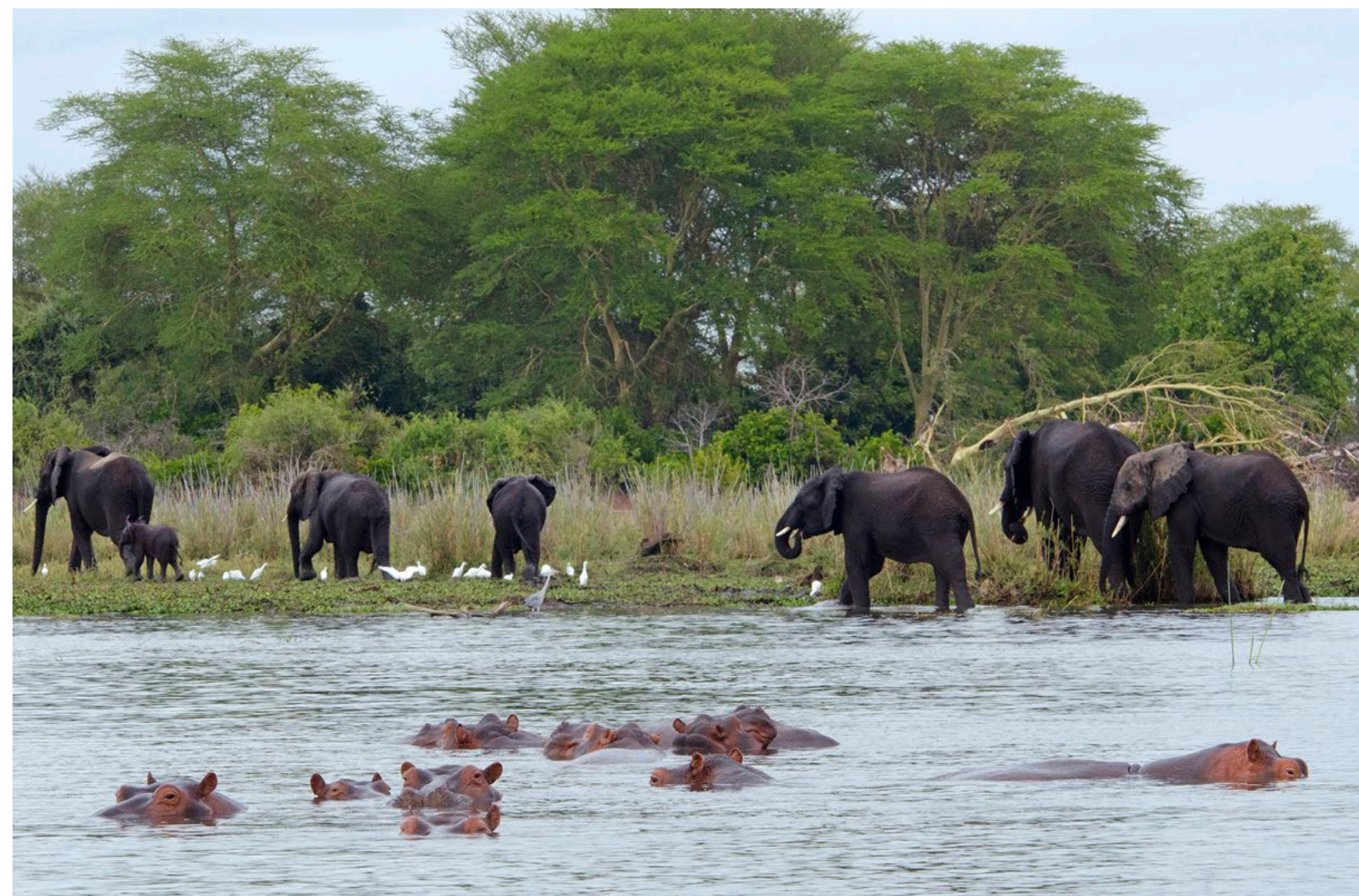
Discreetly nestled on a small lagoon off the Shire (pronounced “Shir-ee”) River, the camp was simply stunning. Resting on a raised platform high beneath an imposing thatched roof, the main lodge featured an open-air reception and dining area, offering superb views of both the lagoon and the Shire River beyond. Lodge facilities included a dining room, pub, lounge area, library and swimming pool. Accommodation



Main lodge at Mvuu Wilderness Lodge in Liwonde National Park

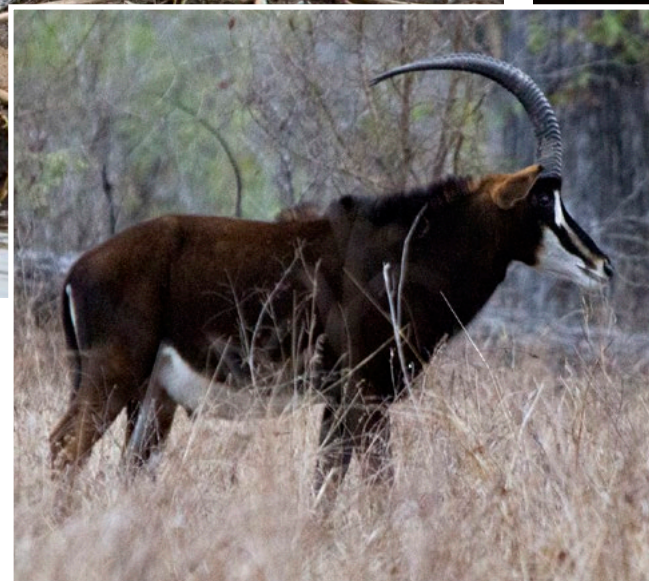
was comprised of eight luxurious “tents” for a maximum of 16 guests, each with ensuite bathroom facilities and a private viewing platform overlooking the water.

Shire River. It did not take long to spot some wildlife. Egrets waded through the lagoon’s shallows while some imposing crocodiles basked on the muddy riverbank. Mvuu means “hippo” in the





CLOCKWISE FROM ABOVE: Crocodile; sunset over the Shire River; African pied kingfisher; sable antelope; African fish eagle; and kudu at Liwonde National Park



The birdlife was spectacular, with open-billed and yellow billed storks, African spoon-bills, fish eagles, African pied kingfishers, little bee eaters, reed cormorants and African jacanas to name but a few. Wire tailed swifts were constant companions, perching on

with portable grill, attended by a beaming chef. "Would you like an omlette sir?" Nearby, a fully-set table groaned beneath copious amounts of sausage, bacon, eggs, toast, muffins and fresh coffee. Sitting down to eat with hippos bellowing in the river was beyond words. Well, maybe three: Best breakfast ever!



Night drive. Afterwards, a night drive yielded kudu, white-tailed mongoose, genets, scrub hares and even a bushbaby hopping along the ground. Back at the lodge for dinner, Sarah asked what I would like to do the next day. Activities included guided bush walks, game and boat

drives. I opted for the latter, which provided tremendous photo opportunities, especially for birds. Over 300 of the country's 650 species reside within the park.

Boat drive. The next morning, coffee and biscuits arrived just before sunrise. Sipping a steaming java with the bush's chorus as backdrop was a sublime start to the day. At the jetty, I met Mathews, who would be my guide for the morning. Midway across the river, the clouds rolled in, dashing my anticipated sunrise photos. My disappointment proved short-lived as the photo opportunities came fast and furious.

the boat's bow or under the canopy barely an arm's length away. Hippos were also abundant. Fortunately, Mathews knew exactly which to approach or which to avoid. Elephants grazed the marshy areas, as cattle egrets snapped up insects disturbed by their enormous companions. Crocodiles basked at the water's edge, propelling themselves into the water if we approached too closely.

Having been afloat for a few hours, Mathews suggested we go ashore to stretch our legs. Clambering up the embankment, I stopped dead in my tracks. In the clearing sat a linen-clad table

The Sanctuary. Within Liwonde is a 4,000 ha fenced area called "The Sanctuary," where a number of rare species have been introduced including buffalo, Lichtenstein's hartebeest, zebra, roan, eland and black rhino. The Liwonde Black Rhino Project, initiated in part by Wilderness Safaris, has established a small breeding population to provide a source of animals to establish in other parks. Black rhino became extinct in the country in the late 1980s.

Although we did not see any, middens (rhino latrines) indicated their presence. We were lucky to see sable antelope (a first for me), several hundred of which reside in the sanctuary's mopane wood-

land. Another first was a bush pig, a slightly more attractive relative of the warthog. Generally nocturnal, they emerge prior to dusk during the dry season when temperatures are cooler. The nominal entry fee of several dollars was well worth it.

The following morning, a second boat cruise filled my flash card to the bursting point. Back at the lodge for breakfast, a pair of warthogs sauntered through the outdoor dining area. One accidentally toppled a chair, startling itself so much, it jumped a meter backwards! Although brief, my stay at Mvuu was spectacular. Although Malawi is not regarded as a safari destination, Liwonde's wildlife was most impressive. I could have easily spent a week at Mvuu!



THIS PAGE: Scenes from Cape Maclear beach; Sunset over Domwe Island (lower right) at Lake Malawi National Park

Malawi



melee ensued, with each jostling to be in the forefront. Getting a simple portrait of one was a near impossibility.

Lake Malawi

At 500m above sea level, Lake Malawi is no ordinary body of water. Called “Lake of Stars” (coined by missionary David Livingstone due to distant fishermen’s lanterns resembling stars) this inland sea is brimming with superlatives. One of Africa’s Rift Valley lakes, its vast basin was fashioned by titanic geological forces that continue tearing the continent apart. Plummeling to a depth of 800m, the world’s fifth-largest lake features the largest number of fish species

of any lake in the world. At the southern end, the Shire River flows outwards towards the Zambezi River in Mozambique.

Despite its voluminous extent, the lake is conspicuously lacking in large underwater fauna. What it does have is cichlids. LOTS of cichlids. From a few initial colonizers, upwards of a thousand endemic species have evolved, with many more awaiting discovery. In comparison, Lake Tanganyika, 350km southeast, possesses a fraction of the species count despite being substantially larger. The remarkable endemism is due to a number of factors, with isolation from other major bodies of water having a significant impact. Highly territorial, many

Lake Malawi National Park

A drive of several hours brought me to Cape Maclear in the Lake Malawi National Park. A notable landscape feature was the abundance of baobab trees. With bare branches and immense swollen trunks, they bore the appearance of a tree planted upside down.

A World Heritage Site, the world’s first freshwater national park encompasses the Cape Maclear peninsula as well as the lake itself and islands up to 100m offshore. Upwards of 23 dive sites are located within the park’s boundaries. Situated within the park limits,

Cape Maclear. Cape Maclear is a resort area with a really interesting vibe. Abounding with overseas backpackers and souvenir vendors, I felt like I was in Southeast Asia rather than Central Africa.

My first night would be spent

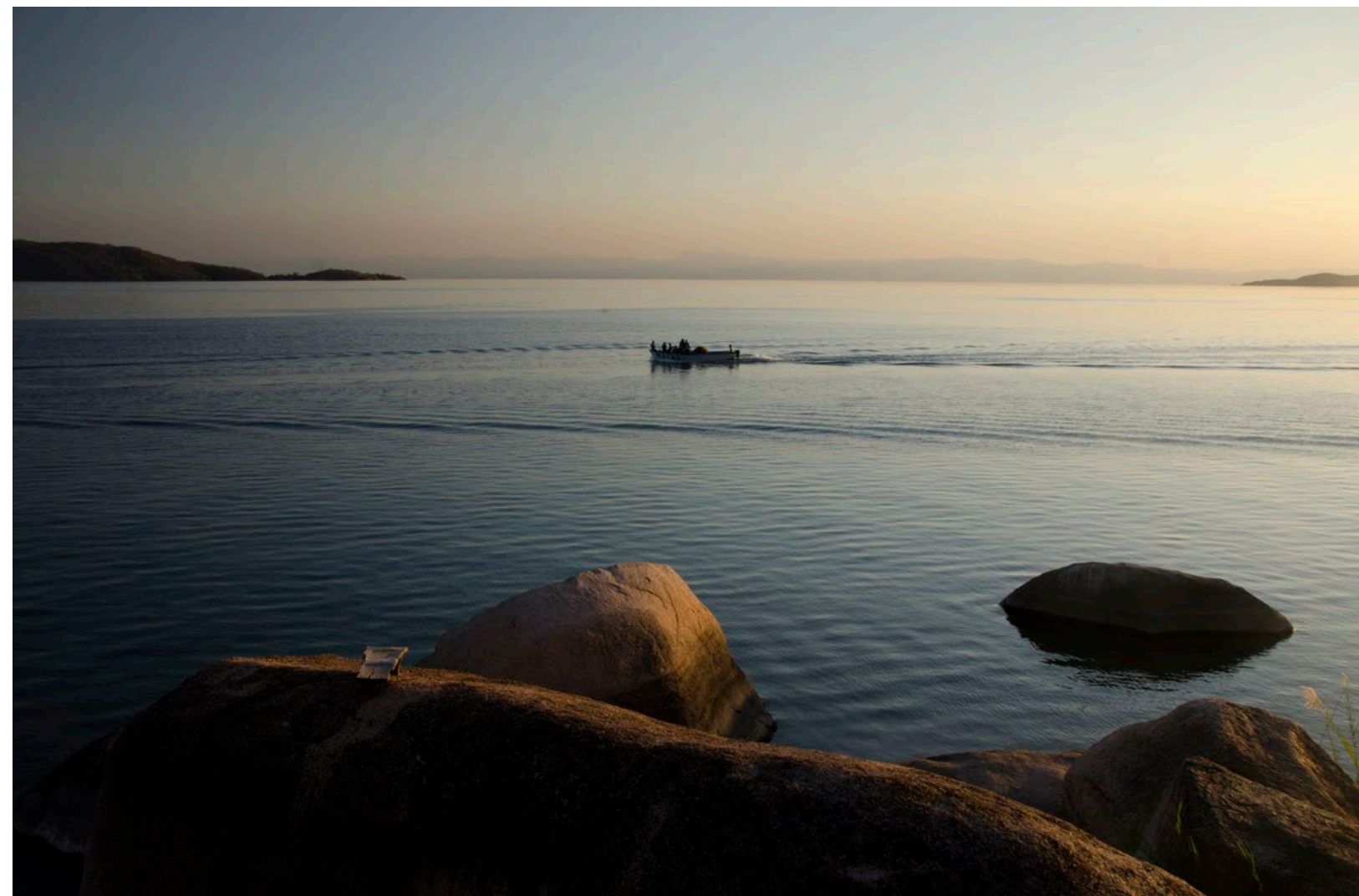
in Cape Maclear at Mgoza Lodge. First, I stopped in at Kayak Africa, the dive operator during my stay. Meeting up with manager Joseph, I was given a rundown on the ensuing days’ itinerary. I would do a pair of dives en route to Domwe Island, where I would spend the first night. Patrick would then pick me up the following morning and take me to Mumbo Island, where I would do more dives before checking into the resort.

Situated right alongside the beach, Mgoza Lodge proved basic but comfortable. With no power at the ensuing night’s accommodation, I embarked on a battery-charging marathon. Stepping out for a pre-dinner stroll, I was immediately approached by a smiling young man. “Hello! Where are you from? What is your name?” I immediately recognized the sales



pitch. The souvenir of choice was a key chain attached to a personalized wooden nameplate. “I just arrived,” I pleaded. “Maybe tomorrow?” “No problem,” he responded and set off in search of a new victim.

I then meandered down to the beach where a number of kids were playing. Seeing my camera, they all came running. A minor





reside in one compact area their entire lives, creating inbred communities that diverge into new species.

The next morning, I awoke to overcast skies once again. After a short walk down the beach, I tucked into breakfast at the lodge's beachfront dining area. The coffee was especially good. According to the label on a bag I purchased, it improves mental performance and reduces risk of

gallstones, diabetes and liver cancer. Perhaps I should have bought several kilos.

Domwe Island

While eating, a remarkable sight unfolded. The bank of cloud ended abruptly in a strait line that stretched across the horizon. Within minutes, the day transformed to brilliant sunshine and blue sky.

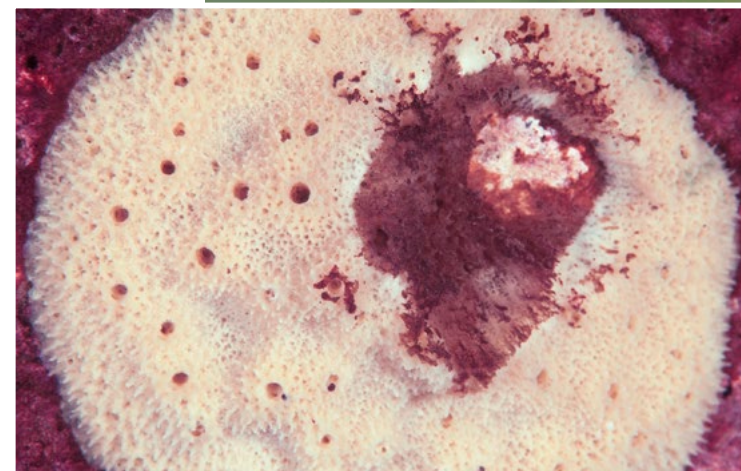
Tumbe Island. Venturing back to Kayak Africa, I met Patrick, who would be my divemaster for the next two days. With luggage and dive gear aboard, our destination was Tumbe Island, a 30-minute boat ride away. Gearing up proved especially interesting. In the ocean with my 3mm suit, I normally require 7-8kg of weight, but a steel tank combined with less buoyant fresh water required only 3kg. Definitely a first! With a water temperature of 23°C, I was hoping my 3mm would be warm enough (Patrick had on 5mm). Plunging in, I noticed an initial chill, but that quickly subsided. Not bad for winter in Africa.

The Wreck. The morning's first dive site was The Wreck. A 15m steel-hulled vessel sunk specifically for diving, it rests upright at a depth of 30m. Heading down the slopes to the wreck, visibility was limited to less than 10m,

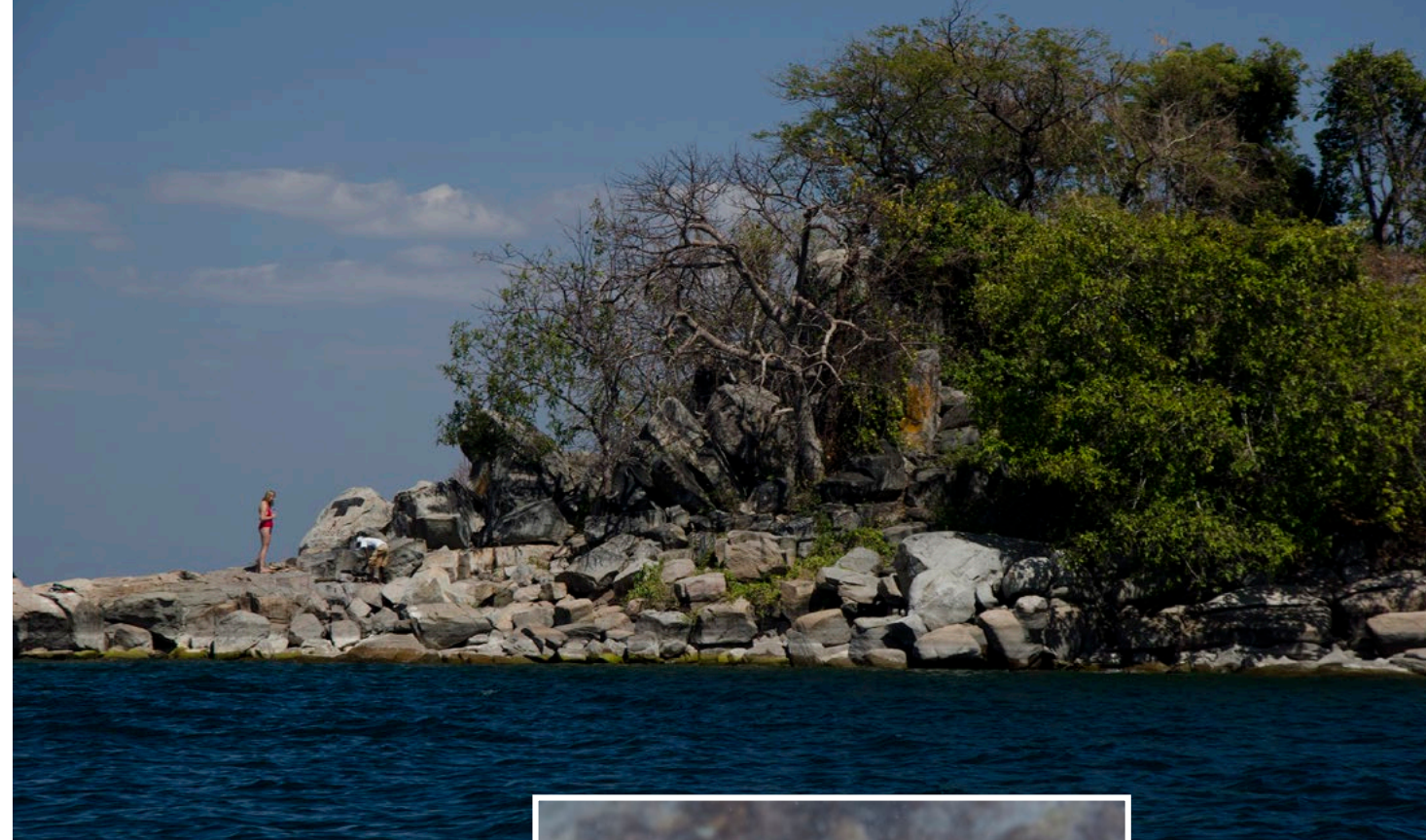
so I ensured that Patrick always remained in close proximity. Cichlids were everywhere in a staggering array of shapes and colors. It was hard to believe they had descended from a solitary species.

The terrain's predominant feature was an abundance of granite boulders, some the size of houses. A large blue crab peered out from under a rock, scuttling to the safety of a deep recess as I approached. Despite the lake's immense size, the crabs are the premier scavengers. Vegetation was surprisingly absent, but every surface was cloaked with algae, the primary food for many cichlid species. A few, however, eat other cichlids.

Arriving at the wreck, Patrick ven-



CLOCKWISE FROM TOP LEFT: Rocky shoreline of Domwe Island; Diver with school of cichlids at Masimbwe Island; Cichlides on The Wreck at Tumbe Island; Close-up of cichlid at The Aquarium dive site; Freshwater sponge found in Lake Malawi



Tumbe Island in Lake Malawi (above); Rocky terrain at The Aquarium (left)

encountered in South Africa, diving Lake Malawi seemed like a swimming pool!

The Aquarium. Completing our surface interval, we motored around to the other side of the island to



Cichlid at The Aquarium dive site

our next site called The Aquarium. I quickly realized the name could not be more apt, being instantly enveloped by cichlids of even greater numbers

and varieties. This time, I took down both macro and wide-angle camera setups, and both were kept busy! Some curious crater-shaped formations on the sandy bottom drew our attention. Remarkably, they were nests made by male cichlids to court females.

Lodging on Donwe Island

With a circumference of 11km and its highest point 400m above lake level, Domwe is Lake Malawi's largest island. "Welcome to paradise," exclaimed a departing guest as I waded ashore. He wasn't wrong; granite boulders flanked the beach like gigantic scattered marbles while dense vegetation cloaked the rugged slopes above.

Accommodation is provided by a trio of fully-furnished safari tents and two tent sites, complemented by a dining



Cichlid hovers over its nest at The Aquarium dive site, Tumbe Island, Lake Malawi

Sunsets and smiles included dive vacations!

Roatan, Bay Islands, Honduras
Phone: +504 9885-0840, +617 391-8338
email: info@turquoisebayresort.com
www.turquoisebayresort.com

Look no further

Emperor Maldives and Emperor Red Sea have the boat to suit you! And oh such experienced teams!

Your liveaboard in the Maldives

Emperor Serenity - 26 guests	Emperor Orion - 24 guests	Emperor Leo - 24 guests
Emperor Voyager - 20 guests	Emperor Virgo - 18 guests	Emperor Atoll - 12 guests

Your liveaboard in the Red Sea

Emperor Elite - 24 guests	Emperor Superior - 25 guests	Emperor Asmaa - 20 guests
---------------------------	------------------------------	---------------------------

The norm, not the exception...

- Great value & variety of boats
 - Quality & service
 - Iconic routes
 - Also perfect for snorkellers and non-divers
- +20 122 2340 995
LIVE CHAT: via our website
reservations@emperordivers.com

emperormaldives.com emperordivers.com

Leading the way for over 24 years
Quality | Excellence | Service | Flexibility | Value

EMPEROR
divers.com





THIS PAGE: Various cichlids hiding in the rocks at The Aquarium dive site and a catfish (above) at Tumbe Island

med students from the United Kingdom who had brought their own food. "You've come to the crappy island first," mused one. Crappy?! If this was crappy, I could hardly wait to see what Mumbo had in store. In reality, he was just joking. Offering more basic accommodation, Donwe is

considered the backpacker island, while Mumbo's resort is more upscale.

Nevertheless, Donwe proved sublime. I even had my open chef. When lunch arrived, the volume of food made me wonder if others were joining me—but no, there were not. The remainder of the day was spent in relaxation mode, snoozing or taking photos. After a glorious sunset over the lake, dinner arrived and proved to be equally sumptuous. (Just how much did they think I needed to eat?)

Mumbo Island

The next morning at breakfast, I finally met my cook. He apologized profusely for the lack of eggs, as they had not been packed

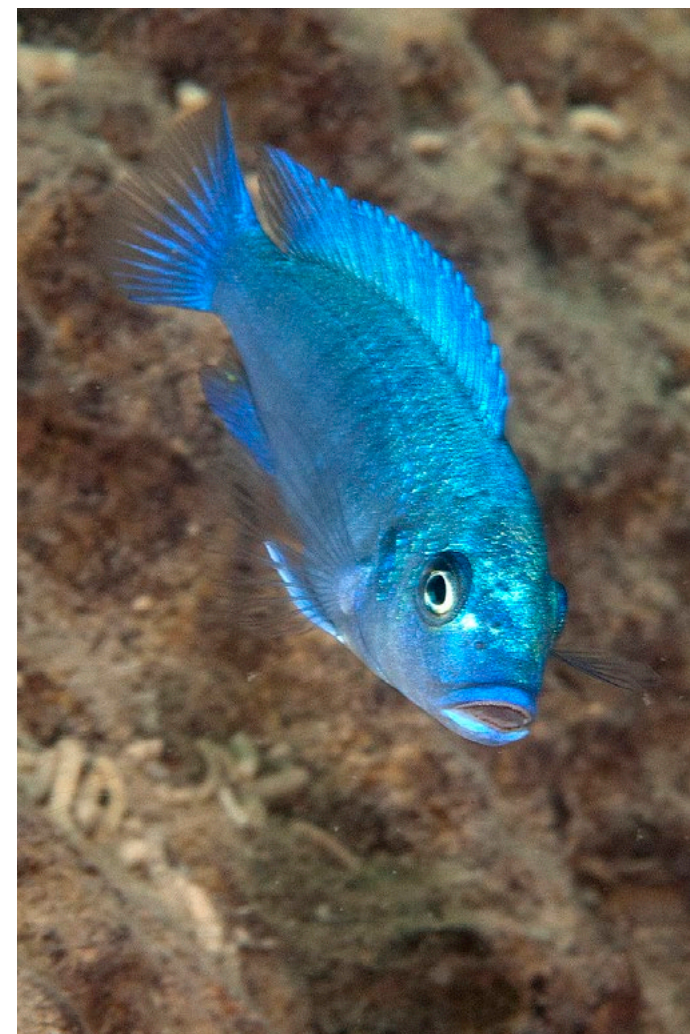
the previous afternoon. The poor fellow had actually worried about it all night! I assured him it was fine and happily loaded chopped sausage and cheese onto my breakfast roll.

Patrick arrived right at 9:00 a.m. and we set out for Mumbo Island. While much smaller and flatter than Domwe, it proved no less dramatic. The island's circumference was a jumble of boulders spilling to the water's edge, with baobab and candelabra trees crowding each other for space.

Tooth Rock. The scenery was equally dramatic underwater. Tooth Rock featured a series of pinnacles descending down to 50m. At 18m, visibility was only 5m at the start. While photography was limited by the conditions, there were plenty of overhangs and swim-throughs to explore. Ascending for our safety stop, the water became crystal clear, with immense boulders

BILHARZIA

Although there are no large creatures in Lake Malawai to pose any threat, there is a very tiny one. Being freshwater, the lake is prone to bilharzia, especially in the Cape Maclear area. Bilharzia is caused by infestation by a type of flatworm, or fluke. The larvae are released by freshwater snails, which can penetrate human skin and mature into adults. The symptoms, which can take six weeks to materialize, depend on the species of fluke. "Swimmer's itch" develops where the parasite enters the skin, and is often the only symptom. Fortunately, a cheap pill from the local pharmacist will nip the problem in the bud. Fortunately, I made it home unscathed and unbitten. ■



area with bar and a water sport gazebo. Meandering around the boulders, a sandy path led me to my tent sitting astride a wooden platform. With birdsong the only accompaniment, I felt like Robinson Crusoe on my own private island!

Arriving in time for lunch, I headed over to the dining gazebo where I met a pair of



THIS PAGE: Various species of cichlids found at Likoma Island in Lake Malawi National Park



ing several African fish eagles.

Bidding Cape Maclear farewell, I embarked on the final

again, I found myself grasping for superlatives. If anything, my tent's location of was even more spectacular than at Domwe. Looking across a small aquamarine bay, I ensconced myself in the hammock as African fish eagles wheeled overhead. Sheer bliss!

Earlier, I was asked if I wanted to go on a sunset cruise. Arriving at the jetty at 5:00 p.m., my cruise vessel was of the no-frills variety: a rowboat, with only a guide, a beer-packed cooler and myself. Heading out, conditions were rough on the resort side of the island, but calmed right down on the sunset side. The trip proved magnificent, with rugged scenery and plenty of birdlife includ-

leg of my Malawian adventure. After a four-hour road trip to Lilongwe, I caught my Ulendo Airlink flight to Likoma Island. Stopping at a gas station outside of town, we were immediately besieged by souvenir vendors. The wooden toys were especially impressive, with everything from bicycles to VW Beetles.

Likoma Island

Between the drive and an airport layover of several hours, it was a long travel day. Fortunately, the flight was only an hour and arrived at Likoma by late afternoon. Dutifully waiting in an old land rover was resort manager Josh. With everyone aboard, embarked on the short drive to Kaya Mawa Resort.



Situated in the northern portion of the lake, just off the Mozambique coast, Likoma is something of an anomaly. Along

with neighbouring Chizumulu, the island is part of Malawi courtesy of the British. In 1880, missionaries from the Universities' Mission to

ders dwarfing the never-ending cichlids.

Mpipi Bay. The follow up dive at Mpipi Bay featured rocky slopes descending gradually to 100m. In the shallows were water plants, the first underwater vegetation I had seen aside from algae. Venturing deeper, we encountered a variety of new

fish species. Silvery chambo are a favored food species for the local people as are the non-cichlid usipa, the latter swarming in great numbers near the surface. I even had a brief glimpse of a small eel.

Lodging on Mumbo Island

Having finished diving by mid-afternoon, we headed back to the resort on Mumbo. Once



Snorkeler in Kaya Mawa Lagoon at Likoma Island in Lake Malawi; Kaya Mawa Resort (left and below)

Central Africa established their headquarters on the island. In the early 20th century, a large Anglican cathedral was erected on the island to further bolster their presence. As a result, the island was ceded to Malawi

rather than Mozambique when national borders were established after World War II.

Kaya Mawa Resort. Yet again, Malawi managed to surprise. I knew the resort was going to be

nice but I was not quite prepared for HOW nice. Translated as “Maybe Tomorrow” in the local dialect, Kaya Mawa was dazzling, nestled along a golden sweep of beach framed by palm and baobab trees. Their blossoms flaming purple, Bougainvillea trees added a dazzling splash of color.

Calling my accommodation a “room” was an understatement. Located at the end of the beach, my villa’s roomy interior featured stone walls and a massive bed draped with mosquito netting. Outside, a private verandah with lounge chairs completed the picture.

While unpacking, I noticed staff moving tables down to the beach. I discovered that dinner was served right at the water’s

edge by lamplight. The appetizer of pan-fried haloumi cheese and cashew salad with a ginger glaze was a standout. Dining on gourmet cuisine as a multitude of stars twinkled overhead made for a spectacular end to the day.

I learned the resort has been voted one of the ten most romantic honeymoon resorts in the world by Conde Naste magazine. Being there on my own, I could have lived without that particular nugget of information.

