FORGOTTEN TREASURE: SLOVAKIA'S OPAL MINES

TIPS TO LOSE THE LEAD AND ACHIEVE YOUR PERFECT TRIM

....

WHAT IT'S LIKE TO BE LOCKED IN THE GRIP OF CIGUATERA

N

DIVE WITH DINOSAURS IN EASTERN TENNESSEE

SCUBALAB NEED A LIFT? 14 NEW BCs TESTED

G

P46 P46 PAGE OF CONTROL OF C

SCUBADIVING.COM JUNE 2018









What's so Special About Aggressor Fleet® Adventures?





Since 1984, making every dive, every meal and every moment special is the mission of Aggressor Fleet staff. Come aboard one of our worldwide yachts. We have a liveaboard vacation suited to your travel budget and lust for adventure!

• Bahamas • Banda Sea • Belize • Caño Island • Cayman Islands • Cocos Island • • Cuba ^{Group Tavel} • Derawan Islands • Dominican Republic • Egypt • Fiji • Forgotten Islands • Galapagos • • Guanacaste & The Bat Islands • Hawaii • Komodo • Maldives • Oman • Palau • Raja Ampat • • Red Sea • Roatan • Sri Lanka • Thailand • Tiger Beach • Turks & Caicos •

DIVING AND TRAVEL ADVENTURES



















New Dive With the Owners Weeks New Gelebrity Gruises and Photo Workshops Money-saving Specials online at www.aggressor.com

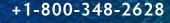




NEW! Sri Lanka Safari Lodge

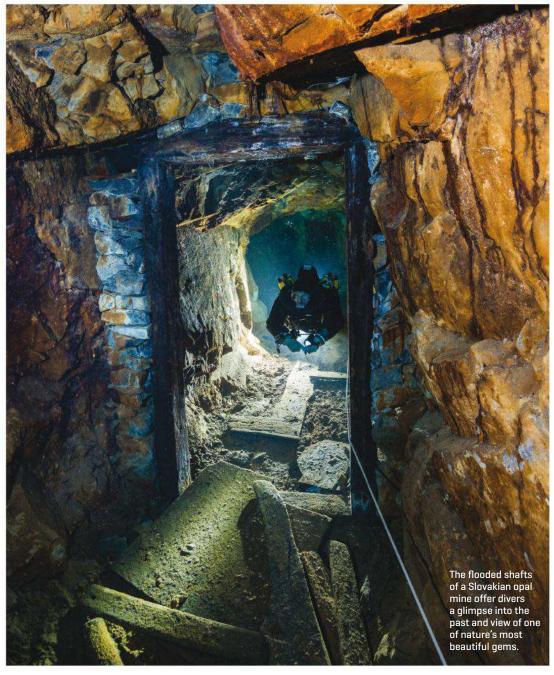
NEW! Nile Queen **River** Cruises Aggressor River Cruises"





+1-800-348-2628 • +1-706-993-2531 • info@aggressor.com www.aggressor.com

CONTENT JUNE 2018



09 ASCEND

Australians man the front lines in the fight for the **Great Barrier Reef**; our **June Sea Hero** asks you to see food in a different light; the back story behind scuba's **recreational depth limit**; fun facts about **moray eels**