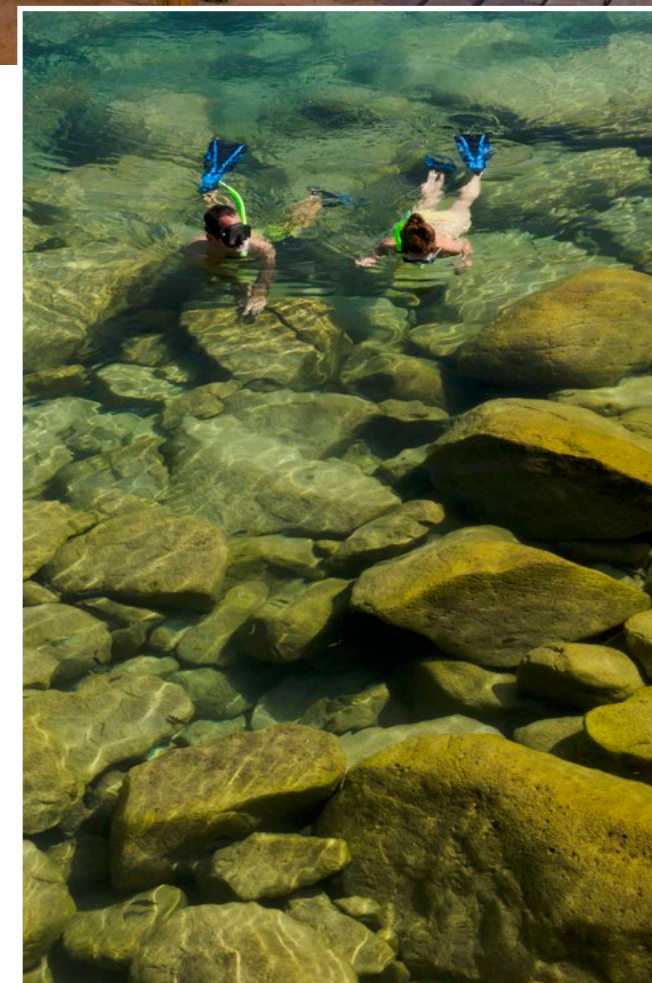


The following morning, I wandered over to the dive center to meet Kevin, the resort’s water sports manager. Also along for the day’s dives was Aaron Gekoski, a photographer from the United Kingdom and his partner, Gemma. Having another photographer along ensured I would not be the only one slowing down the group. I even managed to get my weight belt down to 2kg and likely could have dropped it to one.

Diving

The first day, we did a pair of dives in the morning with a third in the afternoon after lunch. Anchored off Likoma’s northwest side, Masimbwe Island quickly became a favorite.

Masimbwe Island. Featuring shallows on the east with deep drop-offs on the west, the fish



Snorkelers in Kaya Mawa Lagoon Likoma Island





life was profuse and the scenery dramatic. Like colossal steps, huge boulders tumbled down to 26m. Heading deeper, crevices concealed hefty catfish that allowed a close approach. Kevin indicated a curious linear pattern etched into the rock believed to be carving. I even observed a freshwater sponge; something I did not even know existed! Visibility at the safety stop was outstanding, and I was able to get numerous cichlid portraits.

However, one subject remained maddeningly elusive.

Many Malawi cichlids are mouth brooders, with the juvenile fish protected within their mother's mouth. Keeping a mindful eye on her free-swimming offspring, she will gulp the babies back in at the first sign of danger. I could not help but wonder if any had ever been accidentally swallowed. Having missed them at Cape Maclear, I really wanted to see this phenomenon in action

THIS PAGE: Divers explore underwater rocky terrain at Mosimbwe Island; Mouth brooder with juvenile cichlids inside and outside their mother's mouth (lower right)

(the mouth brooding, not the swallowing).

Christian's Point. A second dive at Christian's Point proved more fruitful on the mouth brooder front. The key was to search for a school of juveniles, an indication the mother must be close by. Before long, we witnessed the mouth brooding behavior in action.

Getting a photo proved challenging as the action was lightning fast. We even found some juveniles forming a miniature bait ball, a behavior Kevin had not encountered before. Back at the dive shop, species classification proved daunting as many



Malawi



cichlids.

Back to macro for my final dive, I finally managed to photograph juvenile cichlids inside their mother's mouth. Regrettably, some cichlid mothers will not be winning any parenting awards. We witnessed cichlid genocide on several occasions as hungry predatory cichlids decimated juveniles with the mother nowhere in sight. Talk about feeling helpless.

not only looked similar but also had no common names. It did not help that the identification book had the girth of a dictionary.

Switching to wide angle for a return visit to Masimbwe Island, visibility was at least 15m, the best I had seen on the trip. I managed to get another kampan-go image, while Aaron made a good model, posing with swarms of obliging





Acacia tree (above) and zebra (left) in South Luangwa National Park

Zambia's South Luangwa National Park

Despite nearly a month in Africa, the safari bug was still biting. I opted to visit Zambia, one of the continent's premier safari destinations. With just a few days

to spare, I settled on South Luangwa, arguably the country's most famous national park. From Lilongwe, I connected with an hour-long Ulendo Airlink flight to Mfuwe Airport, gateway to the park. Arriving at the emptiest immigration queue of all time (just me), I had to wait a few for the officer

to finish lunch. After paying my US\$50 entry fee, I had officially arrived in Zambia.

Waiting outside was my transfer from Norman Carr Safaris, one of the country's most celebrated operators. I would be



staying at two of the company's camps within the park: Luwi and Chinzombo. The latter had just opened a month earlier and was already regarded as one of the country's most luxurious safari camps.

Established as a game reserve in 1938, South Luangwa became a national park in 1972 and now encompasses 9,050 sq km. Regarded as Africa's most intact river system, it is home to intense congregations of wildlife. Mopane woodlands comprises the val-



Yawning hippo (above) and feeding hyenas (right) at Luangwa National Park in Zambia; Luwi Camp (left)

ley floor, with grassy patches interspersed throughout attracting a

profusion of browsers and grazers.

From the airport, it was a 90-minute drive to the park. Passing numerous villages where children waved to us, smartly attired in their school uniforms. Entering the park, civilization abruptly vanished and nature took control. It would be an additional hour drive to Luwi, doing a game drive en route. Despite the mid-day heat, there were plenty of animals about, including Thornicroft's giraffe, a regionally endemic sub-species.

Luwi Camp. Shaded by mahogany trees, Luwi Camp is situated deep within the national park, alongside the seasonal Luwi River. Extremely remote, with no other camps in the vicinity, Luwi is one of Luangwa's most traditional camps, rebuilt each season using natural materials. Simple yet comfortable, rooms featured en-suite bathrooms with hot showers.

On hand for my arrival was camp manager and guide, Brian Mukumbuta, who gave me a rundown on the activities. South



Luangwa is famous as the birthplace of African walking safaris. After a chance to unpack and have afternoon tea, it was time for an afternoon game drive.

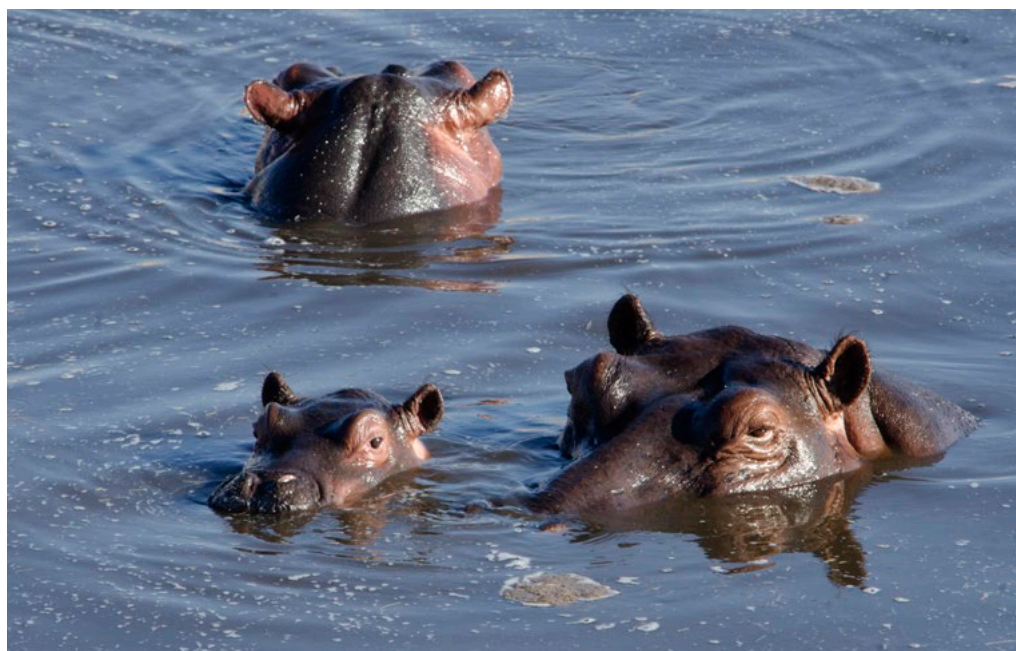
Our destination was a hippo pool a short distance from camp.



With water diminishing throughout the park, it was hippo central, with two dozen animals jostling each other for space. I finally got my chance to photograph them yawning, the massive tusks contradicting their comical appearance. Egrets perched on their ample backsides while crocodiles sunned themselves at the water's edge.

After dinner under the stars, I was ready to call it a night at the late hour of 9:00 p.m. I had barely closed my eyes, when distant roaring jolted me awake. Lions! That, combined with a sudden onslaught of allergies, ensured a near-sleepless night. Then, again, who goes on safari to sleep?

Walking safari. Up at sunrise, it was surprisingly cool and a bowl of hot porridge really hit the spot. I especially liked the coffee mugs suspended by the branches of a dead tree. First up was a three-hour walking safari. Walking safaris originated in South Luangwa and are still one of the finest ways to experience the unspoiled wilderness. Along with Brian and an armed guard, Tim, Lucy and I



set out, first traversing the Luwi's sandy expanse. Free-flowing during the wet season, it was a now a vast highway of sand.

For me, walking safaris are equally exhilarating and nerve-racking. The idea of an unexpected elephant encounter and having to climb a tree is unnerving, as my tree-climbing days are long past (not that I even had any when I was young). The rainy season's luxuriant green had withered, replaced by tones of ochre

and amber. The tall grass had vanished, now short and dry from the burgeoning heat. In the open woodlands, it was easy to see what was coming.

A distant roar caught Brian's attention and we set out to find the owner. I marveled as Brian deciphered the trail's patchwork of tracks, pointing out warthog, puku and honey badger, to name a few. "See here?" he gestured. "This is the lion we heard. Now he is running to keep ahead of us."

Bush breakfast at Luwi Camp (left), yellow baboon (below), puku in riverbed (lower right) and hippos in watering hole (lower left) in South Luangwa National Park, Zambia



bled and churned to the surface as hippo poo bobbed profusely. Even from high above, the aroma was gag inducing—this was not nature at its most sublime!

Game drive. After lunch and a mid-day break, we set out for an afternoon game drive. Lots more wildlife appeared, including zebra, puku, warthog, yellow baboons and some distant elephants. One muddy pool held a lone male hippo, its rear flank bloody from a recent skirmish. The look of wild-eyed fear in its eyes was haunting. Banished from the herd, its days were numbered and it knew it.

A night drive after sundowners resulted in a truly spectacular

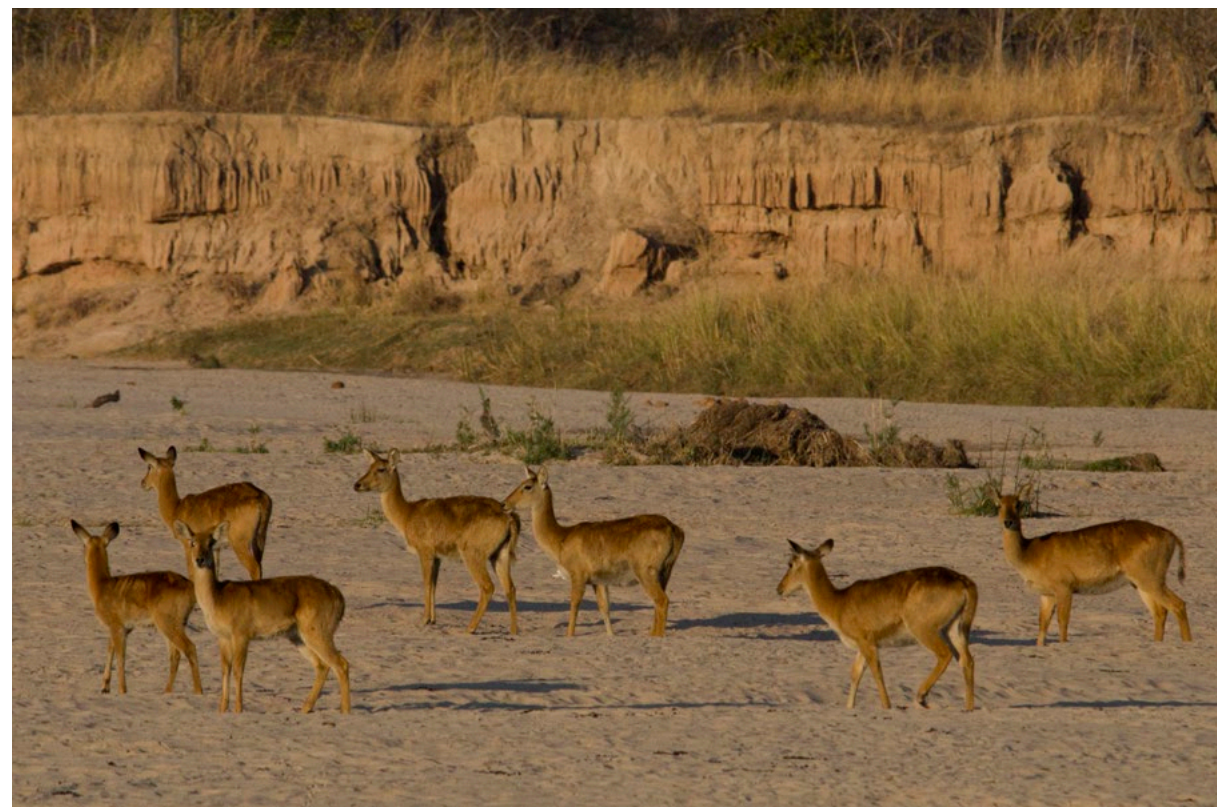
ting. I expressed surprise that it did not smell, but spoke too soon. On cue, an utterly noxious aroma assaulted my nostrils that stomach churning. "It's probably gas escaping the stomach," remarked Brian. Although a serious contender, all unanimously concluded the hippo pool ranked higher for sheer gross-out value.

Back at the main road, I was surprised to see the lights of another vehicle, which turned out to be a research unit studying park predators. "They will stay with the hyenas all night," remarked Brian. Spotlighting en route to camp, we were rewarded with some rare sightings, including serval (like a large housecat on stilts) and a pair of honey badgers. The

latter are notoriously bad-tempered; even lions have been known to give them a wide berth.

Approaching the camp turnoff, lights twinkled near the dry riverbed. "It must be another research unit," remarked Brian. "Perhaps they are following a leopard. Let's go have a look."

Upon arrival, there were no researchers or leopards to be seen—only an elaborate surprise. A bush barbeque was in



We never did find him.

In the distance, a remnant pool clung to life at a bend in the river. Hiking to an overlook, a multitude of hippos packed tightly into the remaining black water. Gas bub-

encounter. Driving off road, torch beams illuminated hyenas feasting on a huge buffalo carcass. With eyes glowing yellow, the hyenas cackled in the dark—a sound that was positively unset-

full swing with copious amounts of meat grilling, the fragrant smoke wafting through the African night. Nearby was an immaculately set table, a fully-stocked bar and a roaring campfire surrounded by

comfy chairs. Africa never ceases to surprise!

The next morning was another bush walk, this time to Kapani Camp. Lucy and Tim were staying here but I had a ride waiting. Bidding Tim and Lucy farewell, I set out for my final stop at Chinzombo Camp.

Chinzombo Camp

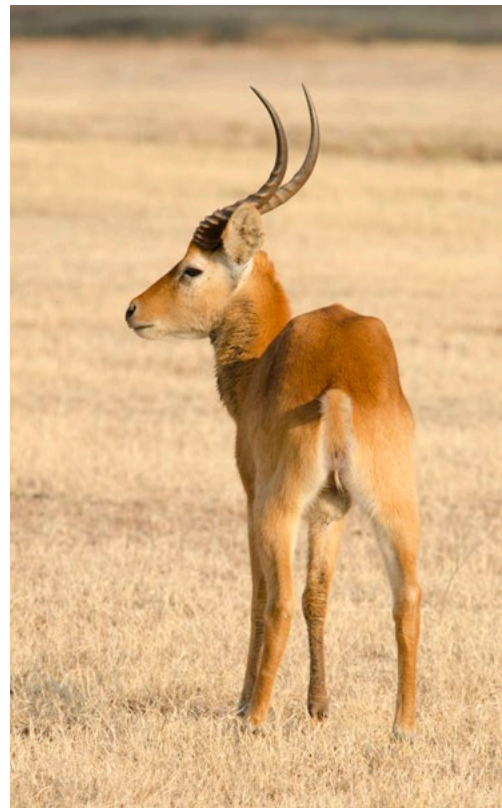
Set within 60 acres of private land alongside the Luangwa River, Chinzombo was newly opened during my visit. Sheer luxury, the camp offers six villas, each with spacious living areas, luxurious bathrooms and private plunge pools overlooking the Luangwa River and park beyond. Shaded by msiki trees, a footpath connects the villas with the lounge and dining area. Even in daylight,

a stroll requires vigilance, as elephants and hippos are frequent visitors. A large hippo print in the mud near my front door proved that fact. With a spacious terrace, private pool and free wi-fi in each room, this was a safari with style.

Game drive. After a sumptuous buffet lunch, it was time for an afternoon game drive with guide Abraham Banda. With 20 years' experience in the bush and recipient of the prestigious Zambian Guide of the Year award in 2009, I was in exceptional hands with "Abes." A short boat ride across the river revealed a waiting safari vehicle and we set out.

The river's broad expanse was but now a trickle, with embankments towering on either side. A dozen giraffe stared from the

Elephant (right), male puku (below), herd of giraffe at Luangwa River (lower left) and lodge at Chinzombo Camp (lower right) in South Luangwa National Park, Zambia



Helmeted guineafowl skittered across the road while lilac-breasted rollers and red hornbills perched in trees alongside. A pair of crowned cranes in flight was a first in three trips to Africa.

Alice the leopard. An entourage of vehicles proclaimed something special. "Leopard, I think," said Abes. He was spot on; sitting near the vehicles was an adult leopard, rendered nearly invisible against the surrounding vegetation. With the surrounding vehicular entourage, we had to settle for a distant sighting.

The ensuing day proved more successful. "She lives here so we have a good chance of finding her," remarked Abes, scanning the surroundings with binoculars. We soon found her lounging in the cleft of a small gully. Yes, it was a she; Alice to be exact. Something of a celebrity, she has

water's edge while elephants grazed, unperturbed by our presence. Acacias, the omnipresent thorn trees of Africa, dotted a landscape burnished gold by the late afternoon sun. Troops of yellow baboons foraged alongside puku, warthog and zebra. A puku fawn suckled its mother so violently it made me wince. Despite being the dry season, birdlife was also plentiful.

low baboons foraged alongside puku, warthog and zebra. A puku fawn suckled its mother so violently it made me wince. Despite being the dry season, birdlife was also plentiful.



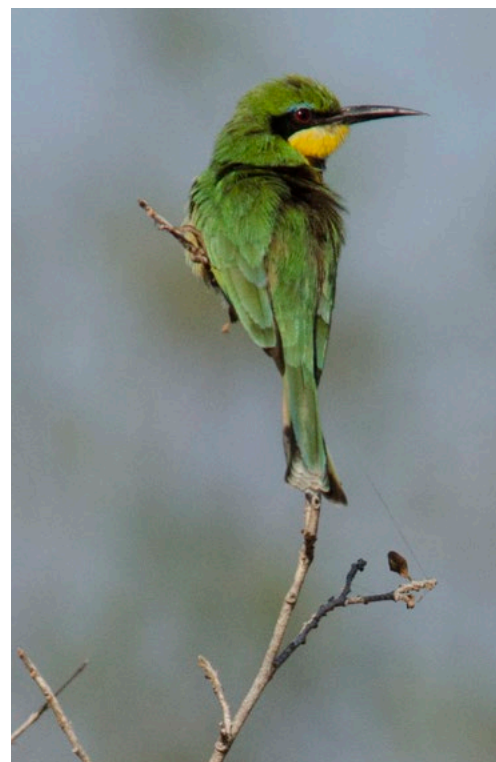
been studied for some time and is well known to the park rangers and guides. Being the only vehicle around, we enjoyed a remarkable half-hour encounter at very close range. South Luangwa is renowned as one of the best places in Africa for leopard and it did not disappoint. Superb!

The remainder of the day was rewarded with numerous encounters. An amorous bull elephant charged an unreceptive female that promptly got out of his way. Thornicroft's giraffe blended adroitly with the surrounding vegetation, while a herd of zebra eyed us warily from a safe distance.



Ancient baobab. For my final sun-downer, we stopped by a colossal baobab tree Abes estimated to be 1,000 years old. Venturing closer to capture the sun setting behind the twisting branches, I was cautioned to stop. From deepening shadows, a quartet of elephants passed alongside the tree—two adults and two juveniles. One of the youngsters was clasp- ing its sibling's tail with its trunk.

Heading back after a final night drive, we travelled all the way by road, crossing the bridge



CLOCKWISE FROM FAR LEFT: A thousand-year-old baobab tree, a red-billed hornbill, pair of crowned cranes, a yellow baboon, Alice the leopard resting, and a little bee eater in the South Luangwa National Park of Zambia

over the Luangwa River. Glancing upwards, I glimpsed a falling star fracturing into three glowing pieces. A magical end to a magical stay.

Afterthoughts

While lacking the megafauna and colorful reefs of a tropical ocean, Lake Malawi's subtropical waters were truly unique, offering dramatic scenery and remarkable biodiversity unlike anywhere else on Earth. One of the biggest surprises was the ease of the diving. With negligible currents, calm conditions and good visibility, Lake Malawi is an ideal destination for divers of all skill levels. South Luangwa's wildlife was truly stunning, adding a marve-



lous conclusion to the trip. I am sure that when I return, the warm heart of Africa will continue to dazzle with more surprises. ■

Special thanks to Malawi Tourism, Wilderness Safaris, Kaya Mawa Resort, Norman Carr Safaris and Africa Tours.



fact file

Malawi



SOURCES: BSAC, POWER-PLUGS-SOCKETS.COM, TRAVEL.STATE.GOV, US CIA.GOV, XE.COM

History Malawi became an independent nation in 1964. It had been a British protectorate called Nyasaland, which was established in 1891. Multi-party elections were finally held in 1994, after 30 years of one-party rule by President Banda. In 2004, President Mutharika was elected, after Banda tried to amend the constitution to allow another term in his struggle to maintain authority, leading to the establishment of his own party in 2005 called the Democratic Progressive Party. However, Mutharika was re-elected in 2009 and oversaw

economic improvements until his abrupt death in 2012. He was succeeded by vice president, Joyce Banda, who had established her own party called the People's Party. In 2014, Mutharika's brother, Peter, won the election against Banda. Challenges the nation faces includes increasing pressure on agricultural lands as the population grows, corruption, and the HIV/AIDS crisis. Government: presidential republic. Capital: Lilongwe.

Geography Located in Southern Africa, west and north of Mozambique, and east of Zambia, Malawi is landlocked with no ocean coastline. Terrain is mostly rolling plains and rounded hills, with some mountains, on a long narrow plateau. The junction where the Shire River meets Mozambique is the lowest point: 37m. Highest point: Sapitwa (Mount Mlanje) 3,002m.

Climate Malawi has sub-tropical climate, with a rainy season from November to May, and a dry season from May to November.

Economy Predominately agricultural, Malawi is one of the most densely populated and least developed countries in the world. Its economy has been hindered by inconsistent policies, instability in macroeconomics,

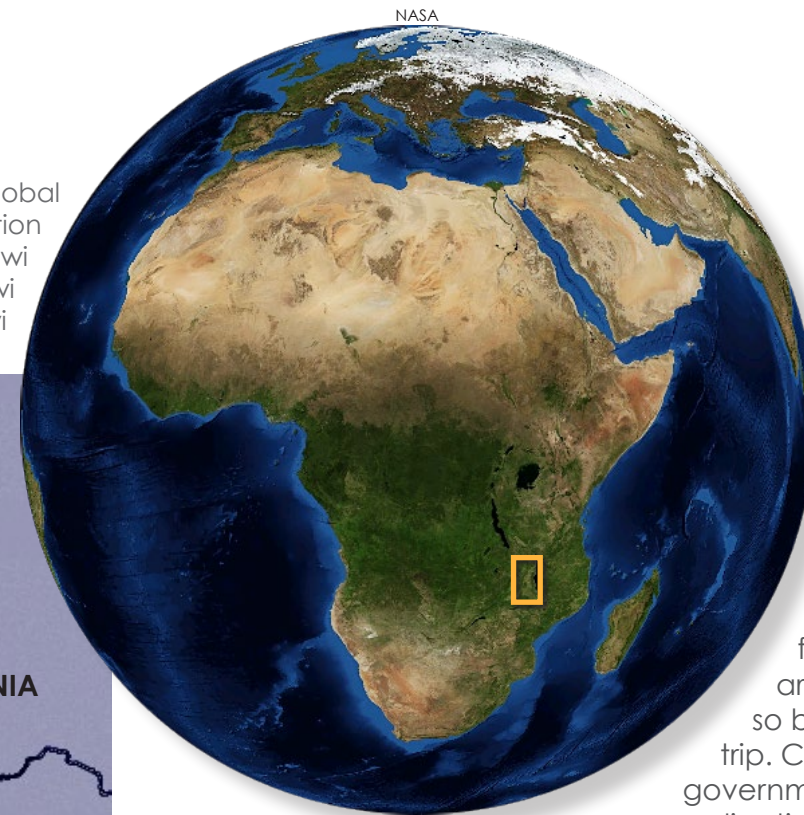
limited regional and international connectivity, as well as poor health and education, which hinders productivity. Short-term growth relies on the tobacco sector. The country's economy depends on assistance from the IMF, the World Bank and donations from individual nations. Relief under the Heavily Indebted Poor Countries program was approved for Malawi in 2006. Under the guidance of Finance Minister Gondwe, there was improved financial discipline for four years leading to the signing of a three-year IMF Poverty Reduction and Growth Facility valued at US\$56 million. The government aims to improve the economy through infrastructure projects such as a new oil pipeline to improve access to fuel as well as a waterway link through Mozambican rivers to the ocean for improve transportation.

Environment Challenges include deforestation; land degradation; water pollution from industrial wastes, agricultural runoff and sewage. Fish populations

are endangered by siltation of spawning grounds.

Population 18,570,321
Ethnic groups: Chewa 32.6%, Lomwe 17.6%, Yao 13.5%, Ngoni 11.5%, Tumbuka 8.8%, Nyanja 5.8%, Sena 3.6%, Tonga 2.1%, Ngonde 1%, other ethnic groups 3.5%.

RIGHT: Global map with location of Malawi
BELOW: Lake Malawi on map of Malawi



Religions: Christian 82.6%, Muslim 13%, other religions 1.9% (2008 est.). Population living below poverty line: 52.4% (2004 est.)

Language English is the official language. Chichewa is commonly spoken. Other languages include: Chilambya, Chilomwe, Chingoni, Chinkhonde, Chinyakyusa, Chinyanja, Chisena, Chitonga, Chitumbuka, Chiyao.

Currency Malawian kwachas (MWK). Exchange rates: 1USD=725MWK; 1EUR=769MWK; 1GBP=907MWK; 1AUD=549MWK; 1SGD=518MWK

Phone/Internet There are 1.67 million internet users. There is a rudimentary telephone system with two fixed-line and two mobile-cellular operators (in urban areas primarily) governing the market. International country code: 265.

Voltage There are type G power sockets. Standard voltage is 230 V and the standard frequency is 50 Hz.

Health Medical facilities are rudimentary. South Africa is recommended for advanced medical care. Drink bottled water and avoid tap water, ice cubes, raw fruits and vegetables. Eat well-cooked, hot food. Many medications are not readily available, so bring enough for your trip. Check with the Malawi government whether your medication is legal in Malawi.

There is a very high degree of risk for food or waterborne diseases such as bacterial and protozoal diarrhea, typhoid fever and hepatitis A; as well as vectorborne diseases such as dengue fever and malaria. There is also a high degree of risk for water contact disease such as schistosomiasis, as well as animal contact disease including rabies (2016). Note: AIDS and tuberculosis are also prevalent.

Decompression Chambers Please be aware that the nearest chamber is in Pretoria, South Africa.

Travel Visa & Security Passport valid for six months required. Tourist visa required. Since 2016, US citizens can obtain 3-month single-entry visa for \$75 at a port-of-entry in Malawi. Check with your state department about travel warnings and visa requirements for your country.

Websites
Malawi Tourism
Malawitourism.com ■





Malaysia's

Tioman Island

Text and photos by Jennifer Idol

— *Jewel in the South China Sea*



View of ABC Bay, Tioman Island (above); Malaysian cuisine (right)

Hollywood is attributed with recognizing the natural beauty of Tioman Island in the 1950s as an exotic tropical paradise. Having seen one of the films as a child, it created an impression of a place I would like to visit someday. I never imagined it would set the stage for my first experience diving in Malaysia. Tioman delivered an enchanting dream.

Malaysia is an independent country comprised of 13 states, represented as the stripes in the current flag, and three territories. Locals refer to the states as individual countries and think of Malaysia more like the United Kingdom. The crescent on the flag represents Islam, the official religion, though Malaysia is home to many religions.

Their flag has changed over time as has the country's ruling. Portugal, the Dutch, and the British Empire all established a presence, followed by the British East India Company, Japan and Chinese influence. Singapore has been a significant port from

its origins. Influence from the multitude of occupants pervades the culture making Malaysia both familiar and unique.

Diving in Malaysia is famously known for the Sipadan area on Borneo near Tawau in Sabah on the lower left side of the coral triangle. However, Tioman Island is a quiet secret just north of the state Johor in Pahang. Tioman is a unique ecozone with different species from those



Common mormon butterflies, *Papilio polytes romulus*, find nectar on local flora (above); Macaque monkey (left). PREVIOUS PAGE: Eastern skunk anemonefish on anemone

Tropical flowers decorate the walkways





View of resort area on Tioman Island (above); Nasi lemak is a local favorite for breakfast (left); Tioman Dive Resort rooms were clean, comfortable, and beautiful with standard seated toilets and a huge shower (below); Divemaster and diver prepare to descend to the KM *Sipadan* (bottom right)

Diving for all levels

Since, no major road is on this part of the island, all vehicular traffic occurs through scooters and bicycles on what looks like a large sidewalk. It makes the small village a

quiet reprise from urban living.

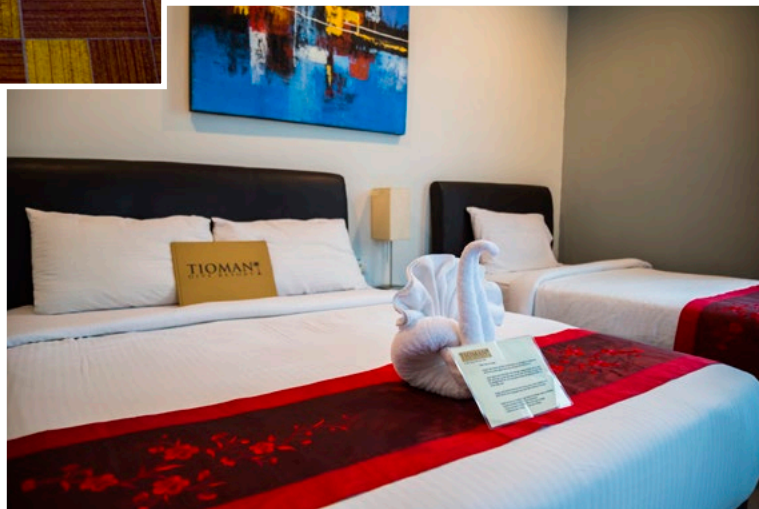
I bring my dive equipment to every destination, but always rent cylinders and weights. Malaysia works on the metric system, so rented gauges are in bar, depths are measured in meters, and temperatures are written in Celsius.

No wetsuit is necessary for most divers, though a full skin is recommended. I found the 26°C (80°F) water cold during monsoon season, but I also think the Caribbean is cold, so I wore a 5mm suit. The temperature is usually a bit warmer. Both shore and boat diving is available around Tioman.

east of the Wallace Line, an imaginary line created by British naturalist Alfred Russel Wallace.

I enjoyed learning about the culture, food, and history of the island. Tioman Island was first popular with backpackers in Salang. I stayed in the newer accommodations at Tioman Dive Resort in Air Batang (ABC bay) at the foot of the jungle. The villages are home to few buildings along the shoreline before the steep mountains rise with a lush rainforest.

Fortunately, travelers have not yet discovered the affordability of diving on the island. The biggest expenses for a dive trip here are airfare and time. Its seclusion has kept it a quiet island devoid of crowds, tourism, and the ecological pressures caused by development for these demands.



The **HOTTEST** DIVE EXPO in Malaysia
www.mide.com.my

MIDE 2017

12 - 14 MAY
PUTRA WORLD TRADE CENTRE
KUALA LUMPUR • MALAYSIA

ASIA DIVE CONFERENCE
DIVE INTO POSSIBILITIES

Photo by: Peter Symes

A Meeting Point For The Asia Dive Market

Supported by

Association Partners

Media Partner

Member of

Official News Print

In Support of

**BEST BUILT
LIVEABOARD 2014**
By Liveaboard Association
of Maldives



Maldives Blue Force One

The best Boat at the best price!!!

- Weekly liveaboard diving cruises.
Guaranteed departure from Saturday to Saturday.
- 5 Atolls Classic Route & South Hemisphere Route.
- Themed cruises: Manta Trust, Family Weeks, Photosub, Videosub, Freediving, Surfaris...
- We include: 18 dives (2 night dives) per week. NITROX, wifi. Shore excursions. Dinner on desert island... and many more.

Information on boats, routes, schedule, brochure, videos... look it up on www.maldivesblueforce.com



Maldives Blue Force

info@maldivesblueforce.com
www.maldivesblueforce.com



Tioman

The reefs around Tioman Island are diverse, with corals densely bound together

Diving on Tioman is part of the South China Sea with maximum depth of 70m (230ft). Most dive sites are shallow, but deeper diving is available. The coral reefs cover granite boulders that support a diverse ecosystem and create swim-throughs such as on Labas Island.

Tioman Island is situated in a north south position with attractive dive sites such as Fan Canyon, Batu Malang, and Labas Island in the north. However, those sites are open to wind and surge, so must be visited during the best season. I repeatedly saw requests for Tiger Reef on the dive site board at the store. Tiger Reef is an advanced dive named for the shape of the submersed pinnacle. It features strong currents that is little visited by divers, so it shows little human impact.

While I traveled during the monsoon season, the best season is from mid-March to late May and mid-

September to late October for the best visibility with smaller numbers of visitors. The clear water brought to Tioman comes from the Gulf of Thailand during their monsoon season when the winds are from the north. Plankton-rich waters bring nutrients necessary for reef life and poor visibility outside these times from Singapore. Europeans mostly travel to Tioman from April to August and again in October.

Renggis Island. I explored Renggis Island and KM Sipadan wreck, southern sites just a few minutes from ABC Bay. Renggis is also a snorkeling destination and home to sea turtles, cuttlefish, and sharks. Two blacktip sharks passed us on our dive and two sea turtles spent ample time hunting for food on the reef around the staghorn coral forest. This is the densest staghorn I have seen.

I saw my first anemone fish and



Dive sites around Tioman Island

anemones in the wild. They are very active fish that hide within the anemone for protection and swim just above the anemone when they feel safe. Observing them made me appreciate the photos I have seen even more since they are fast moving and always seem to look soft



Engage Smarter

With DAN Educational Resources

Your Go-To Resource for Dive Safety Information

We believe a smarter diver is a safer diver, so we want to arm you with the information needed to stay safe both in and out of the water. Available online and in print, DAN's Educational Resources address topics relevant to the new and experienced diver. Engage smarter, and join DAN in the goal of making every dive accident-free.

- Health & Diving Reference Library
- Online Incident Reporting and Case Summaries
- Medical FAQs and Information Line
- Social Media Channels
- Webinars, Safety Quizzes and Online Seminars

[DAN.org](https://www.dan.org)



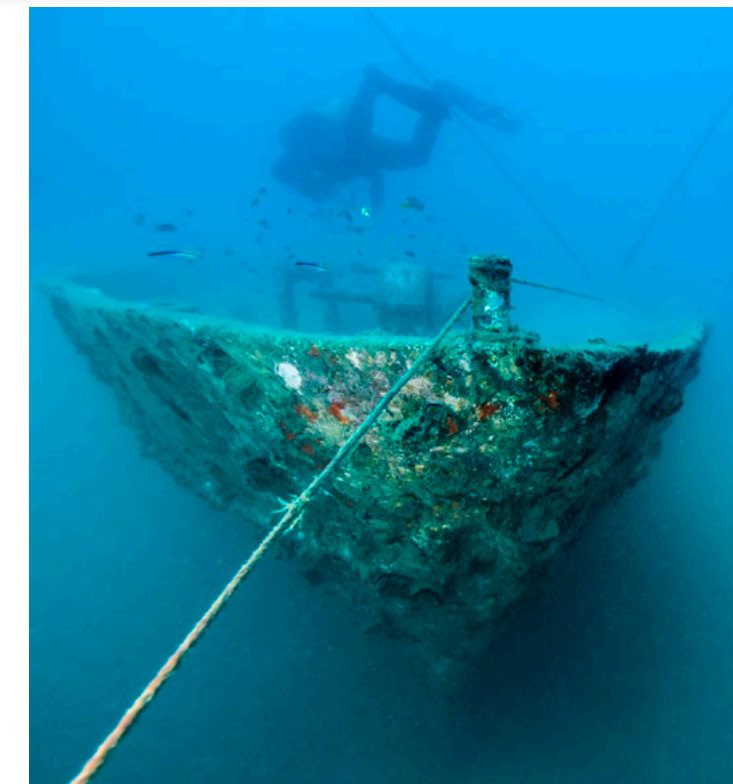
rather than sharply defined. Their orange is so vibrant it seems to glow from within. I understand how their cuteness entrances divers.



KM Sipadan. KM Sipadan is a deep artificial reef just north of Renggis Island that was sunk in 2012. Under the name KD Sri Sarawak, this was a

Royal Navy warship that served from 1964 to 2005. This is the only dive I used nitrox to help with my allowable bottom time, though it is available on any dive to certified divers who prefer nitrox. Two Thai fishing boats are connected to this wreck. I spent my time exploring the KM Sipadan, observing nudibranchs and red lionfish. I reached the ship down the mooring line at 20m (66ft) and swam through the empty hull at 27m (90ft).

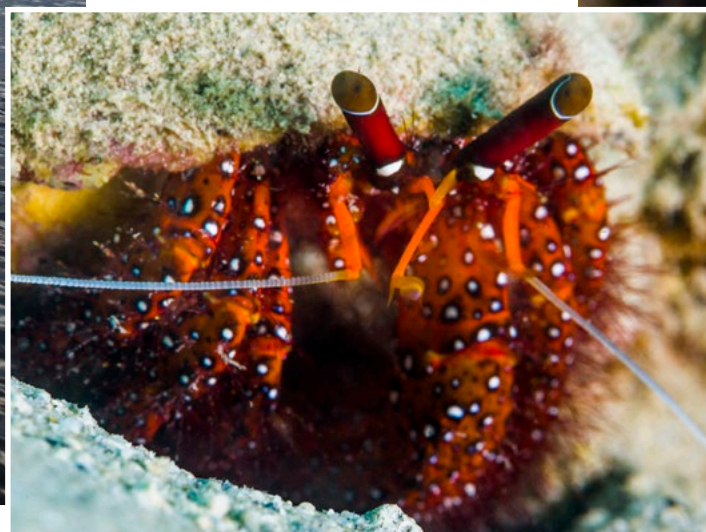
ABC House Reef. Most of my dives were spent on the ABC House Reef in front of the resort. Although known as a training destination, much of the natural resources are untouched and healthy. The bay protected the water from currents and waves. To escape rough seas, even the fishermen moored in the bay. No fishing is allowed in the water surrounding Tioman Island and the other eight nearby islands because of



Diver on bow of the KM Sipadan (above); False clownfish stay close to their anemone (left inset); Hawksbill sea turtle hunts for food on Renggis Island (top left)

Red lionfish inhabit the KM Sipadan





CLOCKWISE FROM TOP LEFT: Shore diving was easy on house reefs; Detail of coral polyps; Reticulated puffer blends with coral; Close-up of hard coral (below); A red-margin shrimp goby shares its burrow with an alpheid shrimp; A hermit crab inhabits an oversized shell



the marine park designation. The number of boats fishing in nearby waters is still numerous with many focused on specific fishing products such as squid. I was grateful some protection was in place.

The shore diving was easy with a sandy path between boulders in front of the resort leading to the major reefs, House Reef 1 and House Reef 2. Ghost Town is named after the artificial objects laid to attract reef growth. I was also told it is an unusual and unexplained site for how sculpture and rocks were left behind. I noticed the rebar in place on the way to House Reef 1 to encourage coral growth beyond the main biomass.

House Reef 1. This is a macro

world. Some of the unusual creatures I like to photograph like flat-head, puffers, lizard-fish, and porcupinefish seemed to regularly occupy House Reef 1. I was most surprised by the colorful boring giant clams buried in the granite boulders. Dozens of them reached for food in the current. A few were as big as a melon. Maxima giant clams on Renggis Island were the size of a basketball. They came in all colors, but I was most drawn to the blue and teal colored clams. They were quick to shut as I swam over them, but then reopened if I paused.

Between the reefs, a sandy

bottom hosts gobies, crabs, and shrimp. I nicknamed this the "Goby Desert" and relished watching them dart into their holes. As I looked closer, I also was able to see an alpheid shrimp cleaning out a hole while its host gobyshrimp watched for predators to warn of danger. These animal interactions were so captivating that my dives reached 90 minutes, easy to do in the shallow



GANGGA ISLAND
RESORT & SPA



E-Mail: info@ganggaaisland.com

www.ganggaaisland.com



White-eyed moray eel (above); Staghorn damselfish (inset)

reefs. I could only pull myself out of the water long enough for meals. Shore dives did not limit me to the boat schedule.

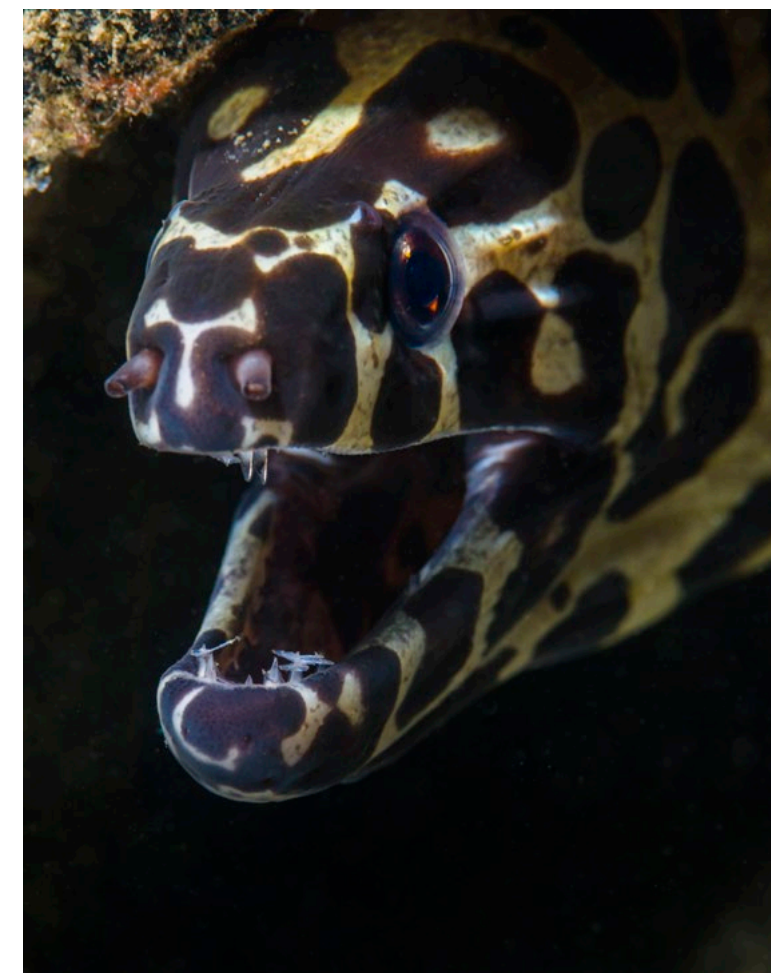
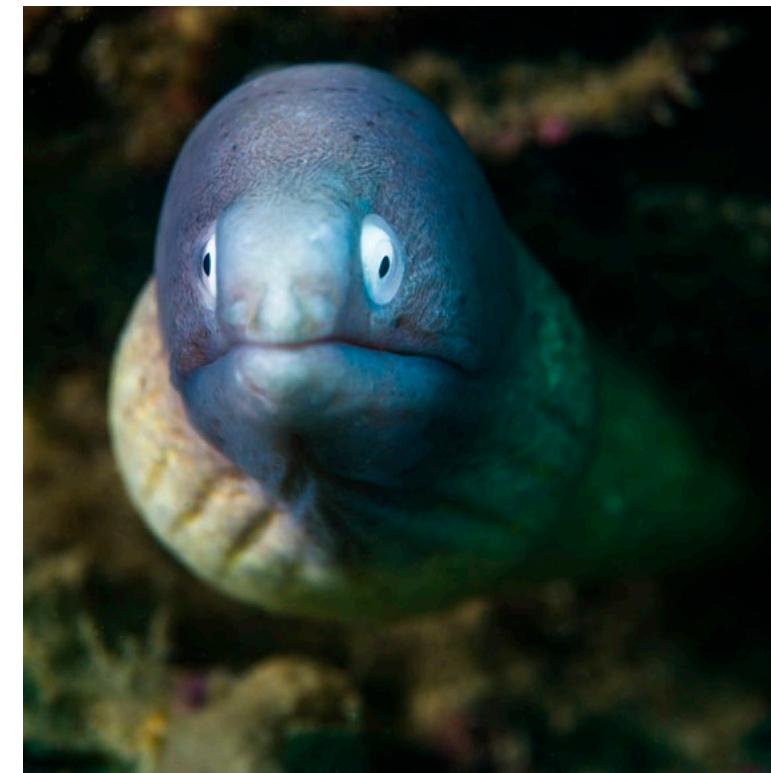
House Reef 2. House Reef 2 was my favorite as it featured eels, nudibranch, hard and soft corals, and more anemonefish. This reef seemed more diverse with more variety in the size and number of animals than on House Reef 1. I passed it again when I dived from the jetty back to the resort. You never know what you will find passing by the jetty, so I hopped in to look at the possibilities.

Life bound by environmental change

While the biodiversity on Tioman Island was rich and included healthy reefs with invertebrates, hard and soft corals, small fish, medium fish and large fish, it is not



CLOCKWISE FROM TOP FAR LEFT: Juvenile damselfish hides in coral; Hard corals grow atop the rocks; White-eyed moray eel hides in holes in the reef; A spotted moray eel hides under the jetty; Nudibranch eggs on reef; Chromodoris nudibranch (center inset)



Mike Ball Dive EXPEDITIONS

COD HOLE • CORAL SEA • GREAT BARRIER REEF • AUSTRALIA

Expeditions On the Wild Side

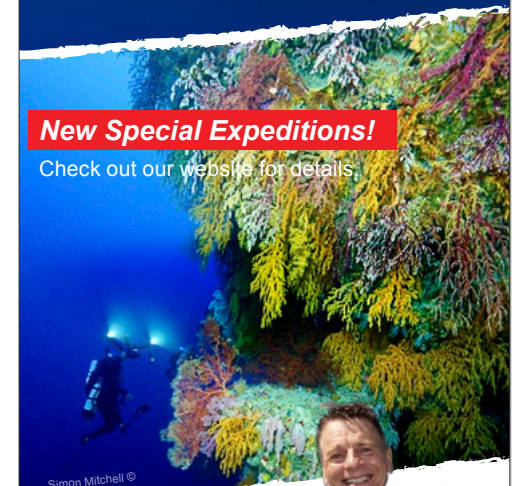
The Best Diving on the Coral Sea & Great Barrier Reef!

Dive with giant potato cod, explore deep walls, witness shark action at Osprey Reef.



Minke Whale Season! June-July

Unique Opportunity on the Great Barrier Reef. www.mikeball.com/minke



New Special Expeditions!

Check out our website for details.



Phone: +61 7 4053 0500

www.mikeball.com   

Email: resv@mikeball.com Fax: +61 7 4031 5470
Visit: 3 Abbott Street, Cairns. Queensland 4870 Australia



CLOCKWISE FROM ABOVE: White crown calcareous tube worms wave in the current, filtering the water for food; The reef appears calm on a night dive; While the B&J Diving Centre and Tioman Dive Resort work hard to help educate visitors and reduce their environmental impact, the affect of global climate change is apparent in some areas where corals are losing their symbiotic algae, which cause the skeletal structure to appear bleached (far right); This peppermint sea star was one of few I observed (right)



immune to the effects on the waters surrounding the island. For the last two years, the waters have been warmer than usual. Hard corals show signs of stress with some bleaching, especially noticeable on the stag-horn. A 2010 bleaching event also severely impacted reefs reaching across the entire Coral Triangle. Last year, the island experienced a severe drought, limiting availability of fresh water.

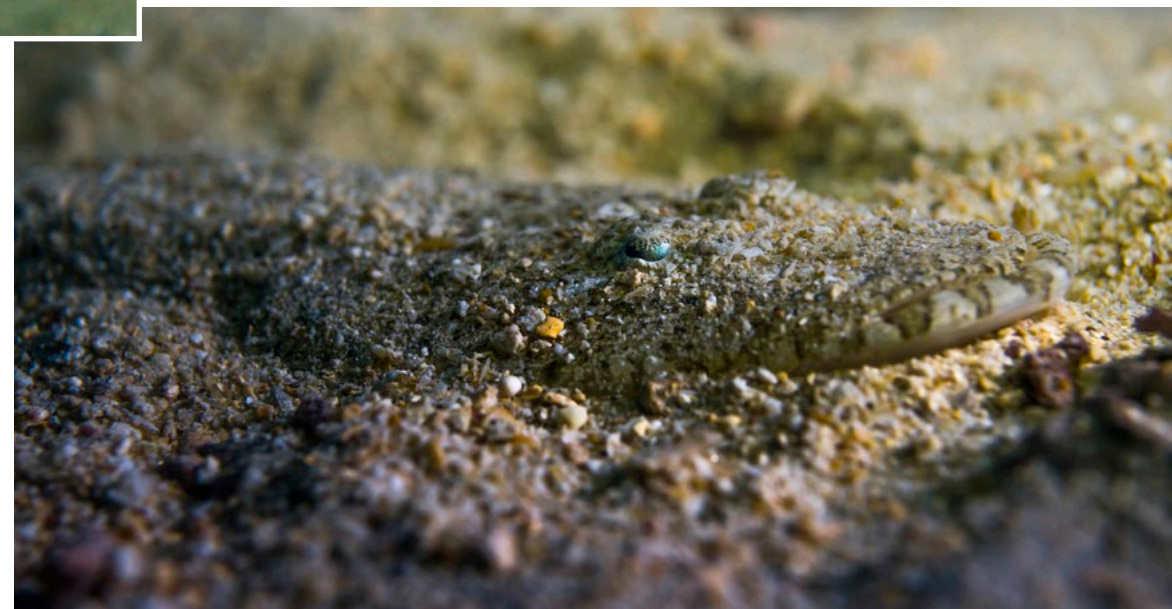
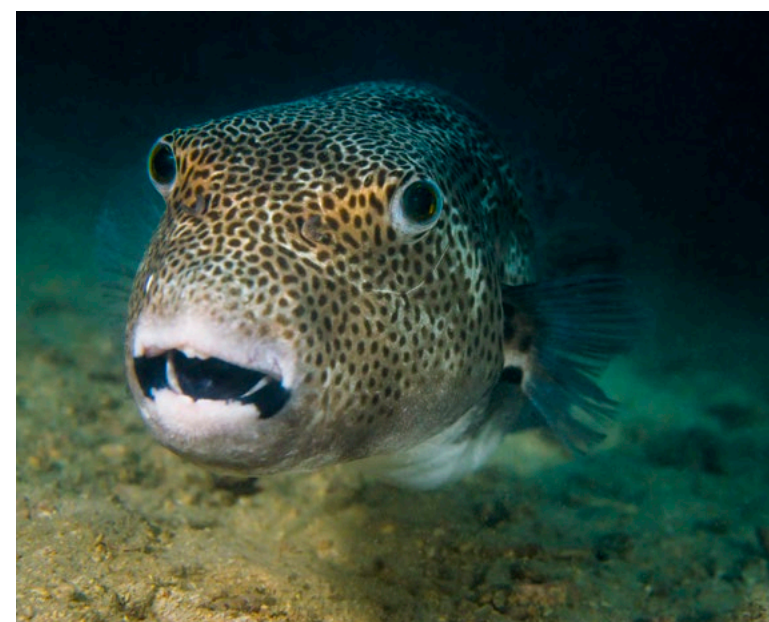
B&J Diving Centre works hard to operate as an eco-resort to help educate visitors and reduce their impact. The center participates in the PADI Project AWARE program and has been awarded the PADI Green Star Award. This means the center has demonstrated a commitment to conservation that includes water conservation, energy use, environmentally friendly transportation practices, use of sustainable

materials, conservation leadership and a donation to conservation through Project AWARE. I found the center did not just earn participation in these programs, but it also embodied responsible behavior. The staff encouraged visitors to turn off lights, turn off air conditioners, and unplug, when not in the room.

The dive center also supports the reduction of plastic use.



Bluewater ferry carries passengers daily (left); Black-blotched porcupinefish (above)



Longsnout flathead buried in the sand (above); Lionfish (left); Star puffer (center right)

conducts several beach and reef cleanups throughout the year. Staff members recently recovered a ghost net left by one of the fishing vessels.

Where everybody knows your name

I love to experience the food and culture of a place

when I visit for a dive excursion. People were extremely friendly and happy to share their love of Malaysia. The island is small, so I got the sense that everyone knows more about everything than you would perhaps like if you lived here. The camaraderie was

wonderful to see as neighbors seemed helpful and exchanged services.

Malaysian food did not seem exotic to me. Instead, it seemed more like a fusion of cultures, with which I was already familiar. This created its own unique flavors from Nasi lemak, roti canai, satay, to curry puffs, and Mamak's fried noodle. I tried as many foods as one could, eating a different meal each time. I highly recommend getting to the NS Corner early for pastries, especially the curry puff. No sign is outside this place. Only a glass case that says "Open" in the morning indicates you have found the right place. It closes once all pastries are sold. Coffee and tea can be ordered either



RARE SIGHTING OF TINY MELASMA DWARFGOBY

I stopped to admire this translucent goby on my jetty dive in shallow waters and later was informed by a fellow photographer that he had long wanted to photograph one. He had seen many other varieties of pygmygoby but had yet to find one with these markings. *Eviota melasma* grows only to 3.3cm (1.5 inches) and is distinguished by gold ornate markings on the iris. They are said to be solitary and are found in the west Pacific. Many common names are attributed to this fish, such as black-spotted pygmy-goby, headspot dwarfgoby, headspot pygmygoby and melasma pygmy goby. ■



- ★ Daily Dive Trips
- ★ PADI Dive Courses
- ★ Water Sports: Kayaking, Snorkeling, and SUP

- ★ Traditional Bungalows
- ★ The Jetty Bar
- ★ Mangrove Restaurant
- ★ Ceningan Yoga Shala

Ceningan Resort
Nusa Ceningan, Bali

Travel off the beaten path, the way Bali was 30 years ago!

CeninganDivers.com
e. info@ceningandivers.com t. +62 82145855934



There is diving for everyone, whatever level you are at, with delicious cuisine between dives; I indulged in my favorite breakfast at the NS Corner (left); Roti is filled with ingredients of your choice, plus sauce (below); Mamak's fried noodle dish is the best in the restaurant next to the dive center (lower right)

customary in Malaysia, which is hard to accept because the price is so incredibly low for food. Staff will provide exact

Getting there

Reaching Tioman takes a little coordination due to its remote location east of the Malaysian peninsula. It is easier to reach from Europe and Asia than anywhere else, but is a worthy journey for anyone. Half the visitors come from Europe, with the rest of the majority from Malaysia, particularly from Singapore.

I recommend flying to Singapore and then taking a bus to Mersing where you can take the ferry to Tioman Island. Uber works in both



hot or cold, with or without sweet milk, and is served in small cups.

Restaurants on the island may resemble huts more than an expected commercial building. They are all open-air, with a collection of a few tables and chairs. Sometimes a restaurant had an obvious name outside, and other times, it did not seem to bear any name. The sandwich shop is clearly marked, Ketapang Roof. Sunset Bar offers pizza, fried chicken wings and chicken sandwiches when it is open.

Payment is accepted after you receive your food. Tipping is not

change for your meals and will not round up. Only the divemasters who help you receive tips at the diving center. There is also a tip jar on the counter if you prefer to leave a total tip at the end of your stay.



australiadiveexpo.com

3 - 7 August 2017

Hall 3 • International Convention Centre • Sydney

JOIN US TO EXPLORE THE BUSINESS OF DIVING



SPEAKERS Presentation

POOL Try Dive | Dive Gear **WORKSHOP**

FREE Photography Course for University Students | Maritime **ARCHAEOLOGY COURSE**

PHOTO GALLERY Display | **HISTORICAL** Diving Display

PASCAL LECOCQ The Painter Of Blue

NETWORKING OPPORTUNITIES | Demo On **DIVE GEAR**

KIDS ZONE ACTIVITIES and many more...

Photo by: Brandi Mueller



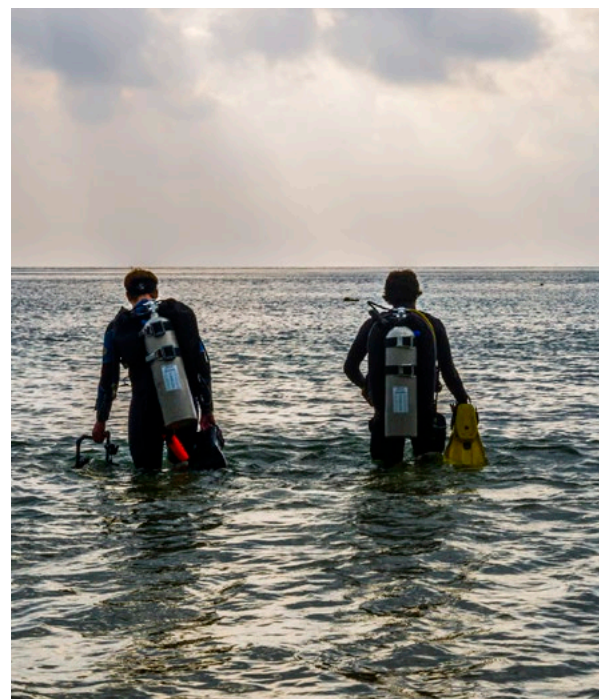
The jungle on Tioman Island is densely vegetated (above); Location of Tioman on map of Malaysia (top right); Tioman ferry leaving Mersing (far right); Poultry is most often served with dishes, as pork is unavailable (left); Divers waded in for a shore dive on ABC House Reef (right)

your passport at the window at the end of the counters. Tioman Island has been protected as a marine

park since 1985 to protect surrounding coral reefs by limiting boat anchoring to designated mooring areas and docks.

Lastly, show your reservation slip at the booth by the waiting area to receive a laminated boarding pass. Hand your boarding pass to the collecting crew member before boarding the ferry. Crew will help you place your luggage according to destination in a public storage place near the door. Keep small bags with you and do not lose sight of them or forget your belongings.

Find your seat assignment written on the reservation slip. Seat numbers are written on the port and starboard walls of the boat above the windows. The ferry takes two hours to reach the first dock on Tioman Island. The ferry and bus are both very inexpensive and easy to navigate for individuals or couples.



Until we meet again

Some of the guests and instructors came for a short trip and stayed a year or more. They fell in love with Tioman Island, an easy feat. The island itself is fabled to have been formed by a dragon queen who fell in love with the place and transformed herself into the island. My visit was all too brief, giving me just enough of a glimpse to know the reefs here are a treasure to be loved, carefully tended and not forgotten. ■



Special thanks to B&J Diving Centre at **DiveTioman.com**. Jennifer Idol is author of *An American Immersion and an underwater photographer*. She's earned 28 certifications and has been diving for over 20 years. A native Texan, she creates design and photography for her company, *The Underwater Designer*. Visit **uwDesigner.com** to see more of her work. Visit **AnAmericanImmersion.com** to learn more and buy her book.

REFERENCES:

ABDULLAH, N., S. SETH, Y. MUKAI. CORAL REEF FISHING IN TIOMAN ISLAND. [HTTP://WWW.DMPM.NRE.GOV.MY/FILES/PEMBENTANGAN%2023.PDF](http://www.dmpm.nre.gov.my/files/pembentangan%2023.pdf)
ALLEN, G., R. STEENE, P. HUMANN, N. DELOACH. (2015). *REEF FISH IDENTIFICATION TROPICAL PACIFIC*. NEW WORLD PUBLICATIONS (2ND ED.)

DIVERSALERTNETWORK.ORG
DOSM.GOV.MY
GOSLINER, T., A. VALDÉS, D. BEHRENS. (SEP. 2015). *NUDIBRANCH & SEA SLUG IDENTIFICATION*. NEW WORLD PUBLICATIONS, P. 209
HUMANN, P., N. DELOACH. (2010). *REEF CREATURE IDENTIFICATION TROPICAL PACIFIC*. NEW WORLD PUBLICATIONS (1ST ED.)
NATURE SOCIETY (SINGAPORE) NSS.ORG.SG
PADI.COM
UWEXPLORERS.NET
US CDC. (MARCH 2017)
WIKIPEDIA.ORG
WORLDTRAVELGUIDE.NET
YING, H., C. HENG, A. ABDULLAH. (JUNE 2015). *LANGUAGE VITALITY OF MALAYSIAN LANGUAGES AND ITS RELATIONS TO IDENTITY*. VOLUME 15(2). [HTTP://JOURNALARTICLE.UKM.MY/8873/1/8025-25671-1-PB.PDF](http://journalarticle.ukm.my/8873/1/8025-25671-1-PB.PDF)



fact file

Malaysia



SOURCES: DAN, US CDC, US CIA WORLD FACTBOOK, TRAVEL.STATE.GOV, XE.COM

History Malaysia is a multi-ethnic and multi-cultural country developed from its history of inhabitants that includes 13 states and three federal territories. Original inhabitants date back 40,000 years followed by traders and settlers from India and China in the first century AD. Later inhabitants introduced Islam to Malaysia in the 14th century. Portugal conquered Malacca in 1511, followed by the Dutch in 1641. The British Empire established a presence in 1786 in Malaya and obtained Singapore in 1819. British ruled until the turn of the 20th century. Chinese and Indians immigrated during this time. During WWII, the Japanese Army invaded and occupied Malaya, North Borneo, Sarawak, and Singapore. The Malayan Union was established

in 1946. The British were forced from Malaysia during the leadership of the Malayan Communist Party. In 1963, the Federation of Malaya joined as an independent federation with present-day Sabah, Sarawak, and Singapore to create Malaysia. Singapore left the Federation in 1965. Some states maintain separate immigration controls and require passports for Peninsular Malaysians traveling between states. Tioman Island is part of Pahang, the third largest state in Malaysia. Government: Federal parliamentary elective constitutional monarchy. Capital: Kuala Lumpur

Geography Malaysia is located in southeastern Asia. Tioman Island is located east of peninsular Malaysia and is surrounded by the South China Sea. It has a coastline of 245km (152mi). Eight villages surround the island while the interior is sparsely inhabited and filled with the oldest rainforest in the world. The island itself is a mountain rising from the sea.

Climate Tropical, hot and humid. The water temperature is normally 27-31°C (81-88°F) year round. Most divers use skins or 3mm wetsuits.

Environmental issues Air and water pollution from industrial development threaten natural

resources. Palm oil contributes significantly to deforestation of the world's oldest rainforest. Logging also contributes to deforestation. Most remaining forest exists only in national parks. Forests are predicted to be extinct in three years. Deforestation contributes to significant runoff during monsoon seasons. Illegal fishing, dynamite fishing, and animal trafficking also threaten wildlife. To help prevent ongoing deforestation, cease all worldwide palm oil usage.

Economy Malaysia is newly industrialized with goals to become an economic superpower and is among the world's largest exporters of palm oil. Industry outside agriculture includes auto, petroleum, electronic equipment, and liquefied natural gas. Mining and manufacturing also produce rubber and tin. Tourism is a growing industry.

Currency Malaysian Ringgit (MYR). Exchange at your local

RIGHT: Global map with location of Malaysia
BELOW: Location of Tioman Island on map of Malaysia



bank or in the airport exchange for current rates. Be sure to exchange for small change. Anything more than a ten is too big a bill. Ones and fives are preferred on the island. Exchange rates: 1USD= 4.41MYR; 1EUR=4.69MYR; 1GBP=5.52MYR; 1AUD= 3.34MYR; 1SGD= 3.15MYR

Population 31.66 million in Malaysia, with 432 on Tioman Island. Ethnic groups: 50.1% Malay, 22.6% Chinese, 11.8% Indigenous, 6.7% Indian, 8.8% other ethnic groups. Religions: 61.3% Sunni Islam (official), 19.8% Buddhist, 9.2% Christian, 6.2% Hindu, 3.4% other religions.

Language Bahasa Malaysia (Malay). English, Mandarin, and Tamil. Most in the tourism industry of Malaysia speak English including staff in restaurants, airports, buses, taxis, Uber and the dive centers. In Pahang, the state of Tioman Island, Pahang Malay is spoken, a dialect of Malay. However, another Malay variant is spoken in Tioman Island that is most closely related to Riau Archipelago Malay sub-dialect spoken on nearby islands.

Health Ensure routine vaccines are up-to-date and also Hepatitis A, Typhoid, and Japanese Encephalitis. Ask your doctor to prescribe an antibiotic for the risk

of bacterial diarrhea. Do not drink the water. However, filtered water is available at B&J Diving Centre to refill reusable containers. Zika virus is a risk. Prevent mosquito bites and bring insect repellents containing DEET, to be used if necessary. International Certificate of Vaccination required for yellow fever if arriving from a country with risk of yellow fever, some countries in Africa and Central and South America.

Decompression chambers

No chambers are on Tioman Island. Chambers are available in Kuala Lumpur (military), one in Penang, one on a navy base in Lamut and in the Singapore hospital.

Divers Alert Network (DAN) can provide initial information regardless of membership. Only members receive financial coverage. DAN takes international or skype calls at: +1-919-684-9111, or you can call DAN Asia Pacific: +61 8 8212 9242.

Travel/Visa/Security

Passport valid for six months beyond intended stay is required. Visas are not required for Australian, British, Canadian, EU or US citizens' stays up to 90 days. All visitors must have proof of return sea or air ticket. Forefinger fingerprints will be taken upon arrival and departure.

Web sites

Tourism Malaysia
Tourism.gov.my





Edited by
Rosemary E. Lunn

POINT & CLICK
ON BOLD LINKS



THE FACTS AND VIEWPOINTS IN THIS SECTION ARE NOT NECESSARILY THE VIEWS OF X-RAY MAG. EQUIPMENT PRESENTED IN THIS SECTION HAVE NOT BEEN TESTED BY X-RAY MAG STAFF, NOR ARE THE ITEMS WARRANTED. INFORMATION PROVIDED IS CONDENSED FROM MANUFACTURERS' DESCRIPTIONS. TEXTS ARE USUALLY EDITED FOR LENGTH, CLARITY AND STYLE. LINKS ARE ACTIVE AT THE TIME OF PUBLICATION.

Equipment

Get wired

When it comes to diving a heated device, you have two options for attaching the appropriate cable(s) from the battery canister, through the drysuit, to the heated device. You can attach your heated device via a dedicated port installed into your drysuit. Or you can choose to either replace or augment your current drysuit inflator valve so that it becomes a device with two functions. A drysuit inflator and a heated device port. SI Tech has gone down the augmentation route with the Atos Cable Entry Port. This has been designed to work with a SI Tech inflation valve and comes with an anti-friction washer. Sitech.se



Minidive

This year's "mad product" comes from a French start-up company. The MiniDive will "make the [sic] shallow scuba diving accessible to everyone with maximum safety. For this, we have [sic] developed products which are more practical and cheaper than classic scuba diving equipment." The 0.5-liter cylinder can be filled with a hand pump. MiniDive claims this will last five to 10 minutes at 3m; However, if one assumes a consumption of 25 liters per minute, it calculates to a three-minute dive duration. Nothing of merit has been found about the MiniDive so far. Minidive.com



Click in

Finclip has been inspired by functional ski bindings and has come up with a method of donning your fins without using your hands. Finclip states that you should be able to don your fins on, as easily as you clip your skis on. The idea is that you fix an L-shaped Finclip to the base of your fin with a serrated clamp. This clamp is hinged. Simply slide your foot into the fin pocket. Your heel pushes down on the ergonomic heelpiece, activating a "sliding cursor" that pulls the fin strap into place. Gimmick? Or useful solution to those who struggle with donning and doffing their fins. Only time will tell.

Finclip.cloud



Apeks MTX-R

Apeks' latest regulator—the MTX-R—is based on the military MTX regulator. The MTX was designed to meet the US Navy NEDU extreme cold water test, therefore the rugged looking MTX-R regulator performs in almost freezing water at depths of 60m (196ft) plus. According to Apeks this is because the first stage design helps to prevent ice build up around the diaphragm. The first stage body has been forged in one piece and comes with two (angled) HP and five LP ports, which should allow for optimal hose routing. Apeksdiving.com



Huish Outdoors acquires Oceanic and Hollis

Bob Hollis' love of diving and his mechanical aptitude allowed him to create his own specialized dive equipment. Forty-five years on, he has developed his business into a multibrand company, which includes Oceanic and Hollis—two recreational and technical diving brands recognized throughout the world.

"Adding Oceanic and Hollis to the family of Huish Outdoors brands is an important step for our company," said Mike Huish, CEO of Huish Outdoors. "These two industry brands allow us to offer a complete range of product categories. We understand that our customers demand the best equipment, rather than a one-brand approach to buying all their gear."

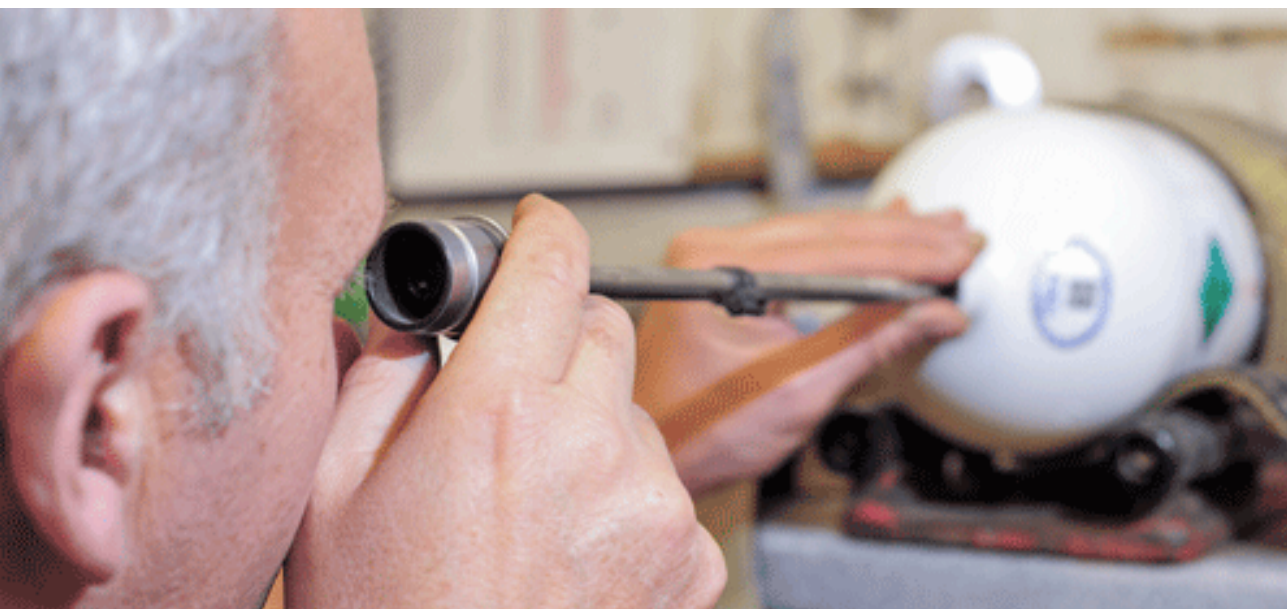
"The Hollis family is excited to work with Huish Outdoors," said Bob Hollis. "We are pleased to be part of a progressive company that believes in driving industry participation through product innovation, an approach that I've taken since I first started making dive equipment."

Oceanic and Hollis represent Huish Outdoors' sixth and seventh acquisition since 2011, and add to an impressive portfolio of premier brands in dive equipment: Atomic Aquatics, BARE, Liquivision, Sharkskin, Stahlsac and Zeagle. ■



Many diving professionals and agencies worry that it will make diving less safe because a certain amount of cylinder filling will go “underground” as divers look to save money on testing.

UK under pressure to test cylinders annually



The UK recreational and technical diving industry is continuing to lobby against a forced change to a proposed ISO cylinder testing standard.

Text by Rosemary E. Lunn

Photos by IDEST and Rosemary E. Lunn

Historically, the UK cylinder testing regime for scuba tanks used to be every two years (visual) and every four years (hydraulic)—the cylinder is visually tested when it is hydraulically tested. This changed in September 2002, when the Inspectorate for Diving Equipment Servicing and Testing (IDEST) advocated that the hydraulic test period should be conducted every 2.5 years and a hydraulic test conducted every five years in the United Kingdom. In other words, the test cycle time was extended!

Now, the United Kingdom is under pressure to amend this test cycle and bring in an annual cylinder visual test. However, the test specifications proposed are a retrograde step because they are not as rigorous as the current IDEST 30-month British visual. What is equally maddening to the UK diving industry is that there is no evidence that this change is necessary, nor that it will proportionally increase safety. In fact, many diving professionals and agencies worry that it will make diving less safe because a certain amount of cylinder filling will go “underground” as divers look to save money on testing.

There is already anecdotal evidence

on social media that divers will buy a personal compressor to avoid cylinder testing. This is a typical comment:

“Buy your own compressor—£1,500 outlay but no more testing! (You can do your own visual if you want). I bought mine six years ago, perfect air fills every time, 240 bar, no half fills, no dodgy air, or waiting for dive shops to open, and I average 50p per fill costs including twice yearly servicing the compressor. It's a no-brainer for me.”

More dangerous

The fear is that this new annual standard will put the divers at risk because there will be less adherence to the current inspection and testing regime. Divers will simply not get their cylinders tested. No one wants to be around a cylinder when it fails, and it is possible that when a cylinder is not inspected for a number of years, it will fail at some point—be it at a dive site, on a dive boat or in a car, when it is being transported.

“This is an exercise in making things more dangerous by trying to legislate for more safety.”

The proposed ISO annual test is an international standard and it is being applied to every cylinder across the board—from 0.5lt to 120lt—in every industry, from aviation and brewing through to cryogenics and dive centres. This new

ISO standard that is being driven by a number of nations, including those that primarily dive with aluminium diving cylinders, where there have been issues with cylinder necks cracking.

So let's compare the UK IDEST visual test process against the US process.

In the UK

- The cylinder is logged in on a job sheet.
- The boot and any stickers on the cylinder are removed.
- The cylinder is externally assessed for damage and corrosion.
- The cylinder is checked to ensure it is

empty. If it is not, any gas is released.

- The valve is removed by a special jig to ensure that it is not damaged.
- The stem threads (the part that is screwed into the cylinder) and the outlet threads (where you screw your DIN regulator into the valve) are cleaned.
- Once clean, both the stem and the outlet threads are checked with a go gauge. If the go gauge does not go all the way, then the threads are inspected to find out why this could not happen.
- The stem and outlet threads are then checked with a no go gauge. This should not go on more than one third





Checking the cylinder neck thread with a threaded gauge



on the threads. If it does, there is a fault with the threads and they are duly inspected.

- In the case that the valve passes the go/no go gauge test it is then dismantled and put into an ultrasonic cleaner to clean all the parts.
- The cylinder is placed on a bench and inspected internally with either a drop light or a boroscope. If a drop light is used, then a dentist's mirror is used to check the inside of the shoulder for damage, corrosion, or anything abnormal.
- The valve is washed in fresh water, dried and reassembled

with new O-rings and white Teflon rings.

- The valve is then screwed into the cylinder and made "hand tight." It is then torqued to the correct tension.
- The cylinder is stamped with the IDEST Centre's unique stamp, including whether it has been visually or hydro-statically serviced. It is stickered to show when it is next due for service.

In the USA

In the States, cylinders are visually inspected only. Whilst the threads are closely looked at, they are not physically checked with go/no go gauges, nor is

the valve always serviced at this time. It may be serviced. It may not be serviced. Unlike the United Kingdom, there are no set standards for cylinder inspection, other than that a hydrostatic test must be conducted every five years.

In other words, in a typical US visual service, the valve is whipped off, a technician takes a look and puts the valve back in. It is a very basic inspection and does not remotely compare with the current safer IDEST visual inspection.

No evidence

In February, a British Standards Institute (BSI) meeting was held in Pretoria, South Africa, to deal with 130 amendments to standards. Only 58 standards were covered, and a follow-up meeting was scheduled for late April 2017 (as this issue goes to press).

The British Sub Aqua Club (BSAC) sponsored Gavin Anthony, a forensic scientist specialising in the testing of diving equipment, to attend this meeting. Anthony was the only scuba specialist in the room. He advocated against this standard, asking for the evidence that shows annual visual testing will make diving safer. There has been a lot of talk, but no solid evidence has been forthcoming.

The United Kingdom voted against the standard, but was outvoted. However, the final con-

tent of the standard is not yet fixed and IDEST is still pursuing a proposed amendment to the recommended interval for internal visual inspections.

In the meantime, IDEST has not seen any evidence that this change is necessary nor would proportionately increase safety and so, with the support of SITA and the UK recreational and technical diving industry, is against an increase in the frequency of inspection for diving cylinders.

And IDEST has got data proving that the 30-month visual inspection is satisfactory. It has been monitoring why cylinders fail. IDEST's data confirms that a small percentage of cylinders fail because of internal and external rusting. However, 75 percent of failures are caused by thread issues. Given that 75 percent of failures are due to thread wear or damage, what is the logic of increasing the frequency of removal and refitting?

Thread gauging

The reason that the UK recreational and technical diving industry has been safe up until now is that, thanks to IDEST, there is a thorough periodic internal inspection regime that encompasses thread gauging. It stops mismatched valves and cylinders being dived (where the valve has one size thread and the cylinder has a different-sized thread and an

untrained person has screwed the two together). And where cylinders and valves fail the thread gauge tests, they are taken off the market and destroyed. If the use of thread gauges is not part of a visual inspection, it will cause issues.

"You cannot just look at a cylinder valve and say, 'this is ok'," said Tony Marshall of IDEST. "I can definitely see this having an impact on people coming into UK diving... I know I am going to have to start shrinking my cylinder collection if this comes in," another diver said.

What happens next?

ISO standard. The adoption of the ISO standard is automatically undertaken by the countries that signed up to the Vienna Agreement in 1991, and this includes the United Kingdom. Consequently, this would apply whether or not the country is in or out of the European Union, because the decision to comply with the Vienna Agreement is one made at governmental Ministerial level.

In the meantime, the whole of the United Kingdom's recreational and technical diving agencies,

along with SITA and IDEST, continue to advocate on behalf of UK divers and explore alternatives to the proposed testing changes. One possible route is via a risk assessment.

Different classifications

Not all pressured cylinders are treated the same way in the United States. Diving cylinders are classed as "sport and recreation." They are not classed as "commercial cylinders." Therefore the UK recreational diving industry has been discussing the idea of introducing a risk assessment alternative for domestic cylinder use with the UK dive training agencies. However, divers may have to prepare for an increase in cylinder inspection frequency if this is not successful.

It is currently anticipated that, if implemented, the cylinder testing changes could come in as early as October 2017. ■

C&R Testing

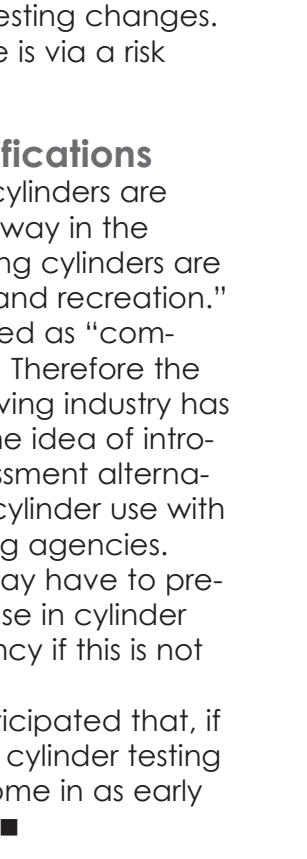
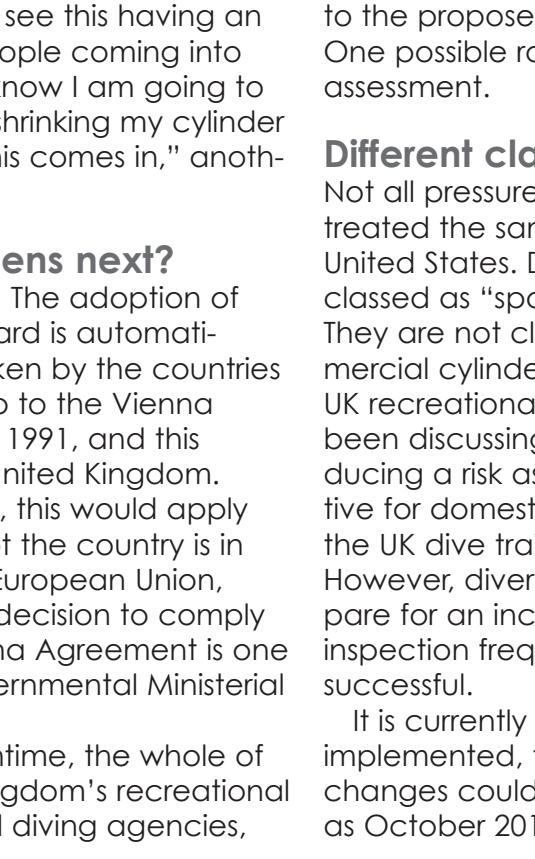
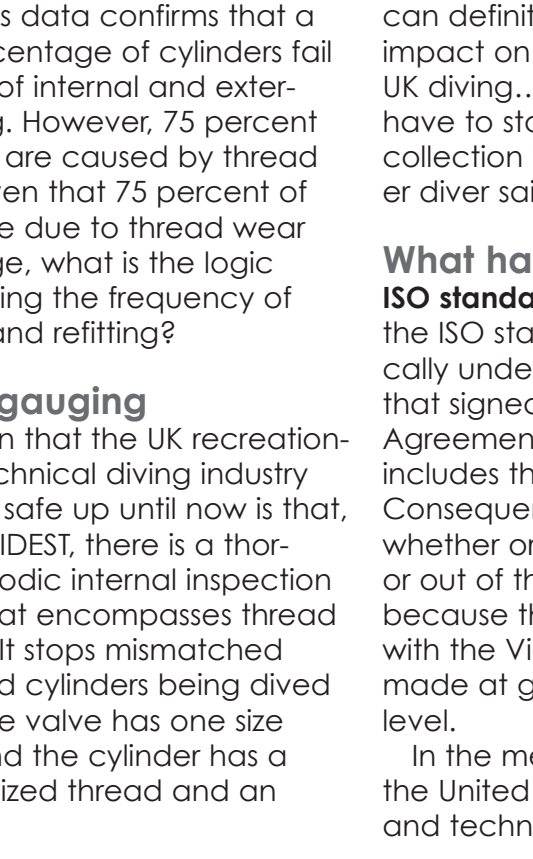
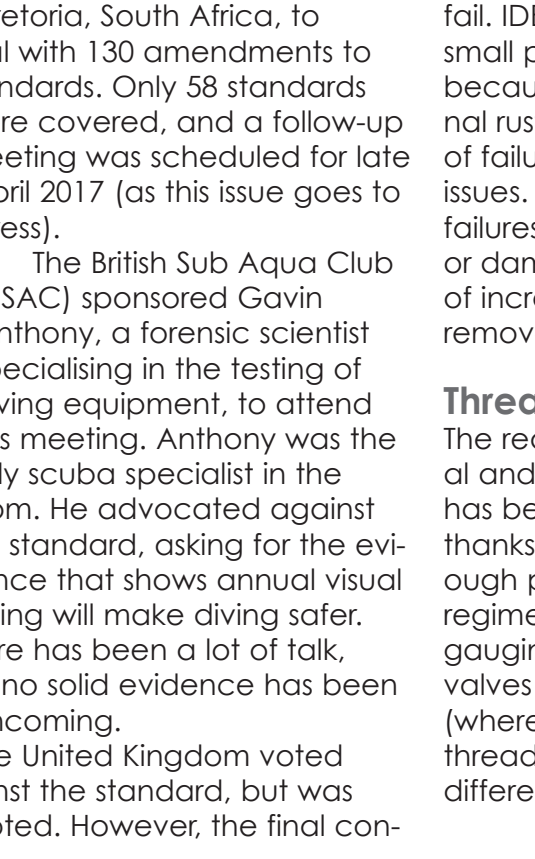
We care for compressed air

W31 MARINER
High Pressure Compressor
Charging Rate: **105 or 140 lt/min**
Working Pressure: **225/310 bar**
Dimensions (CM): **W44 L81 H52**
Weight: **65 kg**

W32 CANOPY
High Pressure Compressor
Charging Rate: **180, 250 or 300 lt/min**
Working Pressure: **225/310 bar**
Dimensions (CM): **W70 L100 H130**
Weight: **280, 290 or 300 kg**

Alkin and Aykom
Compressor Distributors

C & R Testing Ltd
Unit 1, Owenshaw Mills, Old Cawsey,
Sowerby Bridge, Halifax HX6 2AF
Telephone: **+44 (0) 1422 410 466** | Email: **info@candrtesting.co.uk**
Website: **www.candrtesting.co.uk**
Opening Times: Monday to Friday 9.00 am - 17:00 pm
Saturday and Sunday - Closed



Remains of ancient amphoras can be found resting on the reefs around Greece

Text and photos by Peter Symes

Greek diving is back on the menu. X-RAY MAG's Peter Symes asks Avgerinos Vrazopoulos, the director of Scuba Hellas—the Greek diving marketing group—for insights into the development of new dive locations and trip packages for international divers.

X-RAY MAG: You are taking on the seemingly gargantuan task of positioning Greece as a diving destination, somewhat anew, even though Greece has always had a recreational dive industry.

AV: Greece is one of the most popular tourist destinations in Europe. Every year more than 20 million people visit Greece to visit the ancient sites and museums, the endless sunny beaches with the crystal-clear waters, enjoy the famous Hellenic gastronomy, the extensive opportunities for sport, leisure and cultural involvement, and of course the famous lifestyle, which completes the puzzle of an amazing holiday!

Although Greece seems to be a great place to discover diving and to fall in love with the underwater, the country doesn't offer—or at least doesn't promote—organized diving with, say, at least 10-15 good dives in one location, aimed at the experienced and demanding divers who travel the

Rebuilding Greece's Dive Industry

— An Interview with Avgerinos Vrazopoulos of Scuba Hellas





Divers at dive site off Rafti Island in Rafti Bay with walls covered with sponges and soft corals (left and bottom right); Avgerinos Vrazopoulos of Scuba Hellas (below and lower left)

Greece



diving industry began with the lifting of the restrictive law regarding diving in early 2006. This I consider a watershed moment for Greece's dive industry. From this point onwards, dive centers were finally able to offer services for experienced divers and dive centers started exploring their backyards. Before long, those dive centers realized they had a real opportunity to attract real divers and began a process of adding more and more dive spots to their maps.

But that was not quite enough to undo the

damage. The global dive community had long since taken it for a fact that you could not dive in Greece. Even today, when I travel to promote ScubaHellas.com abroad, I frequently got told to my face, "What are you talking about? You cannot dive in Greece. It is forbidden." It appears that many who came to Greece as tourists in the past, some of which had their first diving experiences in the Greek islands, went asking for further diving adventures but were disappointed. This perception was then passed on through the grapevine until it became an established myth. As divers returned to their home countries and discussed options for further adventures in diving with fellow divers in clubs

world with their diving buddies. This is the most important reason that Greece is not firmly pinned on the global diving map yet.

As you noted, the recreational dive industry has been around since the '80s, but the 250 registered dive centers, even today, provide mostly DSDs (Discover Scuba Diving) and Open Water Diver courses to new divers—tourists.

Moreover, up and until 2006, diving in Greece was totally prohibited, apart from some very small locations and some bays, and only for training purposes. In order to protect our national heritage, the authorities did not allow any other diving. Special licenses were issued by port police and the ministry of culture only to a very few, to participate in research dives for archaeological purposes. As a consequence, dive centers had no interesting spots to offer experienced div-

ers. Instead, they had to focus on tourists, who mostly had no diving experience.

The idea of ScubaHellas.com arose in 2009, when I realized that, although there were thousands of potential dive spots all around the seas of Greece, I could not find—and I have been a diver since 1992—any dive centers offering a week full of good dives. Instead I had to travel abroad to pursue my interest in diving.



X-RAY MAG: Can you walk us through the historic development of the local dive industry and community since recreational diving came about? Given Greece's extensive archipelago, general popularity as a tourist

destination with a well-developed infrastructure, why hasn't Greece enjoyed much of a prominent position as a dive destination?

AV: The real development of the





THIS PAGE: Shipwrecks, ancient amphoras and wrecks of aircraft are also features of diving in Greece

X-RAY MAG: What are the challenges ahead? How do you envisage overcoming them?

AV: The biggest challenge is to overcome and change the persistent perception that still prevails in the global dive community—that it is still forbidden to dive in Greece. Secondly, to convince divers that there are locations that offer a week of good and different dives. This requires time, effort and reaching out. Another matter is to convince the local dive centers to focus more on the dive community, instead of general tourism, and to add still more dive spots. But as I tell my colleagues, we need to show professionalism and consistency and put in the hard work. This is the only way to overcome obstacles ahead and finally succeed.

home, while spending perhaps only half of the usual on airfares, and be able to enjoy their vacation in a safe and well-known destination.

X-RAY MAG: What opportunities do you see for the Greek dive industry in the present day, i.e. given the current economic climate and geopolitical circumstances—such as, but not limited to, the unrest, or perceived unrest, affecting other destinations around the globe?

AV: Firstly, the crisis spurred the tourism sector to improve quality and range of services, and it also drove prices way down. Still today, prices remain lower than in previous years. Secondly, the many economic and political issues elsewhere on the globe have made many distant locations travel less attractive for various reasons. For Europeans, in particular, Greece has become a very attractive alternative, following the unrest in Egypt and Turkey. And as Malta is becoming still more crowded, we see more and more divers each year.

In 2017, around 30 million tourists are expected to visit Greece. Bookings are going up, and Athens' airport is already the fourth largest destination in Europe this year. Airlines are adding more flights to existing destinations as well as adding new ones.

X-RAY MAG: You have created this portal ScubaHellas.com with the purpose of promoting Greek Diving, and the first time we met some years back, you featured this portal in your exhibit at the German dive show. Why did you take on the task of promoting Greek diving? What happened leading up to that moment when you decided to embark on such a project? What made you believe it was doable?

AV: I both strongly believe that Greece really deserves it, and offers unique diving experiences to the most demanding divers. Not only do we have an endless coastline of 13,676km (the eleventh longest coastline in the world), 3,000 islands—240 of them inhabited, potentially unlimited dive sites (already more than

2,000 registered) all under crystal clear and relatively warm waters (underwater average visibility is 30m), but history as well. Apart from the beautiful scenery, there are more than 1,500 wrecks (more wrecks than any other country in the world) waiting to get explored.

As a marketing professional, it is also my belief that we have to promote Greece as a country and not just some individual areas. Having been a recreational diver for more than 25 years, I see that—provided the infrastructure to provide quality services is in place—we can offer all parts of the holiday puzzle, in one place. It is just a question of time to make the global dive community aware of the potential here. With tourism infrastructure and dive spots in place, we have got all we need,

and dive centers, they passed on the message they had unique first diving experiences in Greece but there was nothing further on offer.

X-RAY MAG: What changed to make room for the current promotion?

AV: Today, there is a completely different availability of holiday packages carefully designed for divers, covering all different needs in places where visitors can enjoy a week full of dives, combining

wrecks, caves and caverns, reefs and walls for all levels of divers—from open water to deep technical dives. There also seems to be a growing number of divers looking for new alternatives for upcoming vacations, which are closer (maximum three hours of flight time for Europeans), safer and of course—as you easily can find out in ScubaHellas.com—good value for money. As a result, discerning divers in Europe now have easier access to quality diving without traveling far from





and all we have to do is follow through on our strategy and have patience. Before soon, Greece will become the new trend among divers, I am sure.

X-RAY MAG: What did you learn in the process?

AV: In order to move forward and improve, I believe that we should learn new things every day. That said, I found it more difficult than initially thought, to change this "myth" of the diving prohibition in the Greek seas, and much more time and effort is required to change this perception. I also found that although there are 250 dive centers, there are very few open-minded professionals who deliver service at a high level,

who add more dive locations on their maps, and are willing to invest in marketing and changing their focus from delivering DCDs and training today for tourists to delivering well-designed services for experienced divers.

X-RAY MAG: What are you hoping to achieve in the next 5-10 years? What are your criteria for success? Will there ever be a point in time where you will consider Scuba Hellas fully developed, or is it a continuous process that will never end?

AV: We are still only at the beginning, and what we have accomplished so far is just the introduction. In order to move things further along, we are following a

strategic plan. First of all, we have to establish ScubaHellas.com in divers' minds and hearts. In order to win over their minds, we need to consistently invest in marketing and promotion, and provide real alternatives for people who travel for diving. In other words, we have to move to the top of the list of options, when people are thinking about their next diving holidays. Then, I say hearts, because visiting divers have to return home so pleased with their adventures that they will tell their friends and share their experiences on social media and come back again and again.

As you can surely appreciate, this is a never-ending process, and if we add to that divers' satisfaction must always increase,

Greek diving includes caves and caverns at several locations (left and bottom right); Avgerinos Vrazopoulos of Scuba Hellas takes divers out to dive sites near Athens (below)



then the sky is the limit. We also believe on following a simple recipe, with just very few and basic ingredients:

- Happy and satisfied divers who will become return visitors and share their experiences with fellow divers
- New dive locations all around Greece
- More dive sites in each location
- New packages, more complicated, designed to provide new experiences for more focused and demanding divers

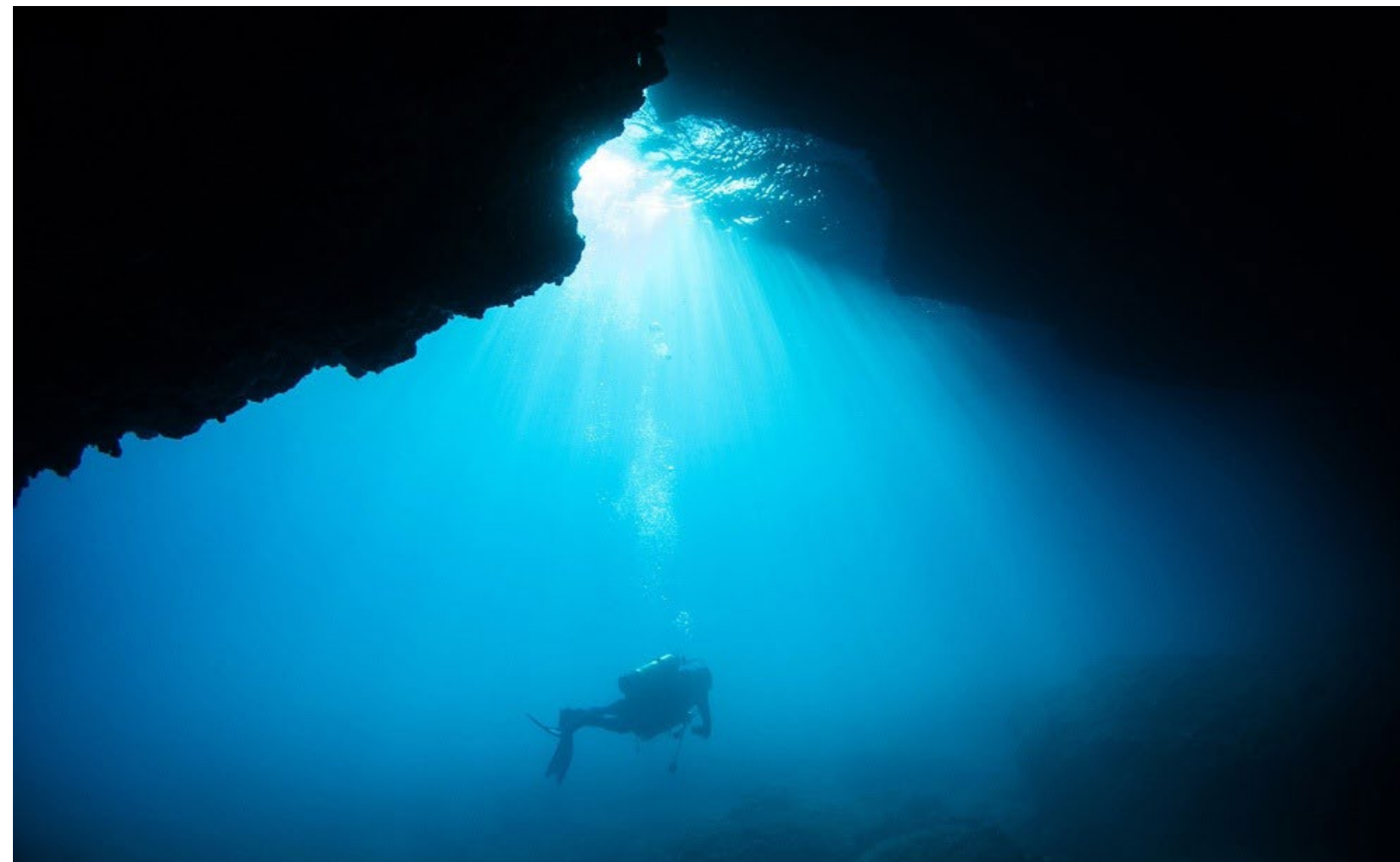
We are just at the beginning of implementing that plan, and I am sure it will keep me busy for many more years—

and don't forget, I really love what I am doing!

X-RAY MAG: In working with the many dive operators in the area, do you find there are areas where they need to improve or step up, in order to (better) provide competitive and attractive offers?

AV: There is always room for improvement. As I explained earlier, this is our core philosophy, our DNA.

What we need is to get still more good presentations of dive sites, longer seasons of operation and more promotion, especially through the social media. The ScubaHellas.com team supports local dive centers by showing best practices, international benchmarking and providing cus-



A fireworm (left) with an amphora from antiquity, sticking out of the sand; Remains of ancient amphoras found on the rocky reef at Raffi Bay (lower right); Diver enjoys crystal clear waters at Blue Canyon, Anovyssos (right); Avgerinos Vrazopoulos (below)

AV: Initially, I thought I could do it all by myself. I believed I did not need any help from the government. Then, in 2015, I realized that this was a big strategical mistake and I approached GNTOT (Greek National Tourism Office), presenting my goals and vision, with the aim of getting some support. Eventually in 2016, we collaborated on organizing our first press trip, which I think went very well. I believe that the authorities are now convinced that diving tourism can become a great asset, a new profit center, and that there are ways of combining security and protection of our national heritage through organized diving.

Obviously, my fellow dive professionals all around Greece are also pushing matters in the same direction, trying to convince local authorities of the benefits of supporting and promoting diving.



ing. During the past two years, a number of projects have been set in motion, such as underwater museums and parks, all of which will help diving in Greece to grow to the next level. There are many municipalities around Greece planning to introduce scuba-related attractions. Unfortunately, the ongoing crisis makes investments a challenge and holds us all back.

X-RAY MAG: Is there a Greek style or characteristic way of conducting diving vacations? And if so, what sets Greece apart from other destinations? Say, from other Mediterranean locations?

AV: I think that the Greek style can be modular, can be tailored to anyone, to all styles and wishes. There are unlimited options. This is the main difference, the ability to combine, to mix all different elements for an unforgettable experi-

ence.

What we do in ScubaHellas.com is to listen carefully to divers' needs and wishes. We can design vacations for many or a few, in big crowded cities or small and remote islands, for families or for groups of extreme divers.

This is what makes Greece different—the ability to provide a very wide range of services.

X-RAY MAG: How does a visiting diver make the most out of visiting Greece? What is worth paying special attention to that is perhaps not so obvious for the outsider? Do you have any tips?

AV: Unfortunately, it is impossible for a diver to explore more than

one or two different locations in just a few days. I rather prefer to propose destinations with more diving than traveling. I have been diving for the last 25 years, and I have dived all around Greece, and still, I feel like I have seen only a small portion.

So, for those friends coming to dive for the first time, I propose that you be specific. Don't try to do as much as you can in a few days. You need to find one place to explore—we can help you to do that. Wherever you decide

tomers care professional seminars and training. Our team follows carefully designed procedures and evaluates key performance parameters on all areas of operations (i.e., facilities, equipment, briefing and training). We put up certain rules and procedures, which dive centers must incorporate in their mode of operation. Each year, we evaluate which dive centers that not only share the same passion with us, but

also can provide high level services and move in the same direction, and finally can follow ScubaHellas.com way of operation and philosophy.

X-RAY MAG: Has the government been supportive of your efforts? What are the challenges and limitations?





Divers find colorful sponges and algae on rocky walls at Anavyssos dive site (left) and Rafti Island (below)

our famous ouzo and tsipouro, mas-ticha, and of course, the unlimited local wines. Let your senses guide you—only then will you get a real taste of Hellas!

X-RAY MAG: Are there any specific sights or locations in Greece that are not so well known outside the country but may become so in the future?

AV: There are plenty, and very soon you will see these new places appearing on ScubaHellas.com dive map, but we need some time to develop each destinations to provide the full package, and we need to be sure about our proposals. Since we are still at the beginning of our journey, we have to be very careful about what we are offering. Just stay tuned to ScubaHellas.com! ■

For more information, go to:
ScubaHellas.com



to go, the islands or the mainland, you will have so many things to do, you won't have time to do them all.

Don't forget, it's a holiday too, and it is always nice to spend some time just laying on the beach, relaxing under the sun!

Visit our page ScubaHellas.com to explore our existing proposals and then

leave us some tips. Our team will listen to you carefully, providing what best suits you.

Most importantly, try to avoid July and August — it is the peak of the season. It is overcrowded and you won't be able to enjoy your stay. It is better to go during May or October, when the weather is also perfect, warm enough

and water temperatures are more than 20°C (68°F).

Keep the last one or two days free of dives (no deco, no flight time) in order to spend some time visiting top-side sights around Greece and try local Mediterranean cuisine along with spirits, like



Dive in Athens

MAX 3-hours flight

20' from ATHENS airport AIA

ANAVYSSOS 6 DAYS/8 DIVES
FROM 580€

PORTO RAFTI 6 DAYS/8 DIVES
FROM 650€



Explore unique dive sites 30' away from Athens city center

Get the best out of diving in Greece...

scubahellas.com





opinion

Text by Simon Pridmore

In the last *Scuba Confidential* column, I took a long, hard look at the buddy system and solo diving. Whatever you may feel about the issues, there are definite benefits—both tangible and intangible—to diving with someone else. We are human beings, after all. We like to share our experiences and we also derive a great deal of emotional security from the company of others. There are also occasions when having a buddy around can be of enormous practical assistance.

If you become entangled in fishing line or a net, a buddy can see the situation much more clearly than you and is better placed to extract you. If you become confused or anxious, your buddy's mere presence and calm disposition can be reassuring. If you get a serious injury, you may need a buddy to get you safely to the surface and out of the water.

Another major advantage of diving with someone else is that you can assist them if they have an air supply emergency or so that they can help you if you have one.



PETER SYMES

Scuba Confidential:

Air Supply Emergencies

— *What Do You Do When It All Runs Out?*

Running out fast

A couple of years ago, the folks at *Advanced Diver* magazine in the United States ran a few scenarios using a standard set of equipment on a full 12-litre cylinder placed at a depth of 30m. They

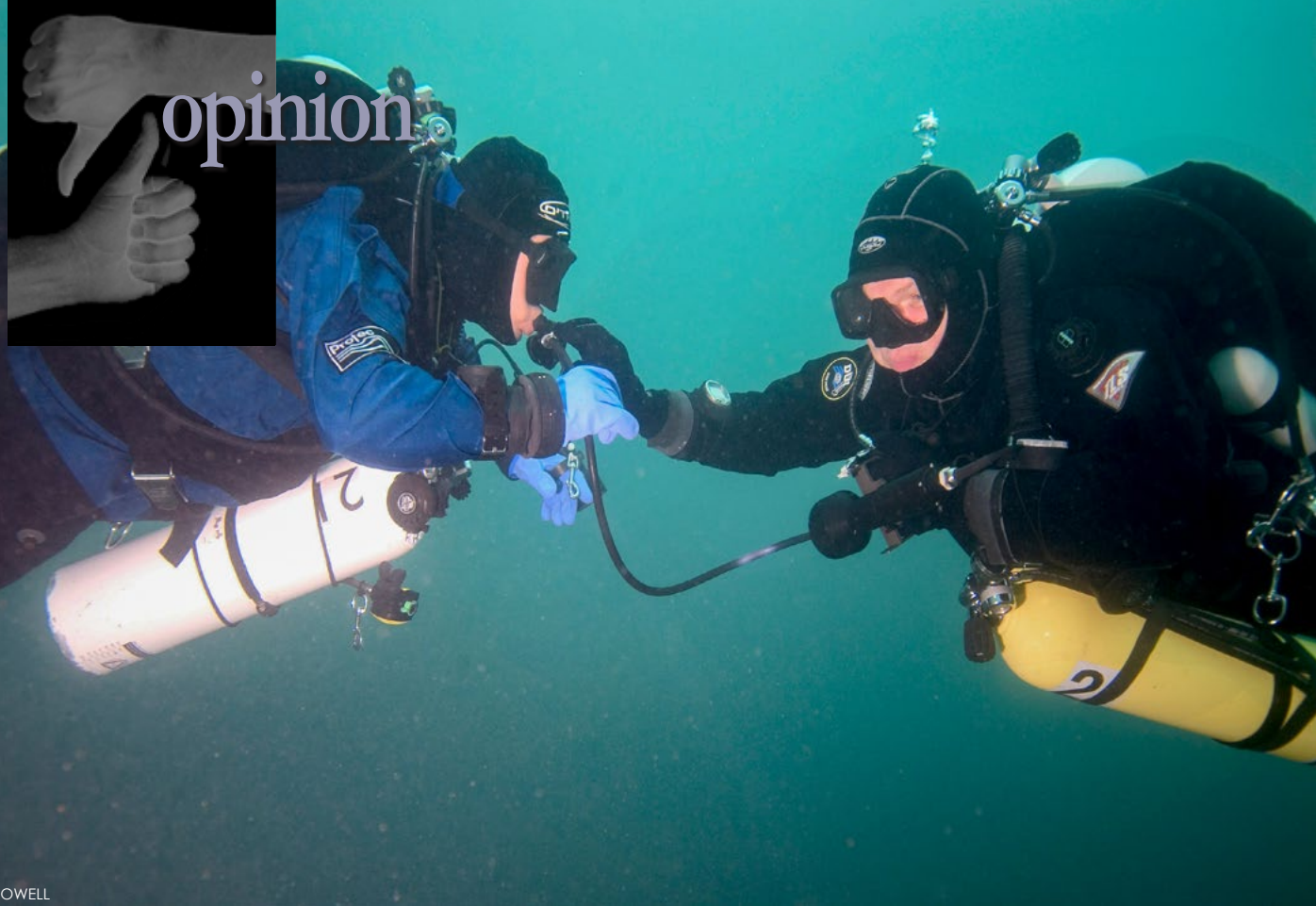
found that a burst intermediate pressure hose emptied the cylinder in less than 90 seconds. A purged (i.e. free-flowing) regulator did not take much longer, causing the cylinder pressure to plummet from 200 bar to zero in just 154 seconds.

So, if you are using a single cylinder with no alternate independent source when you are diving to any sort of depth and something like this happens, you are unlikely to have enough time to make an ascent at a safe speed on your own. You

are going to need someone to share air with you as you go up.

There is also the possibility that you might start a dive on an almost empty cylinder, fail to check your pressure gauge and run out of air completely





MARK POWELL

while still at depth. This has happened to a number of divers who mistakenly thought they were much too careful for something like this to ever affect them.

All of us learn at an early stage in our diving lives how to assist another diver with an air supply emergency. In spite of this, real life air-sharing situations often end badly, with one or both divers coming to harm. In this article, I suggest ways in which you can train and configure your equipment to give you, and the people you dive with, a better chance of survival when one of you suddenly runs out of air.

Unrealistic drills

In standard diver training, the drill begins with two divers kneeling facing each other. One signals calmly to the other that they have run out of air. The donor hands over their octopus regulator, they establish a mutual grip and, after a minute or so, on a signal from the instructor, the drill is ended and the out-of-air diver returns the octopus and starts breathing from their own regulator again. The drill is then repeated with the divers exchanging

roles. A development on the theme has the two divers execute a timed swim together once they have begun air sharing, then return to the starting point.

The benefit of these exercises is limited. Firstly, they presuppose an unrealistic scenario where two divers are side-by-side and stationary when the emergency occurs. Secondly, the manner in which the drills are conducted is unlikely to induce any significant degree of stress in the participants, whereas a real-world air supply emergency is a highly stressful event. Thirdly, the sequence fails to include an ascent.

Two divers, both breathing heavily under stress and sharing one cylinder, need to have an immediate ascent at

the forefront of their minds, as their air supply is likely to become rapidly exhausted. Unfortunately, the exercises they have practised are more likely to make them think that the act of air sharing is the only thing that matters, and that once this has been established, the emergency is over. If anything, the situation has actually become even more serious—There are now two divers at risk instead of one, and any delay in ascent could be critical. The emergency is not over until both divers are buoyant at the surface.

“Real life” drills

Of course, the air-sharing swim is supposed to simulate an ascent, and a good instructor would explain that, but it is commonly accepted that, when called to action in an emergency, you are far more likely to remember some-

thing you have done than something you have been told. People involved in a stressful situation will act according to instinct rather than intellect, and instinct is developed by repetitive rehearsal. This is the concept behind the progressive series of drills I describe in the text box accompanying this article, which takes you through increasingly realistic scenarios, allowing you to gradually develop both your technique and confidence. Practise these as a team exercise. I would recommend a team of three: two divers executing the drills and the third person acting as observer and safety diver, and providing an objective critique of the air-sharing divers' performance. Roles should be exchanged during each session.

What really happens

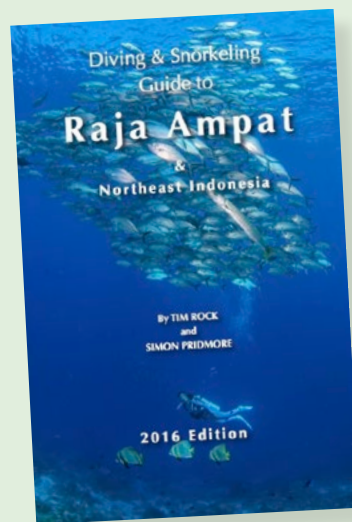
On the two occasions that people ran out of air on a dive and came to me for assistance, they both arrived unnoticed from above and behind, and grabbed the regulator out of my mouth. Both also dragged my mask off in the process. This is what typically happens when you run out of air. At the moment you suddenly realise that you have no air to breathe, you stop swimming and instinctively hold your breath.

This causes you to float upwards. Assuming you have enough self-control and awareness to resist making a panicked runaway ascent, the next thing you do is look around desperately for someone nearby who has air and swim as fast as you can to get to your prospective saviour, who is now usually below you.

As you swim, the anxiety you originally felt on finding yourself airless increases with the effort you are expending and the gradual build-up of carbon dioxide in your body. By now, you have only one thought in your head, “I need air!” The concept of politely requesting assistance with a series of calm gestures could not be further from your mind.

The equipment setup that most divers use is a regulator on a short hose in their mouth and an octopus regulator on a slightly longer hose, secured to the right side of their BCD. From above, the octopus regulator is invisible, so you will just grab the most obvious source of life-saving air you can see. This will be the regulator in the other diver's mouth. Hav-

New Dive Guide to Raja Ampat



As part of their series of 2016 Diving and Snorkeling Guides, authors Tim Rock and Simon Pridmore have produced a brand new guide to Raja Ampat and Northeast Indonesia.

Diving or snorkeling in this remote region at the edge of the Pacific Ocean is a life-affirming, bucket-list-topping

experience! Abundantly rich in marine life, these seas are proving to be a gift for divers that keeps on giving. Raja Ampat is the superstar destination, but other areas such as Cenderawasih Bay, Triton Bay and Southwest Halmahera are shining brightly too and acquiring similarly mythical status.

This richly illustrated, detailed and informative guide is the first to cover all of these incredible places! It tells and shows you—the adventurous travelling diver—what to expect from this remote, fascinating and often downright astonishing part of the world. It will help you plan your trip, enhance your experience when you get there and provide you with the best possible souvenir of your visit. Available on **Amazon.com**



Your Buddies love the summer

Quickly check our website for
an unforgettable summer holiday!
www.buddydive.com/summer









www.buddydive.com/summer
Toll free US/Canada: 1-866-GO-BUDDY - Int. Reservations: +599-717-5080





opinion

ing taken it, you immediately discover that the regulator hose is too short and that, in order to breathe from it properly, you need to turn it around. This presses you up against the diver's right-hand side, making it hard for them to reach their octopus without pushing you away. A confused, chaotic struggle takes place and sometimes, as the history of diving tells us, disaster ensues.



A solution that works

As well as improving your technique by practising real-life drills, you can anticipate, prepare for and reduce the risk of air supply emergencies

by adopting a regulator setup similar to those used by technical divers.

The regulator that you breathe from—your primary—should

OUT OF AIR PRACTICE DRILLS

PHASE 1: To be practiced in a swimming pool or calm, shallow, protected body of water

1. You and your buddy position yourselves 10m apart. Your buddy “runs out of air” and swims towards you without breathing.

2. When you see your buddy signal that they need air, prepare whichever of your second stage regulators is on the longer hose and give this to them when they arrive.

3. Begin air sharing then ascend slowly together. On arrival at the surface you auto-inflate your BCD while supporting your buddy as they orally inflate their BCD.

4. Repeat the drill, alternating roles and increasing the distance between you until the person who is out of air starts experiencing significant stress towards the end of the non-breathing swim.

5. Then add a new level of difficul-

ty. Turn your back so you cannot see your buddy coming and do not prepare a response until they arrive and spin you around.

6. Finally, practice the drill while you are both swimming, one following the other, so your buddy is in the realistic position of having to catch up with a moving target in order to share air.

Do not end any of the drills until both divers are at the surface and positively buoyant.

PHASE 2: To be practiced during ocean dives

1. Begin phase 2 only when you are both comfortable with the phase 1 drills.

2. Once in a while, particularly at the beginning of a dive season, agree that one or other of you will initiate the drill at some point during a normal dive in open water. Advise anyone else diving with you that this is what you intend to

do, just so they do not mistake it for a real emergency and try to intervene.

3. Then practice the drill as you did in the pool, first when you are swimming close together in the shallows then extending the distance and depth as you become more accomplished.

4. Always follow an out-of-air swim with an ascent and establishment of surface buoyancy so the sequence is burned into your minds and become automatic.

5. Finally, to test yourselves in a realistic scenario, involve a third person to act as the trigger for the drill. Ask this third person to watch for a moment in the dive when it looks like you or your buddy has become distracted or when you have drifted a little further apart from each other than usual. Then, the third person should signal to one of you that you are out of air. This initiates the drill.

NOVEMBER 1-4,
Orange County Convention Center
South Hall

ORLANDO, FLORIDA

DEMASHOW.COM

DEMA SHOW

GO DIVE NOW

JOIN US AT THE WORLD'S PREMIER INTERNATIONAL TRADE-ONLY EVENT FOR DIVING, ACTION WATERSPORTS AND TRAVEL PROFESSIONALS. Connect with thousands of industry professionals who direct, influence and recommend purchases for their organizations. Discover fresh technologies and products, grow your areas of expertise and build a worldwide professional network.

JOIN THE MAILING LIST AT DEMASHOW.COM

In partnership with
godivenow





opinion

Technical diver
with regulators
in Hogarthian
configuration

be attached to a brightly coloured hose. The second stage should ideally be brightly coloured too. The hose should be at least 1.5m long and, depending on your size and shape, the extra length can be wrapped over your chest, tucked into loops of tubing along the side of your harness or BCD, or tucked into your waistband. The important thing is that the hose comes free easily when it is deployed.

Your backup second stage regulator should be black and attached to a black hose to make it less obvious than the primary. This hose should be as short as possible while still allowing you to move your head freely when you are breathing from the regulator. Some choose to keep the backup second stage attached to a chest D-ring. Others hold it in place on the upper chest with a loose loop



of cord or surgical tubing around their neck.

The concept of this setup is that, when an out-of-air diver approaches you to share air, the brightly coloured hose and second stage will attract their attention and indicate which regulator you want them to take. The length of the hose will then allow them to remove themselves to a reasonable distance from you once they have taken it. When the regulator leaves your mouth, you take your easily accessible backup regulator with either hand and pop it into your mouth. You and the out-of-air diver will then both be breathing comfortably and ready to begin a controlled ascent together.

Practice makes perfect

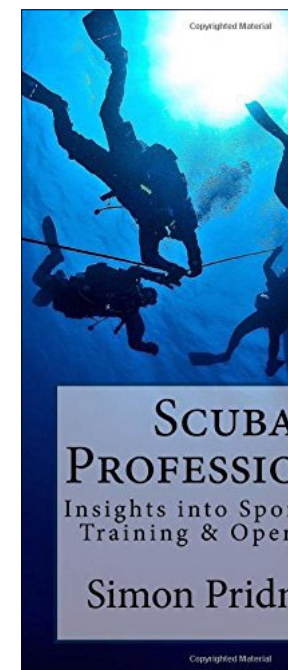
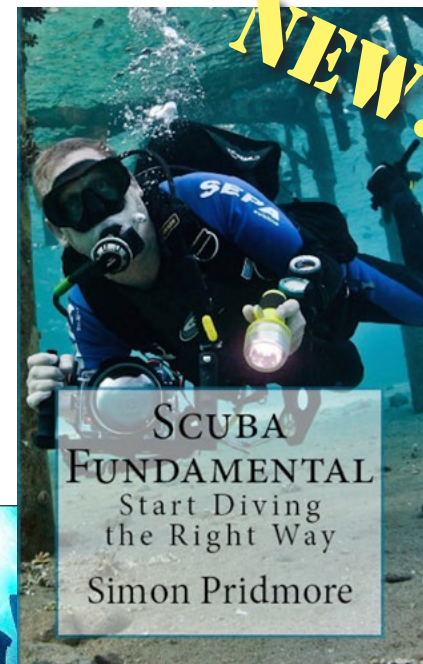
The combination of real-life drills and a well-thought-out

regulator setup can turn an air supply emergency from a potential disaster into a minor inconvenience. Practise the techniques frequently so that they become completely instinctive. ■

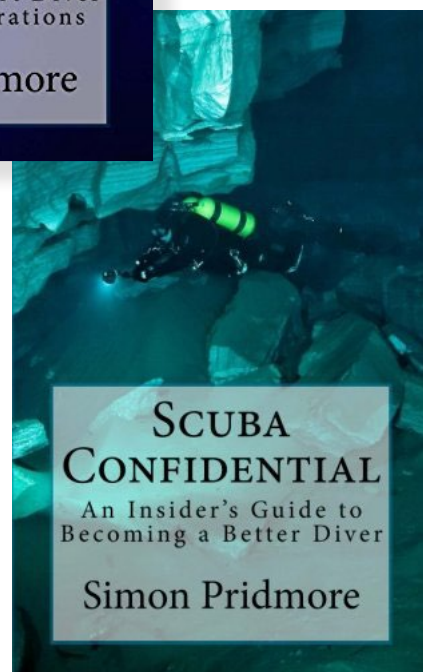
Simon Pridmore is the author of the international bestsellers, Scuba Confidential: An Insider's Guide to Becoming a Better Diver, Scuba Professional: Insights into Sport Diver Training and Operations, and Scuba Fundamental: Start Diving the Right Way. He is also the co-author of the Diving and Snorkeling Guide to Bali and the Diving and Snorkeling Guide to Raja Ampat and Northeast Indonesia. This article is adapted from a chapter in Scuba Confidential. For more information, please visit: SimonPridmore.com.

Get the trilogy!

Three books
by Simon
Pridmore no
diver should
be without



Available as
paperback,
ebook and
audiobook at
Amazon,
Audible
and iTunes



Click on the
book cover
to go to the
order page,
or go to the
link below

www.simonpridmore.com

Inner-Ear Barotrauma vs. DCS

One of the conditions that is more likely to occur in technical and mixed-gas diving is inner-ear decompression sickness (IEDCS).

Technical diving, and technical mixed-gas diving in particular, presents divers with increased risks and a unique set of hazards. Mixed-gas divers need to manage complex equipment, multiple breathing gases, and mitigate their risk of narcosis and the hazards caused by increased gas density by replacing some, or all, of the nitrogen in their breathing gas with helium. This use of high-content helium gases requires special considerations for gas switching and an adjustment of ascent rates and decompression time, and it can pose additional risks.

IEDCS has been shown to be most common in deep trimix and heliox diving, and while presentation appears similar to inner-ear barotrauma (IEBT), treatment of IEDCS requires dramatically different protocols. Both IEDCS and IEBT can cause

permanent damage of the inner-ear if not treated promptly, but IEDCS can be associated with neurological manifestations of DCS and can be life-threatening. Protect yourself and respond to dive injuries more effectively by knowing the difference between the two conditions, and how you can respond to them.

Inner-ear barotrauma

Inner-ear barotrauma is a pressure injury of the inner ear that is caused by pressure differences created through incomplete or forceful equalization. The injury can include round-window bulging or rupturing, and leakage of inner-ear fluid, which can lead to damage of the hearing and balance organs.

IEBT will heal spontaneously in many cases, but if a fistula is created it may require surgical repair. Damage can be caused to the inner ear without a rupture of the round window, but if a rupture does occur, loss of fluid from the inner ear can lead to permanent hearing loss. Symptoms of IEBT include severe vertigo, hearing loss, tinnitus, involuntary eye movement, and a feeling of fullness in the effected ear.

IEBT has two common mechanisms of injury, one from inadequate equalization, and one from equalization that is performed too forcefully. The inner ear is separated from the external world by the middle ear, and if the middle-ear

space is properly equalized, the risk of inner-ear barotrauma is extremely low. If the middle-ear is not equalized during descent, however, the water pressure on the eardrum can transfer through the ossicles of the middle ear to the oval and round window of the ear. This pressure can cause the round window to bulge outward, and if the pressure is great enough, the window or the tissue surrounding it can tear.

In its other mechanism of injury, IEBT can be caused by excessive equalization, specifically via the Valsalva maneuver, which can increase intra-cranial pressure and cause pressure waves in the inner ear and outward bulging of the round window. The pressure waves alone can cause damage to the inner ear, and a rupture of the round-window can exacerbate any injury.

Inner-ear decompression sickness

IEDCS can occur after long or deep dives, after rapid ascents, or after a change in inspired inert gas is made, from helium to nitrogen. It was previously thought that only deep divers using mixed gases could suffer from IEDCS, but recent incidents have shown that the condition can afflict recreational divers performing dives as shallow as 90 feet.

Divers performing deep dives and switching from gases whose inert content is primarily slowly diffusing nitrogen, to quickly diffusing helium, put themselves at increased risk. Helium diffuses into tissues faster than nitrogen leaves and this may create a supersaturation condition that results in increased bubbles.



Inner-ear decompression sickness (IEDCS) is one of the conditions more likely to occur in technical and mixed-gas diving

Between 70% and 80% of IEDCS cases involve a patent foramen ovale (PFO), and there appears to be a strong relationship between the two conditions. Evidence has shown that IEDCS is most likely to occur in individuals who have a significant venous bubble population, a large PFO, a mechanism to cause a right-to-left shunting of the blood through the heart, and measureable tissue supersaturation.

Venous bubble population and tissue supersaturation can often be found in technical divers after long or deep dives. The poorly perfused inner ear, particularly the vestibule, once saturated, can take a significant amount of time to off-gas and remain supersaturated for a period of time, which can increase the risk of IEDCS if it coincides with venous gas bubbles passing through the PFO.

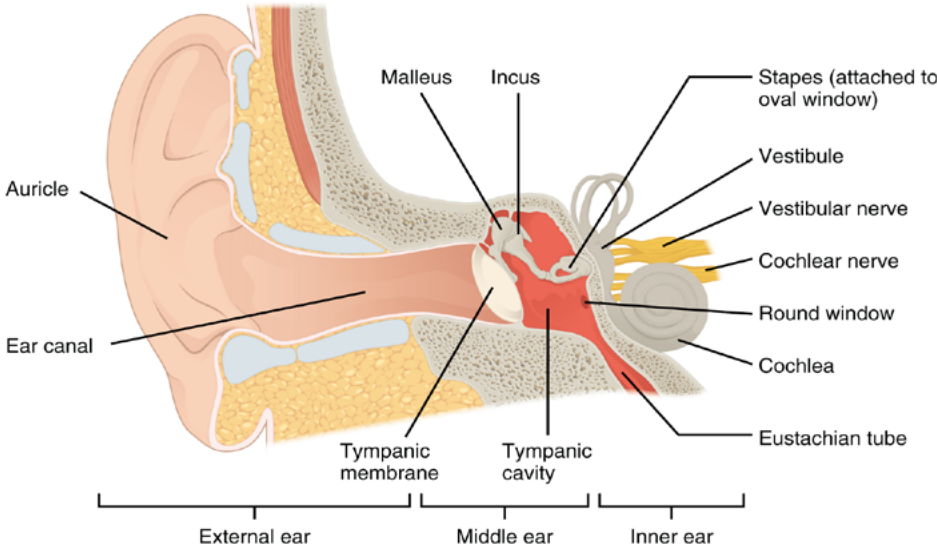
Emergency response

It can be very difficult to determine whether an individual has been afflicted with IEBT, IEDCS, or both. Both may present with vertigo, nausea or vomiting and hearing loss, and discernible

signs of middle ear barotrauma may be absent. IEDCS will, more often, afflict the vestibular portion of the ear, resulting in severe vertigo, while IEBT will most often affect the cochlea and cause deafness, although in many cases both symptoms present simultaneously.

Injured divers who present with any symptoms of IEDCS after a dive should be assumed to have DCS, and should be administered emergency oxygen and brought to qualified medical care as rapidly as possible. Physicians treating the injured diver may be able to accurately diagnose one condition, but in many cases will assume the presence of DCS and treat accordingly, with recompression and associated interventions. Divers who are afflicted with both IEDCS and IEBT can have good outcomes, as long as the response and following interventions are adequate and timely. In most cases, there is some residual damage, which improves over time. ■

For more information on ear injuries and safe diving practices, visit [DAN.org/Health](https://dan.org/Health).



OPENSTAX ANATOMY AND PHYSIOLOGY / CC BY 4.0



Atlantic Bluefin Tuna

Text and photos by Antonio Busiello

— *Ferraris of the Sea*



Fishing boat (above). PREVIOUS PAGE: An endangered species, Atlantic bluefin tuna is one of the fastest and most valuable fish in the sea.

The Atlantic bluefin tuna is one of the largest and fastest fish in the ocean. They are incredible swimmers. With bodies shaped like torpedoes, they are practically built for speed. Some species of tuna can swim as fast as 69kph (43mph). They are exceptional predators from the moment they are born, and they can live up to 40 years.

The Atlantic bluefin tuna (*Thunnus thynnus*) belongs to the Scombridae family. They are magnificent and impressive wild animals. They live in both the western and eastern sides of the Atlantic Ocean, and during springtime, migrate to the Mediterranean Sea to spawn. They were once present in the Black Sea as well, but not anymore.

Atlantic bluefin tuna migrate over huge distances—across oceans—and

can dive more than 1,200m (4,000ft). Studies have found that tuna migrate from North America to Europe and back several times during a year. They are warm-blooded, so they have no problem living in both cold and tropical waters.

Their average size is around 2m (6.5ft), and they can weigh up to 250kg (550lbs). However, they can easily reach larger dimensions. In fact, one of the biggest tunas ever recorded was actually an Atlantic bluefin tuna, fished off the coast of Nova Scotia. It weighed 679kg (1,496lbs) and was approximately 3m (10ft) long.

Atlantic bluefin tuna has become one of the most valuable fish species in the world. In fact, in 2011, a record sale of a single bluefin tuna reached almost US\$400,000, at a Japanese market. However, due to overfishing, the Atlantic bluefin tuna is now considered an endangered species by the International Union for Conservation of Nature (IUCN).

History

Because of the increase in demand for tuna meat worldwide (not just for sushi), a multibillion-dollar fishing industry for tuna has developed in the Mediterranean Sea. Historically, bluefin tuna fishing was an ancient Mediterranean fishing tradition. Homer and Pliny had described the fishing process as far back as 2,000 years ago. Centuries-old bluefin fishing traditions are found in both Italy and France. Of course, over the years, fishing techniques have changed and improved, and the old way of fishing is now only a tourist attraction.

Every year at the end of springtime, huge tunas migrate from the Atlantic Ocean to the warmer Mediterranean waters to spawn. In the old days, when the tuna was vast in numbers, fisherman used to place several kilometers of complex fixed-net systems, called tonnara, in the sea, along the migration path. The nets were like a corridor, with different big nets, called “rooms”, that

Atlantic bluefin tuna circle in a fishing net—they need to keep moving

feature

directed the tunas into one single final big net called the “room of death.” The entire process used to last for months. Building and preparing the tonnara, putting the tonnara in the sea, waiting for the tuna, making sure that bad weather did not destroy the net system, and so on.

Everything was supervised by one very expert fisherman called the rais. *Rais* is a term from the Arabic language meaning “leader”. Arabian culture had a big impact on the Mediterranean

region during their invasion in the 8th century AD, apparently also on tuna fishing techniques. The rais was a very important person who knew a lot about the sea, fishing, tuna and weather, and he was very much respected by all the other fishermen.

Religion also played an important role in bluefin tuna fishing. Every year, fisherman even decided which Saint would protect the fishing. While they fished, they sang very ancient religious songs, which they hoped would help

them have a good fishing year.

When the rais decided that there was enough fish to start a mattanza (killing), the tuna fish were pushed into the final net—the room of death. Fishermen on little boats surrounded the room of death and started to pull the net from below, which made it smaller and smaller, the tunas started to get closer to the surface and the boats. At this point, all the fishermen started to kill the tunas and pull them aboard.

A mattanza could last for many



Underwater videographers film the passage of the tuna from the fisher seller's net to the fish farm buyer's net

THE SUCCESS CONTINUES...

WITH REINFORCED PANELS, SOFT BOOTS AND DOUBLE POCKETS

D9X
BREATHABLE
(only 3.2kg)

TAUCHEN
AWARD
2016
WINNER OF BEST
DRYSUIT 2016



D9X BREATHABLE

• 4-Layer Breathable Ultra light shell • Flexible TIZIP Master Seal Front zipper • Soft lightweight boots • Reinforcement knees, elbows and seat • Double lightweight pockets • Prepared for Dry Glove system • Quick-Dry • Latex seals • Warm cuffs • SI TECH valves • Telescope Torso • Seam free crotch • Integrated suspenders • Pre-bent knees • Zipper cover • Mesh bag

www.waterproof.eu





Divers play an important role in modern, more humane, tuna fishing procedures

hours, and when it was finished, all the tuna in the room of death were fished, and the sea was all red from tuna blood. During a good season, one single tonnara could have seven to eight mattanza. This was a very cruel fishing method. However, it was very selective and had much less impact on the environment, compared to today's industrial fisheries.

Modern fishing techniques

The new way to fish bluefin tuna is much more invasive. Tuna are found in big schools by employing very sophisticated instruments, and in the past, even the help of airplanes. Sadly, bluefin tuna has been overfished for too many years, so much so that, as a result, it is now considered an endangered species by the IUCN.

The industrial fishing of bluefin tuna is now regulated by the International Commission for the Conservation of Atlantic Tunas (ICCAT), which sets the rules for the fishery. ICCAT started setting yearly catch limits, quotas that are assigned to each boat for how much they are allowed to fish. Each fishing boat must have a special fishing permit and must completely comply with ICCAT rules. Fishermen have to pay for an ICCAT inspector, who stays aboard during the entire fishing campaign, making sure that all the rules are respected. Tuna fishing boats cannot even leave the harbor without the ICCAT inspector aboard.

Since 2008, ICCAT rules have become even more restricted, limiting the fishing period to only one month per year, usually from May



THE DEFINITION OF DIVING™





NAUI PASSPORT DIVER PROGRAM

The NAUI Passport Scuba Diver Program is certified and meets ISO Level 1 "Supervised Diver" Standards.

The NAUI **Passport Diver Program** allows you to dive during your very first training session. Yes, after learning some basic theory and practicing a few scuba skills, you can explore colorful reefs and dive with hundreds of fish while escorted by a certified NAUI scuba instructor.

The NAUI **Passport Diver Program** is an easy, cost-effective way to try out scuba diving and begin your journey into the underwater world. The combination of eLearning, included free of charge, and pool training makes diving accessible and convenient for first-time divers.

"NAUI instructors and dive stores are your gateway to starting your dive into adventure."

The Official NAUI **Scuba Passport** is accepted at virtually all diving resorts, allowing you to dive with a certified instructor in the open water paradise of your choosing.

Visit www.nau.org to join in the adventure of a lifetime – go scuba diving on your next vacation!

<https://www.nau.org/certifications/introductory/try-scuba/>





15 to June 15, and the fishing boats that have a permit to fish tuna can still only capture a certain amount of fish.

Many complaints have been raised by fishers, especially about the period limit, which does not allow for bad weather. This means that when the fishing season is open, they only have 30 days to fish, and if sea conditions are bad, and boats cannot leave the harbor, there are no extra days they can get. Sometimes, the fishing boats stay in the harbor for days, reducing their chances to fish. They cannot use airplanes to help them find the tuna anymore, so they can only fish a certain amount of tuna per boat, and they cannot fish small tunas.

According to ICCAT, things are getting better for the Atlantic bluefin tuna. The industrial bluefin tuna fishing process nowadays, as I said, is very different from the past. Tuna are now

caught alive, and sold still alive to a fish farmer. They are then farmed and fed with fine sardines for approximately four months before being killed and sold.

Ninety percent of bluefin tuna caught in the Mediterranean is bought by the Japanese, which come with their big industrial ships all the way from Japan. They check the killing of the fish, inspecting and pricing every single tuna before buying it. Then they go back to Japan with the precious fish, and sell it in Japan and abroad.

Embedded on the boat

I have spent 30 days on an Atlantic bluefin fishing boat, living with fishers and experiencing the entire tuna fishing process. The kind of fishing process used now is called fishing-seine and requires different boats, people and equipment.

They search for the tuna, sometimes for weeks. Once they find the tuna, they feed them at the surface to keep them in one spot. Then they surround them with a huge net. Right after this, they lock the bottom of the net to trap the tuna inside. Then they are sold alive to a fish farmer. The fish farmer keeps the tuna in another huge net, and with tow boats, takes the fish to the farms.

Bluefin fishing boats are equipped with every kind of very expensive modern device, in order to find the fish. However, fishers also search for tuna using the old way. They spend the entire day, until there is no daylight left, looking for the fish, using binoculars.

Many fishers have decided to be paid by commission on sales. They make money only if tuna is captured and sold. They can make more money this way, but they take on the risk of



THIS PAGE: Divers open and close a hole between nets to aid the passage of captured bluefin tuna between the fisher seller's net and the fish farm buyer's net

not getting paid if the fishing is not successful. That makes the atmosphere on the boat even more exciting and tense.

The entire crew is involved in the fishing process, and emotions are very intense. The more days that pass by without finding the fish, the closer they get to the deadline, the more tense the atmosphere on board is. Fishermen can also get very nervous when the deadline gets closer and closer—all they think about is finding the tuna. No tuna, no money—as their entire families live off the fishing season.

The role of divers

Once the tuna is caught, it needs to be quantified. As the tuna must be sold to the farm company still alive, it makes this process very difficult. A professional diver and underwater videographer dives into the cage and makes

Bluefin Tuna

Buy Nature & Wildlife Prints



AntonioBusiello.com

f @AntonioBusielloPhotography





a first estimate to check the number and size of the fish. Once the fisherman and the ICCAT inspector agree that the tuna fished in the net meets the ICCAT quota and size, the fish are ready to be transferred to the fish farm company.

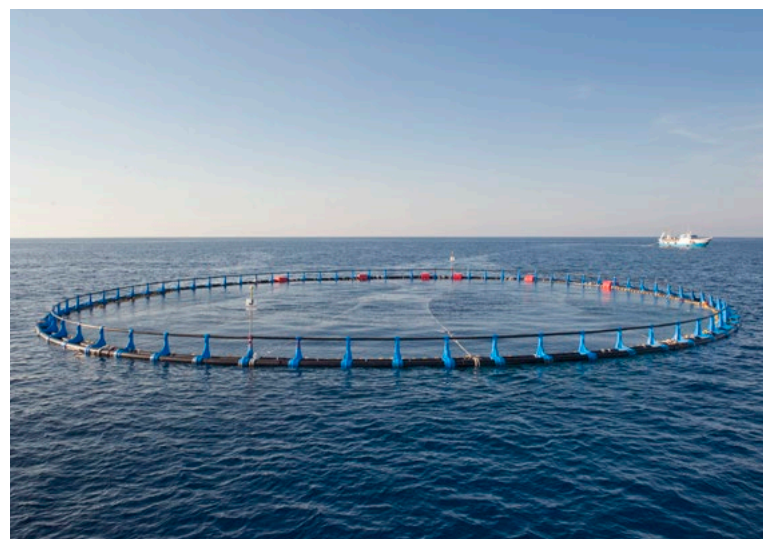
The fish farmer is notified by radio and a farming towboat comes. The farming net or cage is attached to the fisher's net or cage, and divers then open a huge hole between the two nets. The fish are now ready to be transferred from the fisher-seller's net to the farmer-buyer's net.

When everything is ready for the transfer, the fisher's boat pulls up the net from the bottom, reducing the space inside the net, the tuna get scared and start to swim from one cage to the other. The tuna are forced to go from one net to the other while professional divers film the

passage. The video will be the only instrument the parties have during the sale, to decide the quantity, number and weight of the fish being transferred.

The fisher-seller and the farm owner-buyer can spend several hours watching and re-watching the video, arguing and trying to come up with a number, in order to close the sale. Sometimes, the poor visibility of the water or the bad quality of the video makes the count even more difficult.

Once trapped in the net, the tuna can only swim in a circle,



even during their transportation from the fishing spot to the fish farm. Fish farms can be miles away from where the tuna is caught—Malta, Spain, Italy—all over the Mediterranean Sea. The transportation can last up to 40 to 50 days, since the boat has to travel at around 1.6kph (1mph), otherwise the fish will die.

Divers (left) work underwater to place together the fisher's net and the fish farmer buyer's net; Fishers are no longer allowed to use airplanes to find schools of tuna, and now often search for fish the old-fashioned way, with binoculars (below); Once transferred to the buyer's net, the tuna are transported slowly, at 1.6kph (1mph), to the fish farm (lower left)

Once a fishing boat meets its quota (the maximum amount of fish it is allowed to fish), fishers can

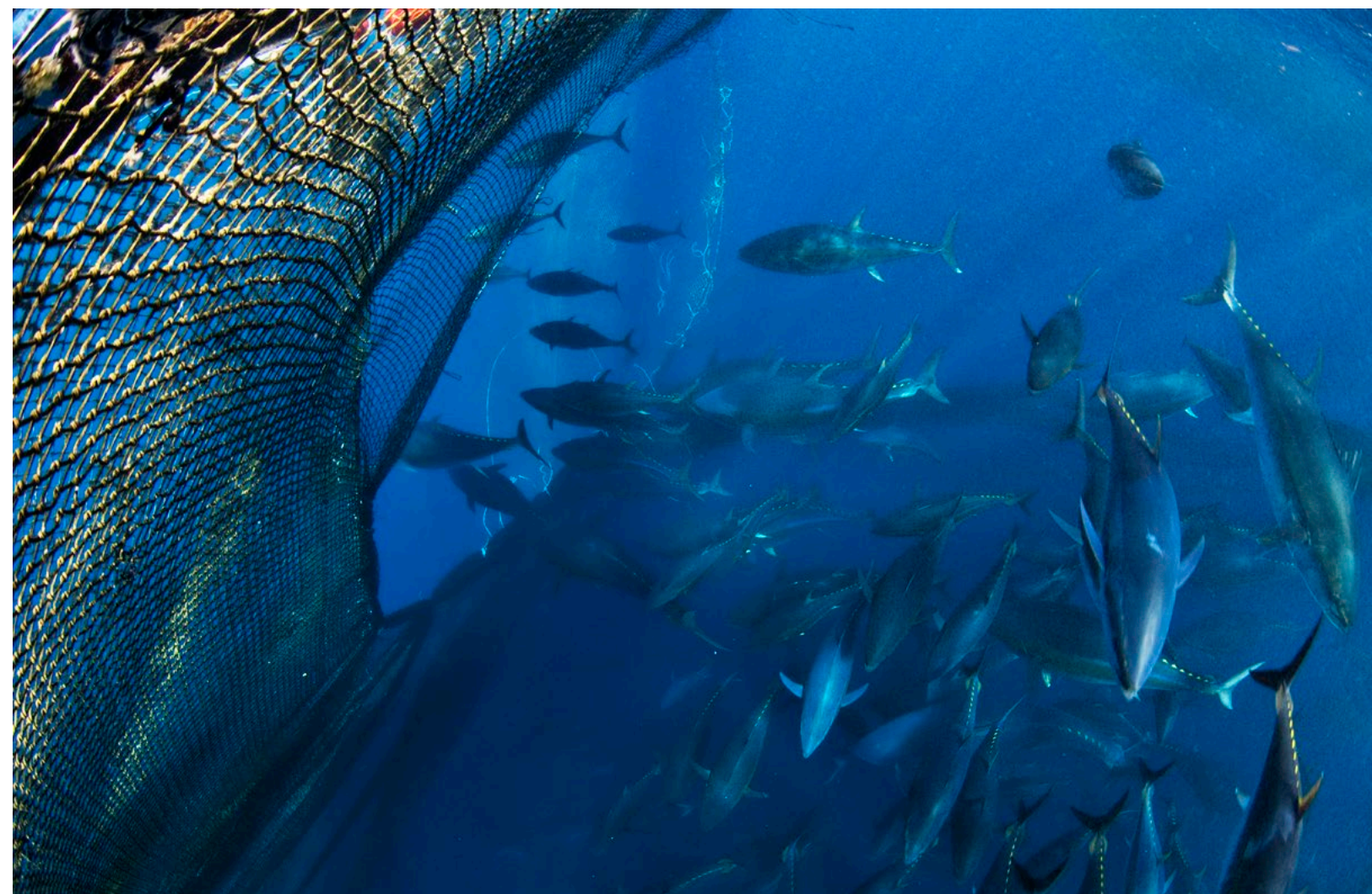
usually have a little break before going home. During my residence on board, we spent a few days

in Malta—the closest place to the fishing spot. The crew had some rest and enjoyed the island, while the fishing boat owner dealt with the fish farm owner regarding the last transactions of the sale. ■



Bluefin Tuna

Antonio Busiello is an award-winning photographer known for his focus on the relationship between humankind and the natural world. A native of Italy, Busiello studied anthropology at the University of Naples, where he developed a deep interest in humanity and its cultural differences. After university, he traveled the world doing photography, living in Central America for many years before moving to California and now resides in London. On Facebook: @AntonioBusielloPhotography.



Bluefin tuna transferring from one net to another



Edited by
Catherine
GS Lim

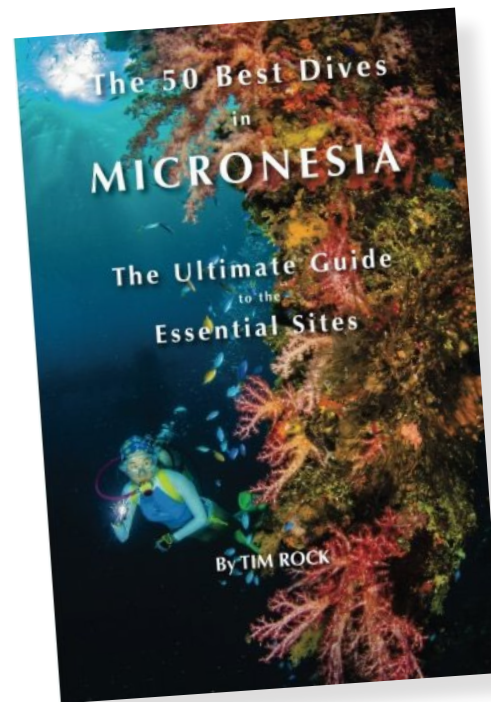
Gozo & Comino

Diving Gozo and Comino: The Essential Guide to an Underwater Playground, by Richard Salter.

Considering the myriad of possibilities for diving in Gozo and Comino, describing the area as

a diver's playground is not an exaggeration. This book covers 71 dive sites here, comprising caves, tunnels, wrecks, reefs, bays and, of course, the marine life. Maps and photos of the dive sites are included, alongside information like entry and exit points, depths, routes, safety and Maltese diving regulations, etc. Readers are also introduced to topside attractions like bays, inlets, caves, caverns, history, culture, food, etc. A comprehensive handbook written by a local dive guide and instructor.

Paperback: 176 pages
Publisher: Dived Up Publications
Date: 12 April 2017
ISBN-10: 1909455164
ISBN-13: 978-1909455160

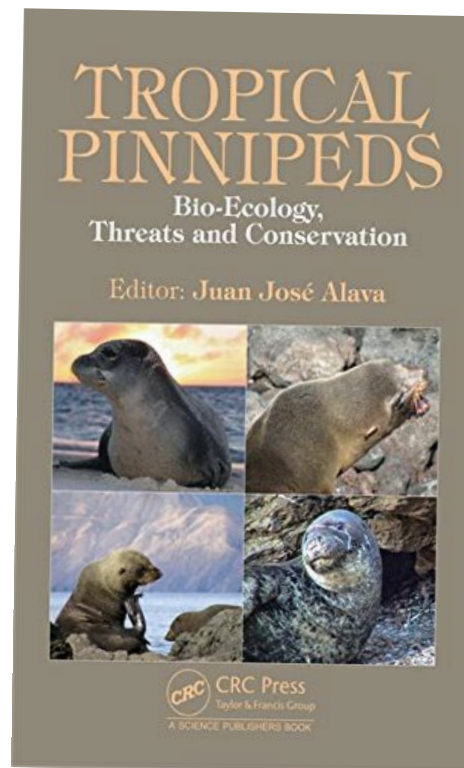


Micronesia

The 50 Best Dives in Micronesia: The Ultimate Guide to the Essential Sites, by Tim Rock.

Written by photojournalist Tim Rock, this book is a compilation of 50 of the best places to scuba dive in Micronesia. Besides islands, outer reefs and remote atolls are also covered. Not surprisingly, places like Palau, Truk Lagoon, Yap and Guam make the grade; however, lesser known destinations like Kosrae, Pohnpei, the Northern Mariana Islands and the Marshall Islands are also part of the line-up. Besides the information about the sites, readers are treated to more than 200 photos and maps printed in full color.

Series: The 50 Best Dives
Paperback: 180 pages
Publisher: CreateSpace Independent
Publishing Platform; 1st edition
Date: 30 March 2017
ISBN-10: 154483537X
ISBN-13: 978-1544835372

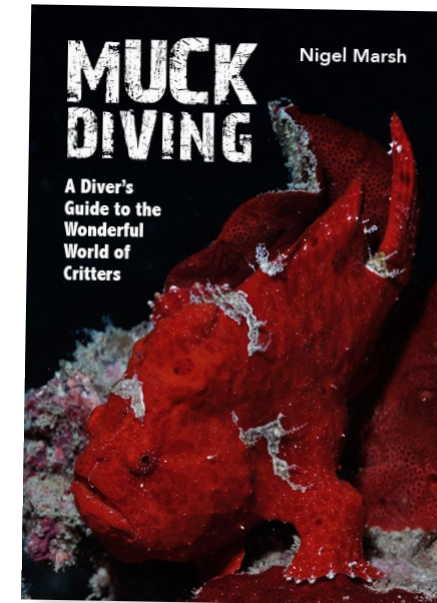


Seals & Sea Lions

Tropical Pinnipeds: Bio-Ecology, Threats and Conservation, by Juan J. Alava.

Pinnipeds live in extreme environments from the polar regions to the tropics. They comprise about 34 species, with at least a quarter of them living permanently in the tropics. This book contains current research on the biology, marine ecology, bio-monitoring and conservation of the tropical pinniped populations, including their behavior, anthropogenic stressors and health. It also highlights the challenges faced in their conservation, as many of the species are under threat.

Hardcover: 325 pages
Publisher: CRC Press; 1st edition
Date: 14 April 2017
ISBN-10: 1498741398
ISBN-13: 978-1498741392

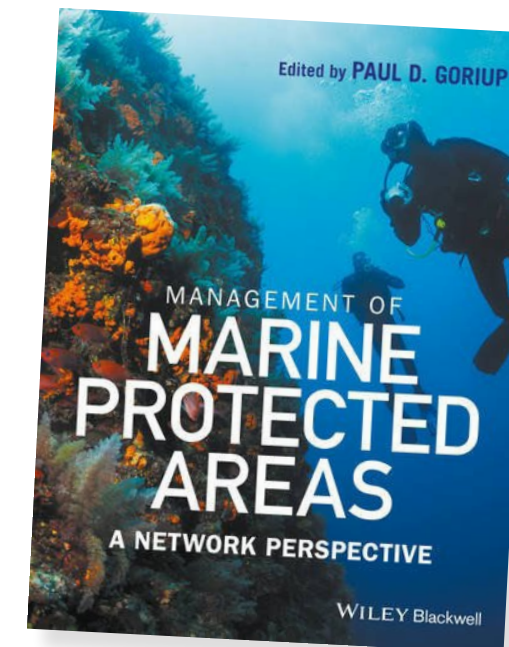


Muck Diving

Muck Diving, by Nigel Marsh.

As the first complete guide to muck diving, this book welcomes you to the curious, exciting and often surprising world of muck diving. Think intriguing and visually stimulating creatures such as the flamboyant cuttlefish, mantis shrimps, mimic octopus, blue-ringed octopus, etc. The history and techniques of muck diving are covered, alongside photography tips so you can snap away like a pro. The book also describes different muck environments and the best muck diving destinations in the Indo-Pacific.

Paperback: 176 pages
Publisher: New Holland Publishers
Date: 1 January 2017
ISBN-10: 1921517816
ISBN-13: 978-1921517815



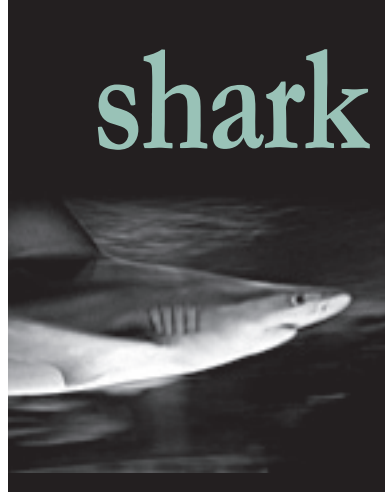
MPAs

Management of Marine Protected Areas: A Network Perspective, by Paul D. Goriup.

This book focuses on the results of an EU-sponsored research project related to the establishment of networks of marine protected areas (MPAs) in the Mediterranean and Black Seas from February 2011 to January 2016. Its chapters utilize the latest research data and developments in marine conservation policy to explore issues related to ways in which networks of MPAs can amplify the effectiveness and

conservation benefits of individual areas within them. This book contains contributions by scientists based in leading universities and national research institutes.

Hardcover: 312 pages
Publisher: Wiley-Blackwell; 1st edition
Date: 24 April 2017
ISBN-10: 1119075777
ISBN-13: 978-1119075776



Text by Ila France Porcher
Photos courtesy of Jim
Abernethy and Peter Symes

A new style of shark dive has been developed by Jim Abernethy, of Scuba Adventures in the US state of Florida. In a dramatic demonstration that “shark huggers” are right, all his guests do with the sharks now is to stroke them!

Jim was the pioneer who first demonstrated the peaceful way that sharks will interact with divers, especially when their curiosity has been aroused through the offer of a snack. But when he found that sharks prefer affection to food, he changed his approach.

Now, Jim offers his guests the opportunity to learn how to befriend a wild shark during their visit to Tiger Beach, and those who accept discover an animal who lies down on the sand at their touch, and seeks them out for more affection whenever they are underwater, for the duration of their visit.

So each week, Jim teaches

some of the guests how to approach and begin caressing one of the sharks, and each week his results improve. He guides the divers to target the lemon sharks and nurse sharks for this, but

the main focus is on the lemon sharks, because they have been considered one of the most dangerous sharks.

The first day goes slowly, because the sharks are used

to him and the crew, and now have to get to know the guest, so for this purpose a lemon shark “cleaning station” is established at some distance from the center of the dive site. But within about

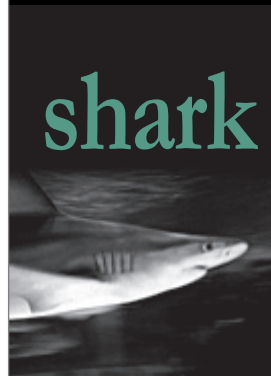
two days, the lemon shark begins swimming straight up to the person who is befriending it.

“This is their true nature when they are not feeding,” he said. “Its tremendous.” His guests are

so touched by the experience, that they often ask for a picture for their wallet, so that they will be able to show their wild friend who lives on Tiger Beach to friends at home.



PETER SYMES



shark tales

"Words cannot describe the feelings one can have from such a connection with a wild animal," Jim declared, "it is so powerful, so moving."

Shared serenity

His goal for sharks is to "turn fear into love." In his effort to have his guests appreciate these unusual animals, he has found that it is much more difficult to provide them with a moving moment when the sharks are being fed. In the presence of food, they come in quickly, eat excitedly, and leave, which is more likely to produce an adrenalin rush. In contrast, his videos of divers and sharks lying on the sand together present scenes of remarkable serenity. He wishes that everyone could have this experience of connecting so intimately with a wild creature.



PHOTO COURTESY OF JIM ABERNETHY

Though they eat little compared with mammals, sharks are usually busy looking for their next meal, and their behavior during feeding dives tends to be dominated by their repeated adoption of search mode. No shark wants to miss out on a chance to get another scrap, so the lemon sharks especially spend their time searching out bits of food and rushing after each other whenever one is

found.

Jim found that if no food was in the water, not only did the sharks become calmer, but that all of the species became more friendly to the divers.

Initial contact

The initial contact with the shark is the most difficult, because the shark is afraid. So Jim

"Words cannot describe the feelings one can have from such a connection with a wild animal," Jim declared, "it is so powerful, so moving."

advises his guests not to sneak up on the animal, but to approach it directly while it is looking at them. The diver is instructed to slowly put down his or her stick and camera, and look at the shark's eye. The key to success is to look at the shark for 10 to 15 seconds as it comes close, and then very slowly, reach out and touch its head, or anywhere in front

of the dorsal fin. The longer the diver is able to maintain contact with the shark during that first encounter, the better are the chances that the animal will react by returning to that diver again. With continued efforts, the shark will begin to seek out the diver, swimming in front of him or her, and often actually pausing there, while looking up as if in expectation.

His videos of these encounters show the

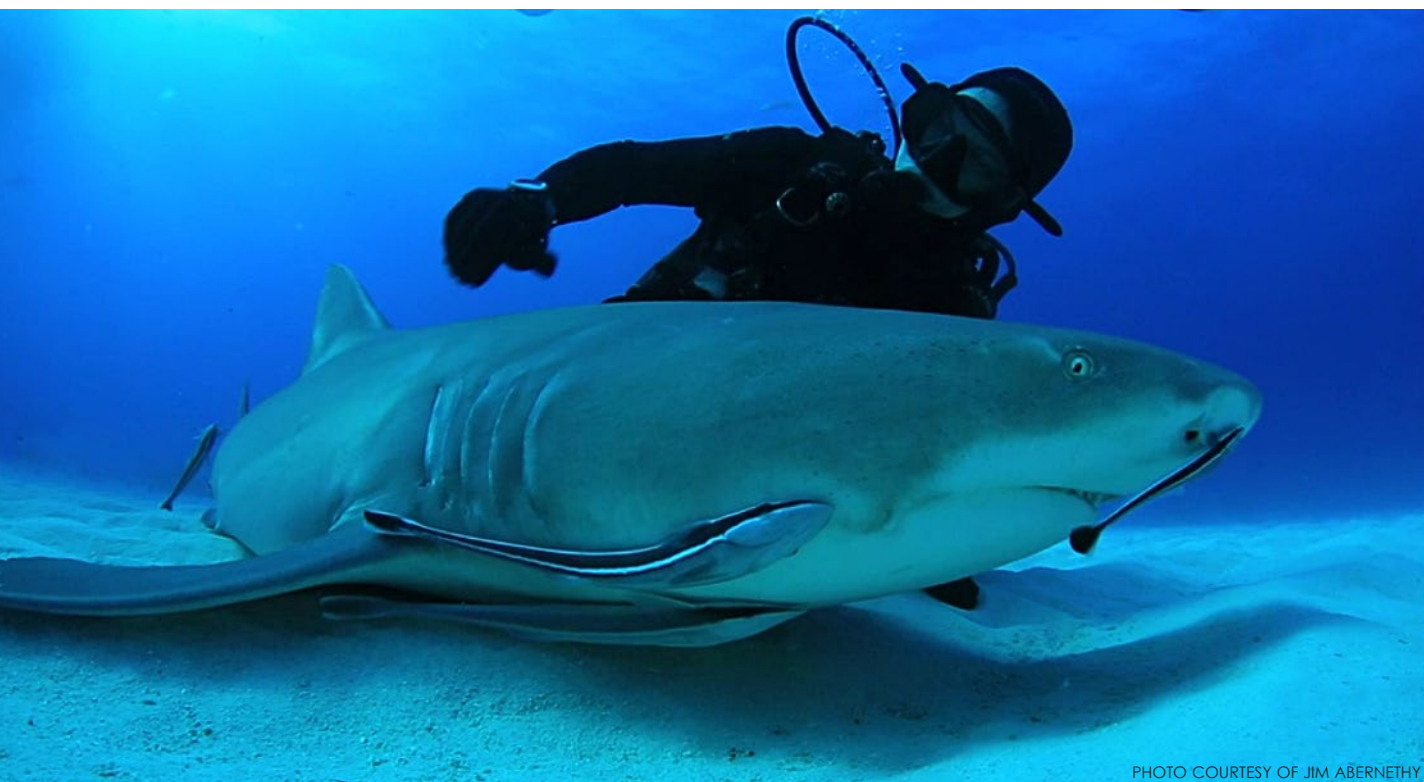


PHOTO COURTESY OF JIM ABERNETHY



PHOTO COURTESY OF JIM ABERNETHY

Jim Abernethy found that if there is no food in the water, the sharks became calmer and friendlier

Here, Abernathy gently strokes a lemon shark, enjoying the special attention

WWDAS
WORLDWIDE DIVE & SAIL
presents

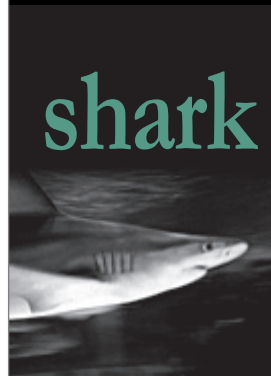
Siren Fleet

Dive Komodo with the Indo Siren
Deluxe en-suite cabins, outdoor dining
& plush lounges, spacious dive deck,
camera station.

**FREE Nitrox and
Rental Equipment**

Contact us for
further information





shark tales

THIS PAGE: Without the feeding frenzy seen on baited dives, Jim Abernathy's method allows divers to gently stroke and interact with relaxed and often affectionate lemon sharks

Jim is always surrounded by six or seven lemon sharks, and often strokes more than one at a time, while the tiger sharks sail above. They, too, respond to affection by coming back for more.

shark lying on the sand, making an extra effort to pull in water to breathe, while a diver lies beside it, stroking it as if it were a pet. The record so far is 16 and a half minutes, in which two people stroked one lemon shark while the animal lay still on the sea floor. Jim has countless videos showing a guest begin to rub the head or back of a lemon shark, while the shark moves closer to the diver in response.

Old friends

Jim is always surrounded by six or seven lemon sharks, and often strokes more than one at a time, while the tiger

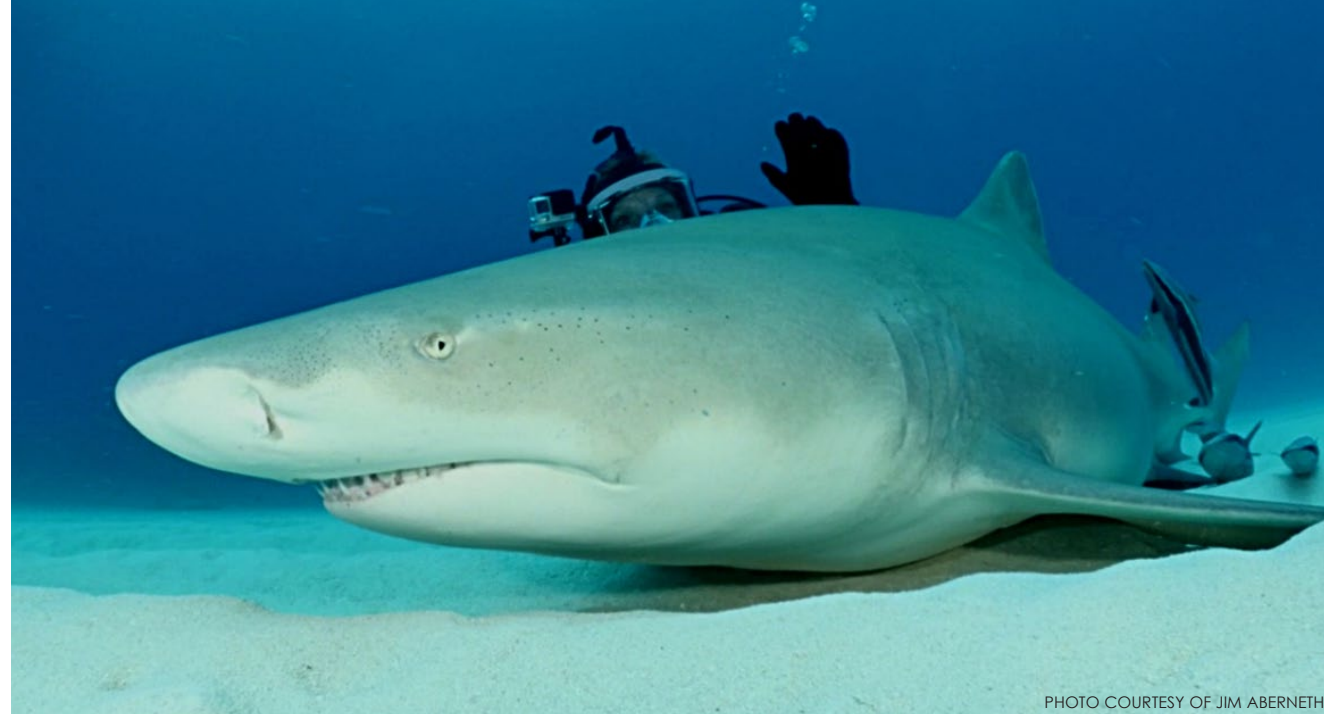


PHOTO COURTESY OF JIM ABERNETHY

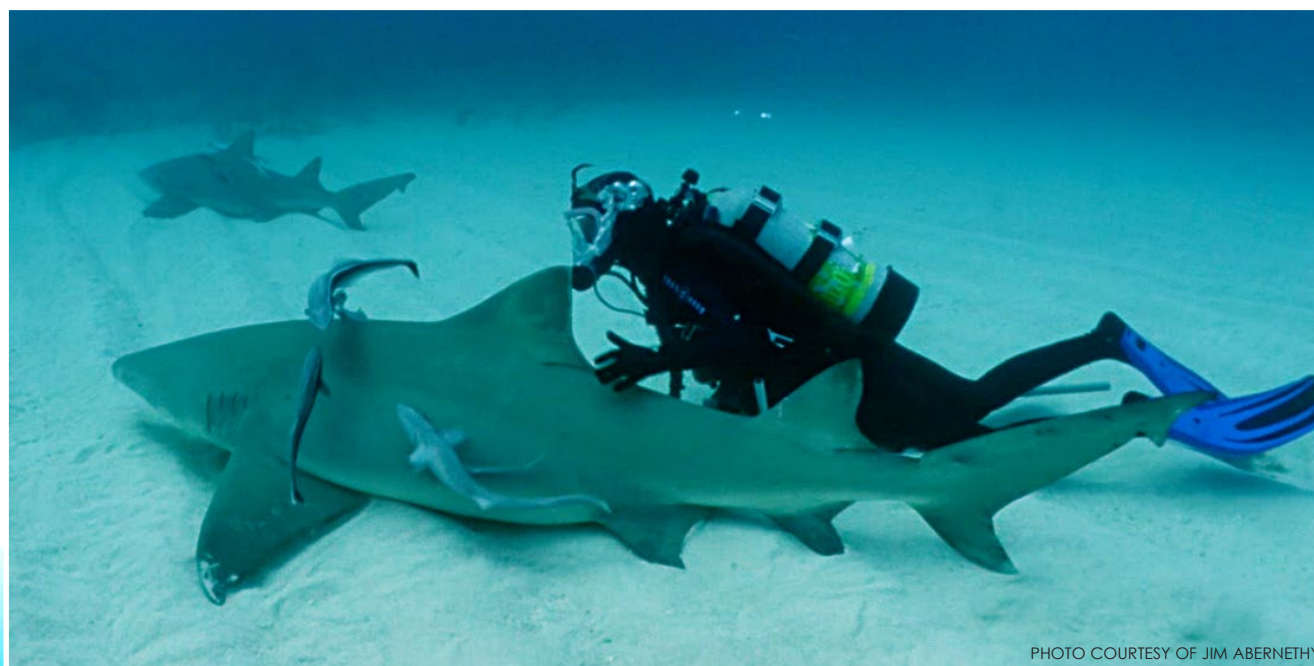


PHOTO COURTESY OF JIM ABERNETHY

hooks removed, and this figure is continually climbing. Unfortunately, however, many of the wounds inflicted by fishermen are so horrific that the shark does not survive.

Jim has always targeted the species of sharks with the worst reputations in his efforts to show people their actual behavior, and he takes divers to see hammerhead sharks, tiger sharks, bull sharks, oceanic whitetips, Caribbean reef sharks,

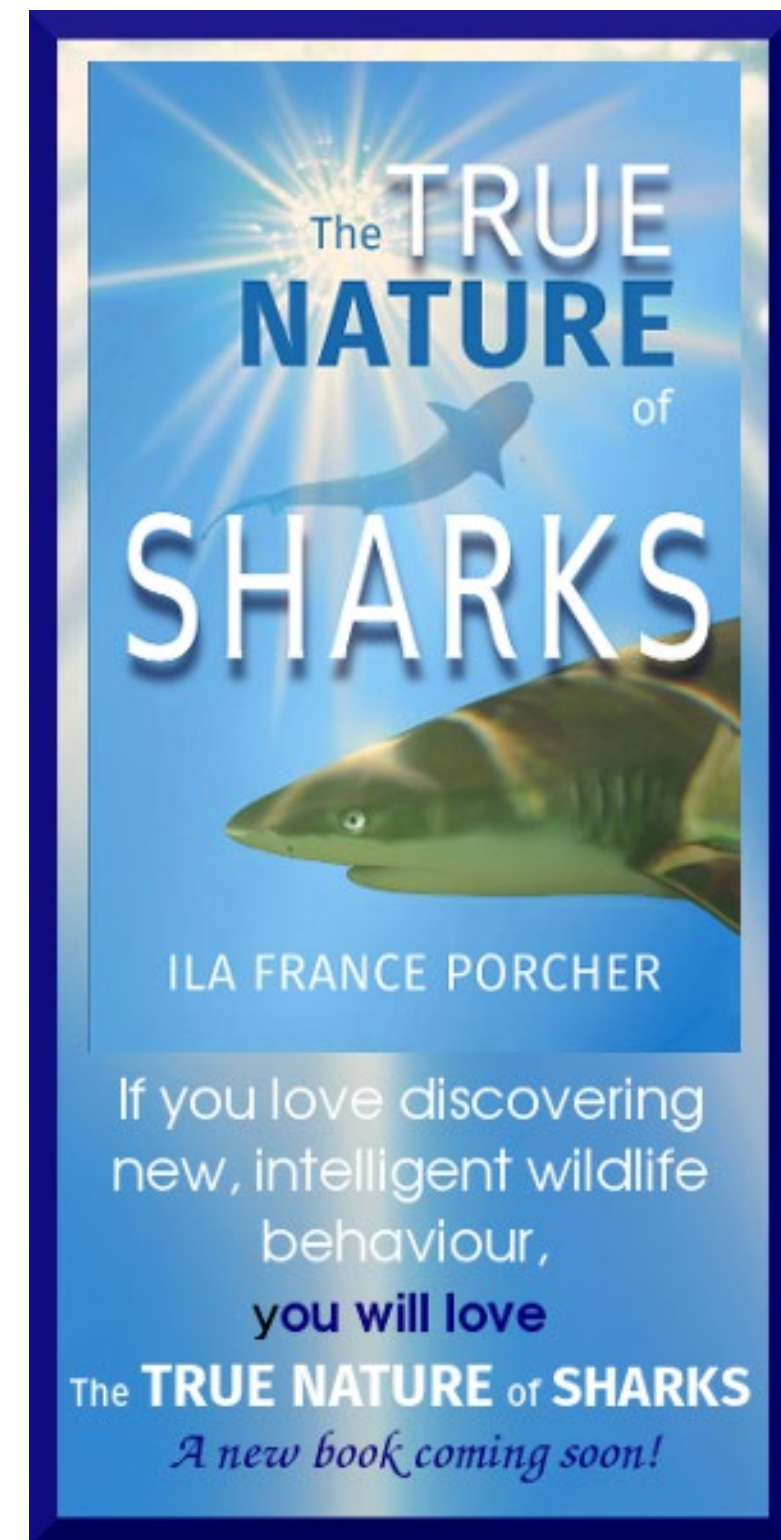
nurse sharks and lemon sharks at a variety of sites around the Bahamas. Over the years, he has found that no matter what the species, a natural bond will form between him and certain shark individuals over time.

Their responses to his new dive methods suggest that sharks too, appreciate some feelings of bonding with a companion, in spite of the hype and misconceptions that have always plagued them. ■

Illa France Porcher, author of The Shark Sessions, is an ethologist who focused

sharks sail above. They, too, respond to affection by coming back for more. Jim has a video online showing a tiger named Tarantino reuniting with him after an absence of two years. The shark repeatedly swims up to him to be stroked in an impressive display of the truth of Jim's assertions. All species of sharks that Jim has encountered treat the divers similarly.

They receive the food he brings at the end of the week. One result of Jim's new method is that there are no longer any sharks with hooks in them, because they have all been removed. He has counted 91 sharks who have had three or four



on the study of reef sharks after she moved to Tahiti in 1995. Her observations, which are the first of their kind, have yielded valuable details about their lives, including their reproductive cycle, social biology, population structure, daily behavior patterns, roaming tendencies and cognitive abilities. Her next book, The True Nature of Sharks, will soon be released.



PHOTO COURTESY OF JIM ABERNETHY

A great sense of peace is experienced by divers and sharks alike in the calm interaction





Text by Matt Jevon

Skills are the foundation of safe and enjoyable diving and the building blocks of all diving certifications. The comment here is not that learning skills is a waste of time, but, learning them from the wrong instructor, and you may have to re-learn them completely for the skills to be of any use.

Until you get into deep trimix or cave diving training, there is little emphasis in diving qualifications on anything other than meeting performance-based skill standards. That is: You can do a shutdown in 40 seconds, whilst keeping perfect buoyancy; you can deploy a long hose—without it looking like an advanced knitting technique—which is very pretty for the video feedback and easily and calmly done in response to an instructor's signal. Frankly, however, it is not much use in the real world.

Neither, by the way, are the pseudo-wanna-be-military type instructors, with camouflage trousers and a my-agency-is-tougher-than-yours attitude. The ripping of students' masks and fins off at random and messing with kit that they do is just

dangerous, and not a learning experience that benefits any student.

I did my Mod-1 course a few years ago with an ex-military instructor, and he was clearly against this type of bravado, and stated that, in his course materials, he

has no time for it. In cave or trimix, lessons have been hard-learned by the instructor and are passed on to the student, who will also have gained considerable experience (if wise) before embarking on this route.

It is little wonder then, that we hear so often, it is not the agency or the course, it is the instructor. Why? Well, if all you do is get someone over a fairly subjectively set line on a skill performance, you can sign them off as passing. Frankly, that sucks.

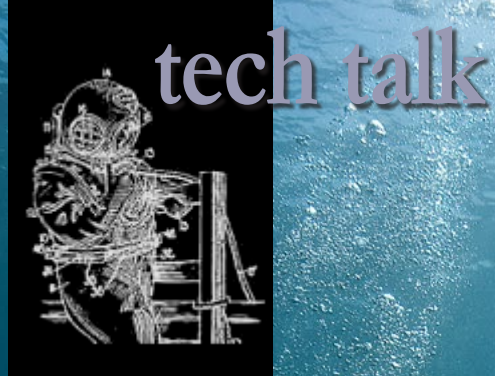
What does the student get? Well, they might have learnt a new skill which they can trot out in response to the appropriate signal from an instructor, but that's it. What is the student's capability to recognise the how, the when, the where, but

Wrong Teacher, Wrong Habits

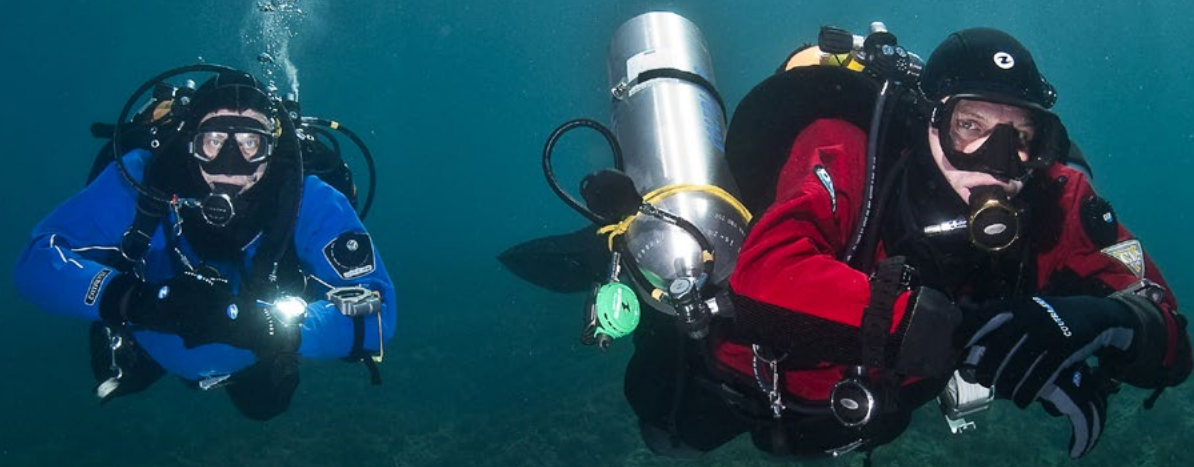
— *Learning skills from some instructors might be a waste of time*

PIXABAY





*Great instructors
are not happy with
just getting students
“over the line”.*



ANDREY BYZUIKIN

most importantly, the why of the skill. Realistic prompts and cues the student will recognise that should kick them into executing the skills should also be included.

Great teachers

Why then are some instructors more valued, have great reputations, and their courses regarded as “graduating” better divers? Of course, these great instructors are not happy with just getting students “over the line”. They will demonstrate demand and insist that the student executes much higher standards of skill performance. These are great teachers. That is, they have an empathy and connec-

tion to the student and are able to make things understandable in a way that suits the student’s preferred learning style.

*Even if you
can execute the
movements well,
learning the skills is
a wasted effort in the
first place, if you do
not know the context
and the triggers for
using them.*

I would have been up for expanding on this point, but to be fair, Mark Powell’s presentation at Dive 2015 on why training does not work, knocked that one out of the park. It is worth reiterating his point on how, without practice, skill performance

drops dramatically, in only a few weeks.

Motor learning theory

This is common in motor learning theory. There are a couple of influencing factors. First, one

must consider: How well was the skill mastered at the time? If only just over the line, the chances of being able to repeat that skill, even one week later, is slim. The second point to consider is:

How many different ways and scenarios was the skill practiced? Even if you can execute the movements well, learning the skills is a wasted effort in the first place, if you do not know the context and the triggers for using them. Every CCR diver knows how to bail out; it is the when, the why and the “on to what” that is really important—not leaving it too long, but also

*Without practice,
skill performance drops
dramatically, in only a
few weeks.*

not abandoning a piece of life support equipment in an ill thought out rush.

The why

So what do great instructors do? They get you to learn not just the mechanics of the skill, but also the context and scenarios in which that skill is to be applied. This is far more prevalent in technical training than recreational, probably because it is harder to become a tech instructor. With most agencies, tech instructors have a solid basis from teaching recreational diving, and they have probably been in the contexts or situations for which they are teaching. They carefully control the stress levels to which they expose the student, building the students’ autonomous responses or reasoned responses to the real-life, everyday scenarios they might face in their diving.

This is the same when teach-

ing recreational diving. A recent Facebook post showed students still kneeling for skills. Comments were made: “This might have been their first dive—a bit early to expect neutral buoyancy.” I disagree. Of course, I am not going to expect perfect buoyancy, but I am going to demonstrate to the student what good buoyancy looks like and what they will aspire towards. I will then work harder on helping them master this early, ahead of out-of-air scenarios, etc, because once the foundation is in place (buoyancy, trim and propulsion), all other skills can be learnt and mastered “in context”. No-one is going to come to you out of air while both you and the student are kneeling in a pool.

Learning

Learning is a psychological process, and as such, we all learn differently, because we are all



PIXABAY

Easier Communications
Faster Learning
Safer Diving...



Human Factors Skills in Diving

Do you want to learn how to apply the hard-worn lessons from aviation, oil & gas and healthcare to your diving to make it more fun, having greater awareness and more memories, and ultimately become a safer diver?

Globally unique training and coaching focussing on creating high performance dive teams and individual divers.

Visit

www.humanfactors.academy
to learn more



Unlocking high performance in teams and individuals





individuals. Teaching styles and learning environments must account for these individual differences. In diving, we embed motor skills into the learning process, but we also would be well-advised to develop stress management, thinking skills or decision making, and appropriate autonomous responses. There are some very gifted instructors out there who manage this naturally. For most, they have to think and plan their way to help students get the best out of themselves.

Authentic vs. holistic

In sports coaching research, there are a couple of interesting concepts that are gaining serious attention from some of the leading practitioners. These are Authentic Coaching and Holistic Coaching.

Firstly, authentic coaching: There is a good article on it by Barnson, (2014), but essentially it is when coaches are true to themselves and to the coachees. "Obvious," you might say, but not in reality, I fear. There are many coaches and instructors who behave how they think the student or the agency or worse behave, in ways they think makes them look cool or saleable. Our previous gung-ho militaristic type is one of these. Similarly, I fear anyone who actually likes wearing a shirt

labeled "Instructor" and loads of badges—although it is true, sometimes an instructor has to do some marketing for and/or represent a dive centre. Personally, as an instructor, I would rather be recognised for what I do. If you are not being true to yourself and you are "playing a part", that falseness will come through in your teaching effectiveness.

Holistic coaching—a term brought to the fore by Tanya Cassidy—looks far more at the person as a whole, as opposed to just what skills one needs to learn. For example, if a person needs to learn a bailout drill, it does not take long to teach the mechanics of the drill. Holistically though, coaches should address that person's abilities around emotional control, decision making, concentration, physical attributes, etc.

In holistic coaching, it is thought that by taking and developing the whole person—using the coaching situation or context as a tool—you enrich the person inside and outside that coaching interaction. I tend to agree. I am certain that the learning experience is richer, that skills are more deeply embedded, and that context and cues for when and where to apply those skills have been thoroughly covered.

Knowledge types

"Coaching effectiveness" is an often abused phrase, which is also true for "instructor effectiveness". True effectiveness (look up Coté and Gilbert) relies on the coach or instructor having expertise in three critical knowledge types.

Professional knowledge – detailed and applied knowledge about the art, science, skills and tactics of what they are coaching

Interpersonal knowledge – an ability to build and foment relationships

Intrapersonal knowledge – an ability to understand oneself and capacity for self-reflection

I do not think it would be hard for most of us to identify those instructors we believe to be effective and see immediately the correlation between those instructors and the required knowledge above.

It also needs to be measured. To be effective you have to know where your start and finish points are and whether the process of coaching or instructing is what is making the difference in getting people there. For sure, there are the very talented who need minimal coaching, and conversely, those for whom no amount of

*I fear anyone
who actually likes
wearing a shirt
labeled "Instructor"
and loads of
badges...*

coaching will ever make a difference. It is quite a complicated interaction then—well, yes, but so it should be.

Improvements

So, how do we get instructors over the line? Well, in developing performance sports coaches, we have identified the vital importance of good mentors. They help the instructor reflect, develop and really build the inter- and intra-personal knowledge. Traditional coaching courses and instructor courses are pretty good at developing the professional knowledge, although again, the mentors are invaluable. In my own instructor development, I have been very privileged to have an outstanding mentor, whom I still see a couple of times a year, to great value.

Ask yourself before you book training whether or not it will give you what you want. Ask the instructor from whom you are considering to take the course just how much of the training will be scenario-based, how much work will they put into setting up decision-making opportunities, how will they mimic realities in which you will have to implement the skills. Ask around... good instructors will be delighted to engage with you on this.



ITDA
International Technical
Diving Agency



Training Agency
diveitda
www.diveitda.com

International Training and Certification

Sports Scuba Diving
Technical Diving
First-Aid & Medical Training
Professional & Occupational Diving

Higher Standards
Safer Training
More Theory
Lower Costs

Mail: gadmin@diveitda.org
www.diveitda.com

Have fun, dive safe. ■

Matt Jevon, M.Sc. is a Full Trimix and Cave Diver and Technical and CCR instructor with TDI and IANTD. He is also the JJ-CCR instructor and dealer for Ireland. He

held accreditations as an interdisciplinary sports scientist, sports psychologist and was a British Olympic Registered Strength and Conditioning Coach. For more information, please visit: Swt.ie and Mattjevon.com.





photo & video

The comb jelly, as it is commonly known, uses two oral lobes lined with touch sensitive receptors to capture anything small enough to fit into its primitive mouth. Often mistaken for jellyfish due to the presence of tentacles and a clear, jelly-like form, the similarities end there. Ctenophores are so unique they have an entire phylum to themselves.

Text and photos
by Mike Johnson

Pelagic black water diving is not for the novice underwater videographer. Without visual references, routine tasks for an experienced diver must be constantly on the conscious mind. Add a camera to the mix and the task loading easily becomes too much. However, with a little preparation, you can set yourself up to capture some amazing video on a world-class dive.

Master your buoyancy, you must

Just as Yoda is a master of the Force, you must be a master of your buoyancy. The only visual references on this dive are the tether

lines and dive buddies around you, and most of your attention will be focused in the opposite direction, looking straight into the black abyss. If your camera housing does not have a built-in depth

gauge, I highly recommend rigging your dive computer or submersible pressure gauge (SPG) so that it can hook onto your housing for quick and easy reference.

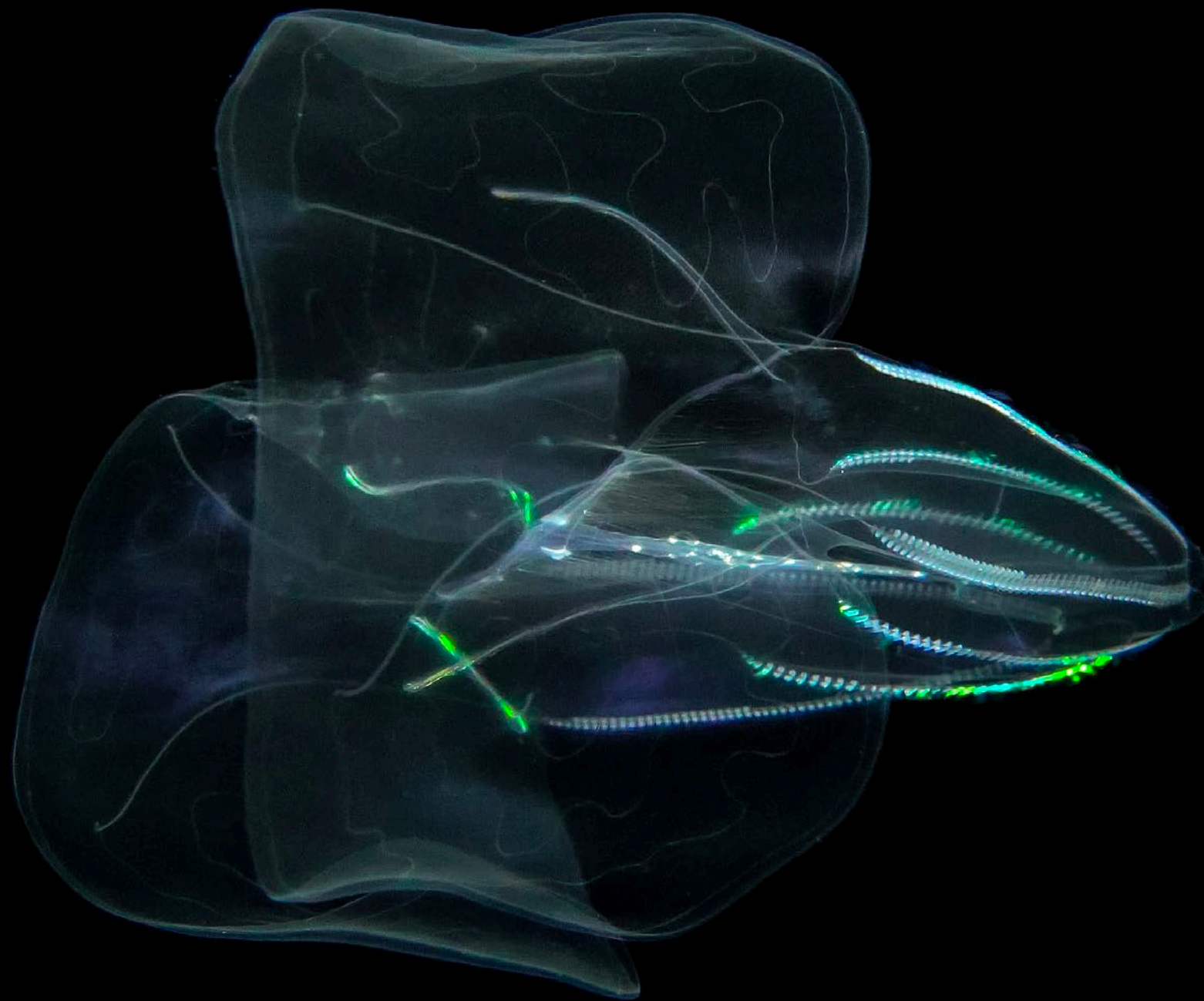
Pay close attention to your ears

as they will indicate if you are ascending, descending or holding steady at depth. Your buoyancy skills should be such that you can hang out anywhere in the water column in a horizontal position,

adjusting your depth using nothing more than breath control.

There are several reasons for this. Putting yourself into, and remaining in, a horizontal position reduces drag and allows you to

easily cruise into the current, then drift with a subject of interest. An upright position will make this all but impossible. Once you find a subject to focus on, it likely will not remain at a constant depth. You



Shooting Underwater Video in

Black Water Diving





photo & video

The female phronima (right) builds a barrel-shaped nursery out of cannibalized parts from other gelatinous creatures. Unlike most crustaceans that leave their offspring to fend for themselves, the phronima nurtures her young until they outgrow the nursery.



can either hang out at an arbitrary depth, letting your subject pass on by, or move with it through the water column, thereby extending the amount of time you have to capture some amazing video.

Being able to adjust your depth solely with breath control will keep both hands on the camera, resulting in a nice steady shot. Continually reaching for your power inflator or dump valve will add fumbles

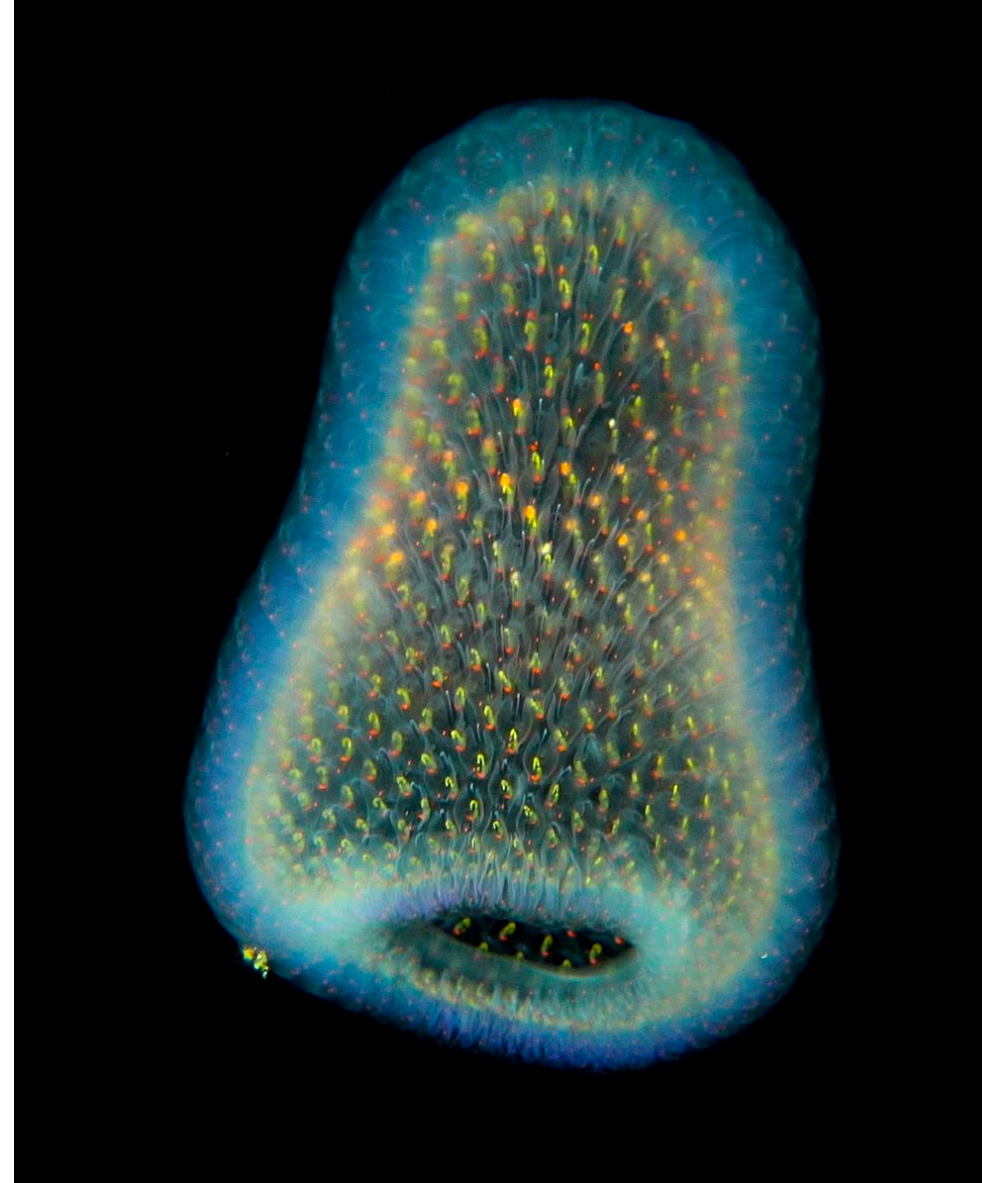
and bobbles to your footage that cannot be smoothed out with any stabilization plugin or software.

Stabilization

Speaking of stabilization, those nice buttery smooth shots seen on National Geographic take a lot more practice than what is possible in even a week of diving (not to mention many are shot in aquariums). There are several soft-

ware options for post-production that will help get this look, but you will need to be sure to set up for success with the right settings in the camera.

The first step to successfully stabilizing footage in post-production is to eliminate motion blur. The Sony a7S II has a 5-axis stabilized image sensor that works wonders! Many current camera models offer features for image stabilization. Be



Unique in being one of just a few marine organisms to luminesce in response to light, it is thought that pyrosomes use their blue-green glow to communicate possible danger and to camouflage against the sunlit surface of the ocean.

sure to turn these features on, but also understand that optical stabilization works best. Digital stabilization will smooth out the image, but will not help to reduce motion blur.

With my a7S II, I shot with a shutter speed set at three times my focal length. If using a camera without image stabilization, or one that does not provide optical stabilization on five axes, you will want to increase your shutter speed even further. The general rule in video is to set the shutter at twice the frame rate, so shooting at 24p would

mean a shutter speed of 1/48. This is simply too slow to eliminate the motion blur from bobbing around in the water tracking an object a couple inches off your lens that is moving independently from yourself. Stabilizing footage that has too much motion blur may be smooth, but will look like the focus is constantly searching.

If your camera is 4K capable, shoot in 4K! Yes, this may require investing in a larger memory card to avoid running out of space halfway through the dive, but it is well worth the investment.

Frame subjects with a little more

SEACAM
silver



cinema of dreams



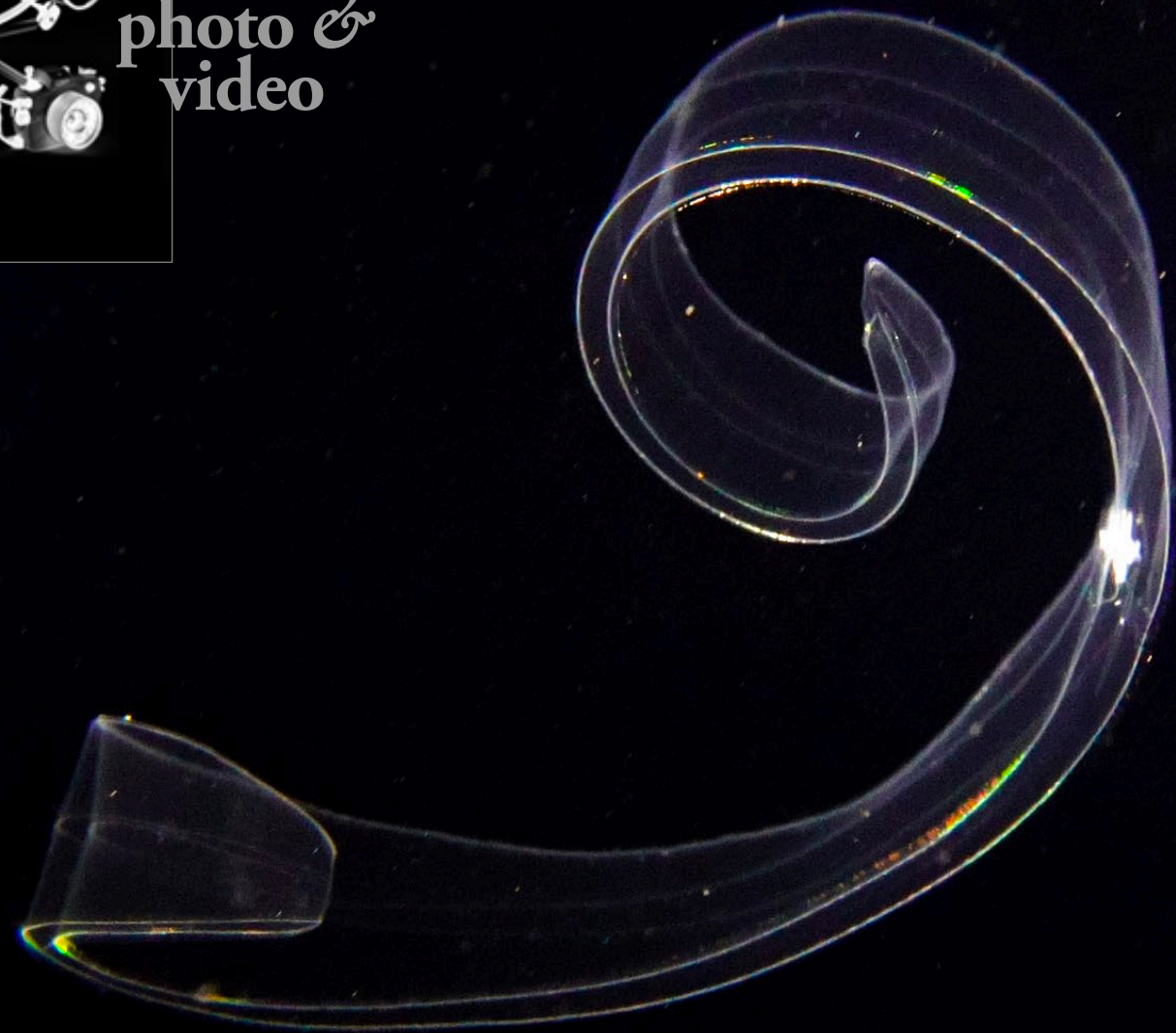
www.seacam.com

Every night in the open ocean, a mass migration of alien-like species occurs. Drifting with ocean currents, these creatures gather near the surface, attracted by microscopic phytoplankton.



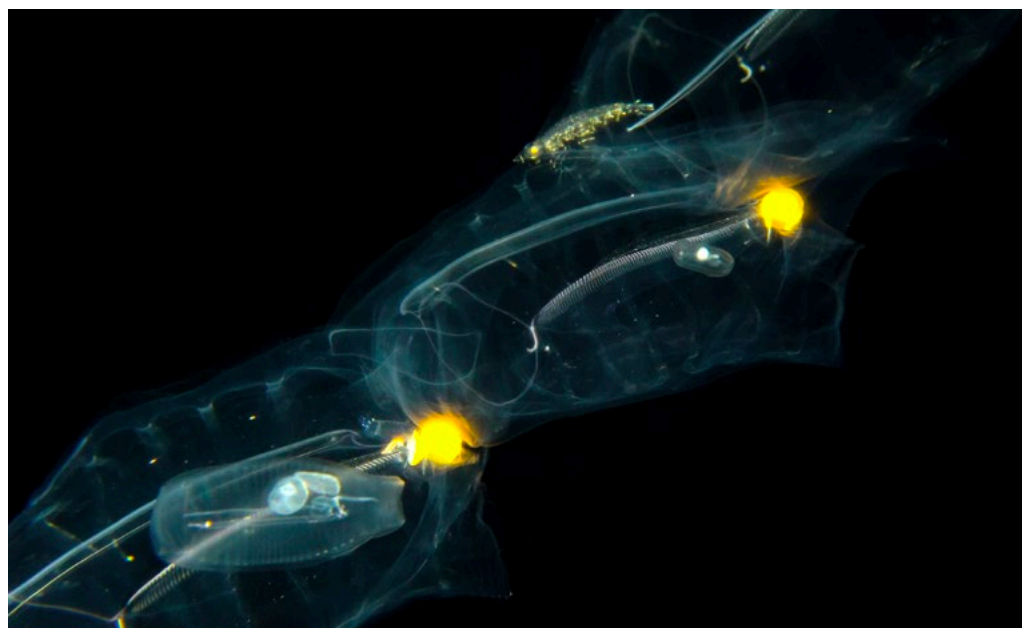


photo &
video



Capable of growing to lengths well over a meter, the Venus Girdle (above) uses sticky tentacles along the leading edge of its body to ensnare small zooplankton. When startled, the Venus Girdle undulates its body in worm-like fashion to escape potential harm.

room around the edges than normal. Instead of editing in a 4K resolution project, edit the 4K footage into a 1920x1080 project. This will provide some space for the post production stabilization to occur, and will allow you to crop in as necessary without losing any quality. By scaling down the 4K



Krill riding *Salpa maxima*, a planktonic tunicate

SUBAL
underwater camera housings since 1954.



your vision.
our technology.

footage to HD resolution, this will also reduce the appearance of any remaining motion blur and the digital noise created by shooting in a higher ISO (gain) setting.

Lens choice plays a major role in stabilization. Rolling up to the boat with a 100mm macro lens is very tempting indeed. For shooting stills, this is a great choice! With video, on the other hand,

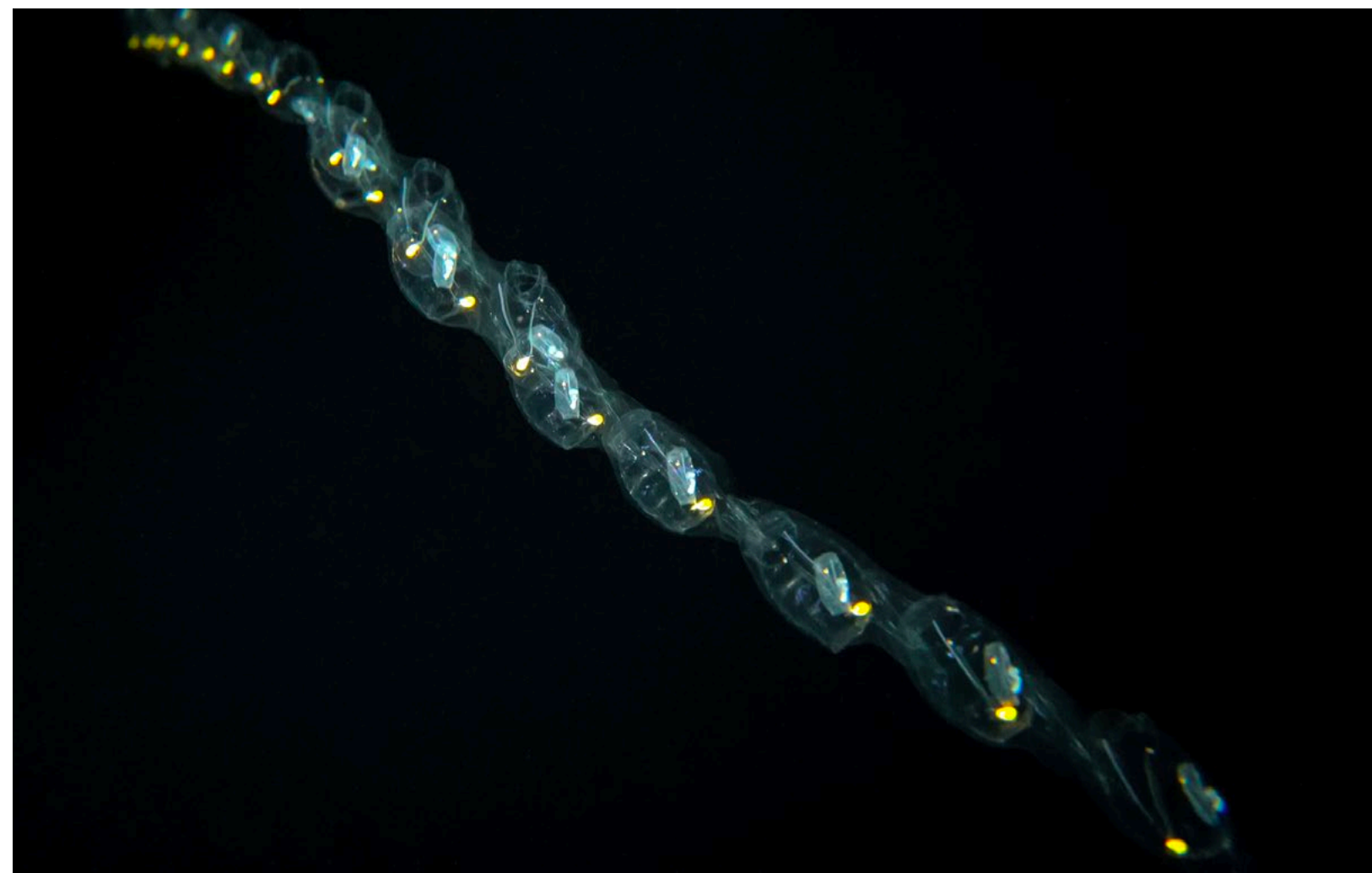
the footage will be so shaky you may get seasick viewing it at your computer. The longer the focal length of your lens, the harder it is to hold steady. Try staying wider.

If shooting pelagic black water video for the first time, I recommend a macro lens with a focal length of 30mm or wider, especially if using a flat port. With a little experience, you may decide you

want to bump up to 60mm, but breaking out the big guns on the first few dives is going to result in major disappointment when you play back the footage.

Exposure

Pelagic black water diving is one of those times when shooting in full manual exposure is encouraged. If you are not comfortable



Functioning in synchronized colonies as well as individuals, salps pump water through their hollow bodies to both feed and move simultaneously.





photo & video

shooting in full manual, be sure to set some limits on the automatic settings of your camera.

One option the Sony a7S II allows for, which I found very handy, is manually setting both aperture and shutter speed while using auto ISO (gain). This produces much better results than shooting in Shutter Priority (for motion blur control) or Aperture Priority (for depth of field control) as you can lock in both, yet still do not have to manually adjust your exposure for every shot.

The time you have with each

critter is extremely valuable. You may only get eight to 10 seconds before it moves out of reach, so every fraction of a second saved can be spent composing and holding a shot.

Because macro video (and photo) has a very shallow depth of field to begin with, stop down your aperture to somewhere around f/13. This will vary slightly based on image sensor size (larger image sensors have a shallower depth of field) and focal length. Photography captures a single moment in time, while video

While siphonophores look like a single creature (right and lower right) they are actually a collection of highly specialized, genetically identical individuals known as zooids - some are responsible for locomotion, some for reproduction, and some for capturing and digesting food. A single colony can contain thousands of individuals. The zooids function like organs of a multicellular organism, and similarly cannot survive independently.

captures several seconds of time. Within these seconds, there is a lot of movement that takes place, so give yourself as much depth of field as you can get.

Automatic ISO setting. Within the automatic ISO setting on the a7S II, the camera allows both lower and upper limits. I set the lower limit to ISO 100 and the upper to ISO 12,800. ISO 12,800 sounds insanely high when compared to DSLRs like the Canon 5D series, which has been touted for its low light ability, but the a7S II does



an amazing job at these higher sensitivities.

I have found through both test shoots and trial and error, that ISO 12,800 introduces an acceptable level of noise to the image while remaining usable on professional production standards. If you choose to shoot with auto ISO (or gain), be sure to look for an upper limit restriction and take the time to research what is acceptable

for your specific camera model. Every camera is different, so do not just take my word for it. It would be an awful feeling to get to a computer after the dive to find that all your footage is useless because the ISO was set too high.

If you choose to shoot with ANY automatic exposure settings, be sure to set your exposure value (EV) to -2. With specs of light on a black background, the expo-

sure meter in every camera will tend to expose too high to compensate for the massive amounts of darkness.

Spot mode. Another option, if your camera has this feature, is to change the metering mode to spot. In this mode, the camera will meter the exposure based on a small area usually in the center of the frame. However, this does not

consistently produce good results as many creatures will spread out across the frame, without a good exposure reference in the middle.

Lighting

With exposure comes lighting. There are many species on the pelagic black water dive that produce their own bioluminescent light. The output is very dim and not enough to fuel many camera sensors. Shooting with video lights is a must. Shoot with one, two or even several lights.

Regardless of how many lights you choose to shoot with, they should be angled from the side, top or bottom and set to fill the area where your macro lens is focusing on. I used two Light & Motion Sola 2000 Video lights, with one positioned at 9 o'clock and the second at roughly 1 o'clock. The light at 9 o'clock I set at 1000 lumen output, and the light at 1 o'clock I set at 500 lumen output. This did a really nice job of illuminating any translucent bodies, yet

To blend in with the open ocean, salps have a transparent body much like jellyfish, but are in fact more closely related to humans with a rudimentary central nervous system and internal organs. They are among the fastest growing multicellular organisms on earth, capable of enormous population increases when food sources abound.





photo & video

Giant siphonophore, *Praya dubia*

was still not too bright to overpower most of the bioluminescence.

With a video camera in your hand, you can just as easily become the most despised diver as you can the most liked diver. Taking over the entire space under the boat and constantly flagging other divers with your lights may very well end your dive early. Being respectful of the other divers by keeping within your space and not allowing your video lights to shine in their faces will possibly result in footage of some cool creatures you missed, but someone else pointed out to you.



Focus

Solid focus is critical to any good video. Increasing your depth of field by stopping down the aperture is a great second step to good focus.

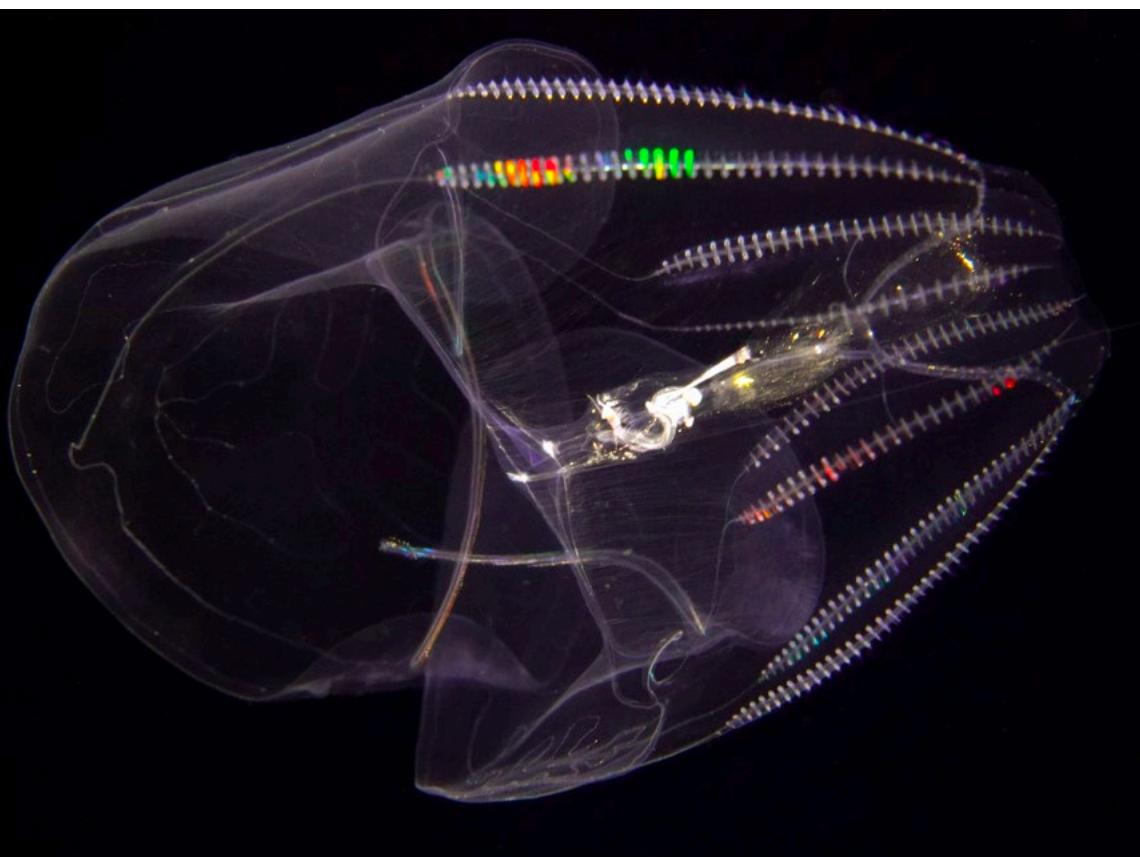
The first is a lens with fast auto focus paired with a camera with a fast auto focus sensor.

Many black water photographers recommend using manual focus because instant, single shot auto focus on a small subject can be very difficult to obtain. In video, we deal with continuous auto focus, and this is a must for all but the most experienced underwater videographers. Even at f/13 or f/20, depth of field with a macro lens may only be one or two inches. This allows for very little wiggle room to compensate for two independently moving objects, namely the subject and camera.

Shooting in manual focus means the camera must remain at the exact same distance from the subject throughout the entire duration for the shot to be in focus. A solid lens/camera combination will allow for much more room in tracking the subject and will result in longer usable shots.

Getting the shot

Your camera rig is set, tested and ready to go. Your buoyancy is so good your dive buddy swears you



Eurhamphaea vexilligera comb jelly



Malaysia's Annual Underwater Photography Competition

MACRO • COMPACT CAMERA • PORTFOLIO
• WIDE ANGLE • YOUNG TALENT • 3-MIN VIDEO
• CREATIVE • FREE DIVING

AMAZING PRIZES ARE WAITING FOR YOU!

The **Hottest** and **Coollest** Dive Expo in Malaysia is bringing to you prizes from the best dive destinations in Asia, Dive Equipments, Photography Gadgets and many more interesting stuff you're gonna love.

PARTICIPATE NOW!

Send your photo to lbo@mide.com.my

Contest ends at 15th April 2017

Visit www.lensbeyondocean.com



Malaysia International Dive Expo

12 - 14 MAY 2017

PUTRA WORLD TRADE CENTRE
KUALA LUMPUR • Malaysia

The
HOTTEST
DIVE EXPO
in Malaysia
www.mide.com.my
www.lensbeyondocean.com



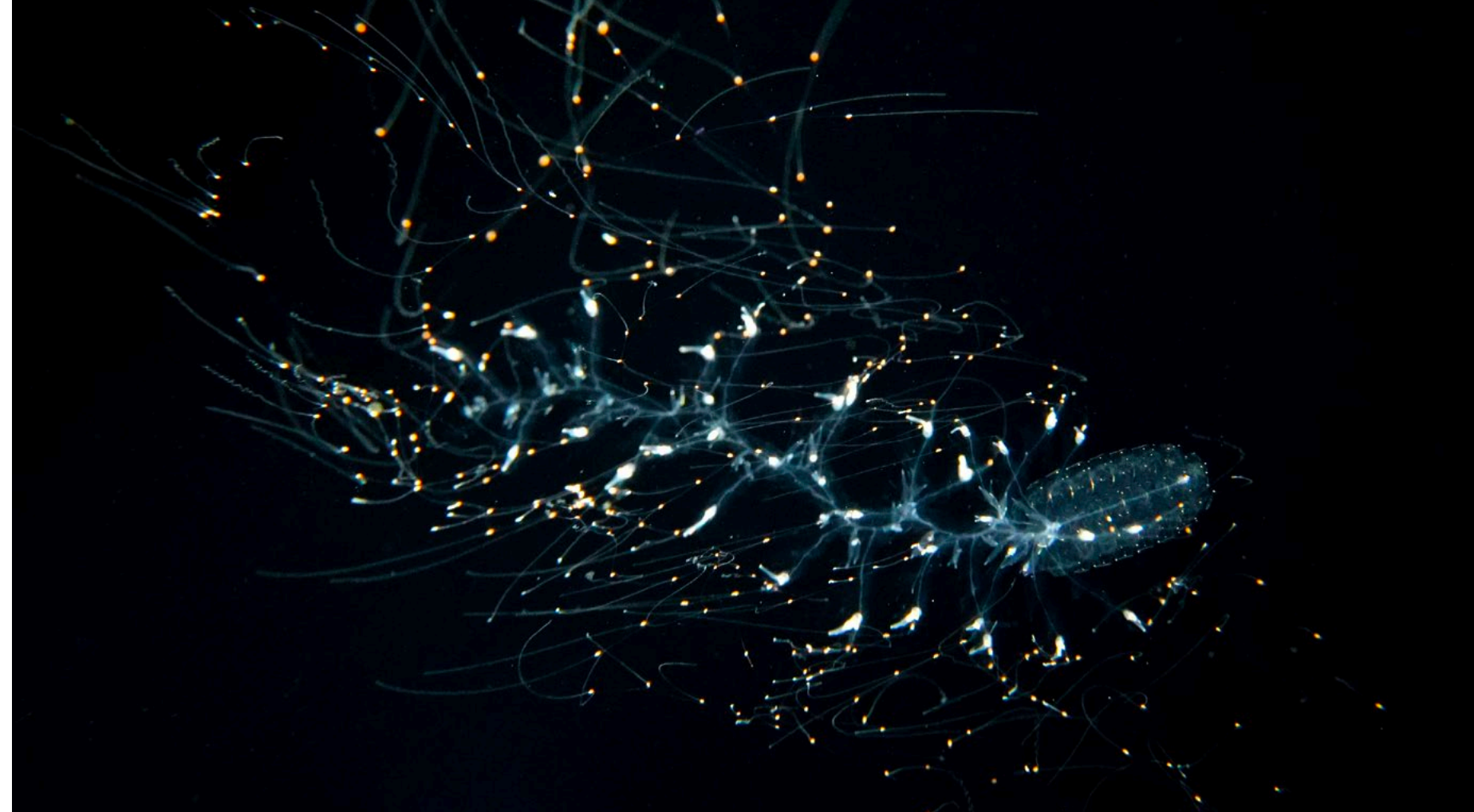


photo & video

are a fish. Half of the challenge is now complete. The second half is acquiring some amazing footage. The technique for this is as unique as the dive itself.

The first task is to figure out which way the current is moving. Oftentimes, it will be subtle. Hover next to your drop line and slowly look around, searching out the direction in which the plankton soup is moving straight towards you. Swim straight into the current as far as the tether will allow, holding your camera in the ready position. Scan the area in front of you for anything bigger than a speck of dust. It takes a few minutes to figure out exactly what to look for, but once you do, there is stuff everywhere!

Avoid the temptation to move quickly from one subject to the next. Rather, pick



Siphonophore,
Forskalia Sp

ticle, go to the links listed below. The film has been accepted for screening at the Wildlife Conservation Film Festival in New York City this fall, in addition to four more film festivals, and has won six awards for Cinematography, Narration and Best Nature Film.

Full film:

<https://www.amazon.com/dp/B06XW-FKL2M>

Trailer:

<https://vimeo.com/208445128> ■

Mike Johnson is a director of photography specializing in adventure and outdoor video productions. He travels the world shooting and producing television shows, documentaries and the occasional corporate video. Johnson is also a passionate diver, working in his spare time as a PADI divemaster. Follow him on Facebook @mikejohnsonvideopro and on Instagram @mikejohnsonvideo.

one to focus on. Find it out in front of you far enough that you have time to hit "Record" and frame the shot. If you must swim to a subject, do not swim too fast, as you can very easily overshoot and miss

an opportunity.

Keep in mind these creatures are powerless against the current. Turbulence created by you moving through the water can very easily send the one you are after into a tumble that is both unnatural and nearly impossible to follow.

Once you lock onto a subject, stay with it by hovering motionless as you both drift along. Hold the shot steady until you can no longer follow the subject.

The best approach I found is to let the subject drift underneath you. This is where Jedi-like buoyancy skills come into play. If the subject goes above you, you will not only get your exhaust bubbles in the shot, the turbulence created by the bubbles will make your subject look like it is in a washing machine. With breath control, position yourself just above, so as the subject drifts by you can follow until the tether holds you back.

Do not be afraid to ascend or descend through the water column to stay with the subject. However, do be careful to do so with great control. Ascending too fast could result in decompression illness, and

descending too fast could result in a blown eardrum. With a little practice, you can expect to have eight to 10 seconds for every subject you are able to lock in on.

My recommendation for shot composition for the first few dives is to keep it simple. Creative, unique angles are a fantastic goal to have, but add an entirely new layer of complexity on an already complicated dive. Try to focus instead on getting steady, in-focus shots of whatever angle is presented to you. In my opinion, it is better to walk away with something "average" than to walk away with a failed experiment. After all, the "average" shots in a pelagic black water dive are not that average!

See the short film

To see *Oceanic Aliens*, the award-winning short documentary I produced from the footage acquired on the dives referenced in this ar-



TRAYS AND ARMS FOR CAMERAS, HOUSINGS, STROBES, AND LIGHTS

Arms are our only business, we do not make housings and strobes

The original arm with o-rings in the balls for ease of use. Accept no imitations.

MADE IN THE USA

22 years in business. 100% customer satisfaction guaranteed
Often copied, never equaled.

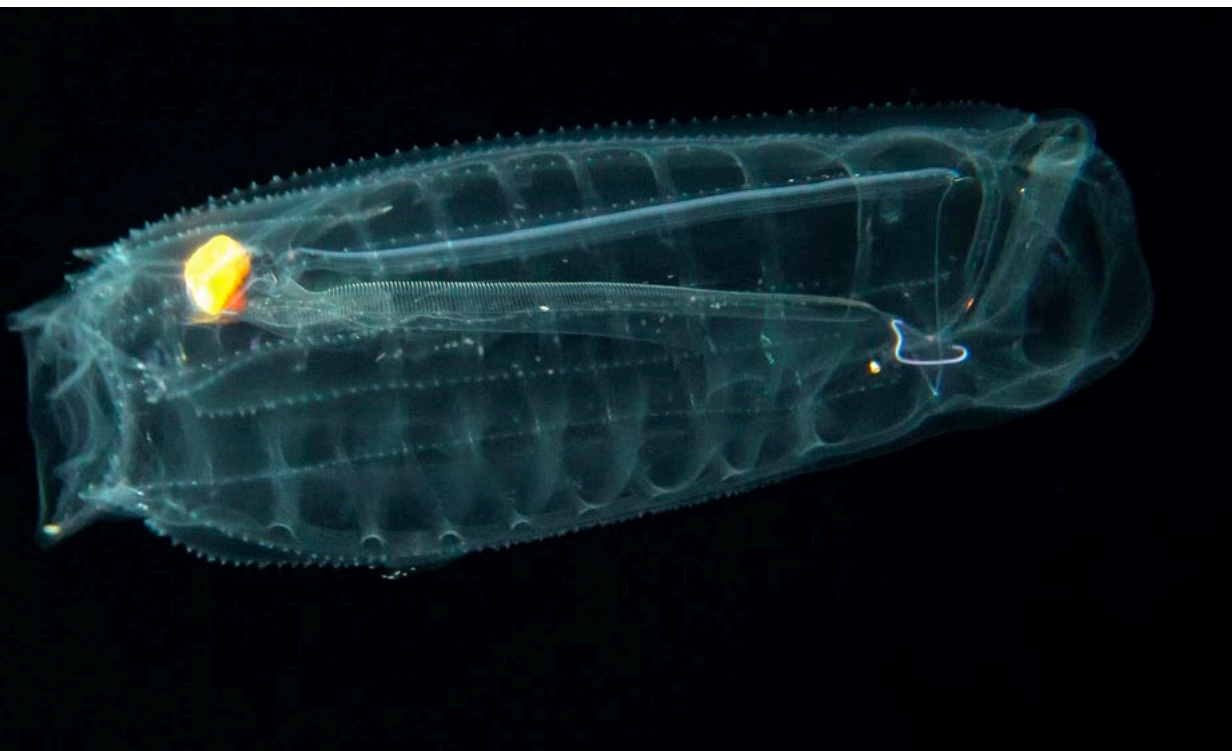
Visit our new website:

www.ulcs.com

for product info & to locate a dealer near you.

Unable to find a dealer?

E-mail: info@ulcs.com



Salpa maxima, a planktonic tunicate





photo &
video

Edited by
Peter Symes



Blitzly card reader

Delkin introduces USB 3.0 multi-slot card reader that will be compatible with the CFast standard, which facilitates data rates up to 500MB/s, with CFast 2.0, SD UHS-II and microSD UHS-I memory cards. Delkin Devices USB 3.0 CFast 2.0 Multi-Slot Memory Card Reader is compatible with Windows and Mac devices and will be available at the end of March for GB£39.99 (around US\$40) with a limited five-year warranty. Delkindevices.com



Keeping it dry

Lowepro's DryZone range of weatherproof and watersport-friendly bags were originally introduced in 2003, but newer designs are tested at an IPX6 waterproof rating to offer protection from water projected in powerful jets against enclosure, from any direction. A removable and fully-padded camera case is constructed with adjustable dividers so you can customize your kit, and taped seams to provide redundant water and weather protection when placed inside the backpack or duffel. Lowepro.com



Fantasea FA6500

Fantasea's housing for Sony's a6500 features an ergonomic design with access to all essential camera functions. An FML interchangeable lens port system allows using a wide range of lenses underwater. A standard M16 port allows for optional connectors and accessories to be installed on the housing, including HDMI, vacuum valve or electronic strobe triggering bulkheads. For a maximal sense of security, the housing comes with a leak detector installed inside. Sonydive.com



Kraken Ring Light

The Weefine ring light can be mounted on any 67mm port or smaller diameters by using an adapter. This means it will fit ports for compact camera housings but not bigger ones such as those for dSLR. The output is rated at 1000 lumens output and it is powered by a supplied rechargeable lithium battery—a small and easy to use charger is also supplied—or three AAA batteries. There are just four power levels: 100, 75, 50 and 25 percent. Burn time is around one hour at the highest power level. Depth rated to 30m (200ft). MSRP is listed as US\$229. Krakensports.ca

Portable SSD

Western Digital's tiny My Passport SSD portable storage is capable of blazing-fast transfer speeds of up to 515MB/s, using the USB Type-C port to rapidly transfer data. Available in 256Gb, 512Gb and 1Tb capacity. Compatible with Windows and Mac devices. Wdc.com



© J. Haschek

CLICK
HERE

EXPLORE THE
UNDERWATER
WORLD



BS KINETICS | **EXTREME**
PHOTO & VIDEO | CARBON FIBER
UW HOUSINGS

www.bskinetix.com



Yoshi Hirata



P O R T F O L I O



portfolio

Yoshi Hirata is a Japanese photographer and marine biologist based in the Philippines. His father was an artist and a painter, so Hirata learned to see a lot of different angles of truths from him. He also studied nature where he also found a variety of truths in ecology, but at the same time, he said, his heart sought beauty.

“Every year, I come up with a concept of study and art as a project for myself,” said Hirata. “Luckily, I have never lost my passion and interest in nature. I have been diving for over 44 years, logging some 26,000 dives already, but still I dive every day.”



Yoshi Hirata



In this photo of a harlequin sweetlips, an LED light with slow shutter speed was used.



This nudibranch (above) is *Costasiella formicarius*. It lives in Valonia (green algae), eating and laying eggs inside of the skin of the algae. The image was shot from inside a cave using a new Nauticam prototype lens. The same nudibranch is photographed (left) using many colors of LED light.

The anthropod crustacean, *Phronima sedentaria* (top left), actually lives inside salps (planktonic tunicates), but sometimes are found floating alone. The motif here is inspired by the movie, *Aliens*, directed by Ridley Scott.

PREVIOUS PAGE: This nudibranch, sitting on algae, was photographed using an aperture of *f*/5 to make the bokeh effect.



Mosaic octopus is wrapped around the middle of a rock (left). Can you find it? So smart is its camouflage! A new Nauticam prototype lens was used for this shot.

Hirata took this photo (left) because, at the time, it was Holy Week in the Philippines. He used a new one-of-a-kind Nauticam prototype lens for this shot.



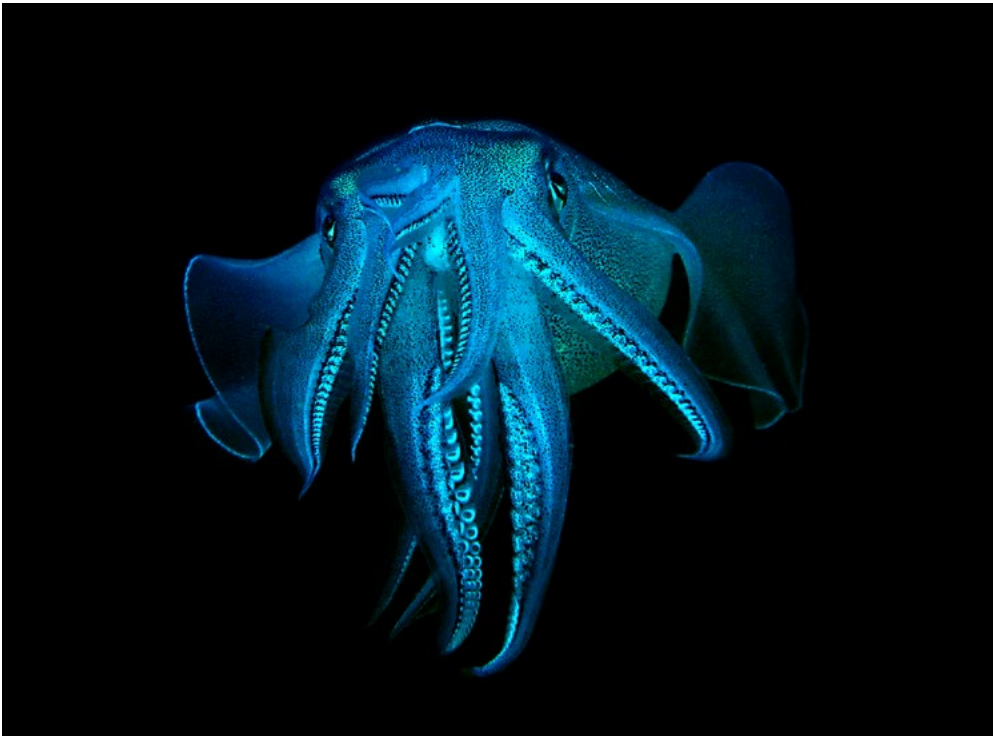
A tube worm opens like a smile underwater. A unique Nauticam prototype lens was used for this shot.



“I have only one life to live, so I want to see more and more. And I want to explain and show people, more and more, how there is so much beauty in the underwater world.”

— Yoshi Hirata

This reef squid (right) is a male, photographed just after mating with a female laying eggs. It is almost at the end of its life when squids are always white in color. This photo was not color-edited, just adjusted to make it dark.



Yoshi Hirata

This is a very rare jellyfish (left) from the phylum *Mollusca*.

Gorgonian shrimp, *Tozeuma armatum*, (far left) looks very nice inside the cave, but this whip coral is just at the entrance, where the lens used can shoot. It is a new Nauticam prototype lens—the only one in the world.

For more information or to contact the photographer, please visit Club Paraiso & Pcom Dream Resort at: **Pcomdream.com**



White-eyed moray, *Gymnothorax thyrsoides*, In this shot, a prism reflection was used.

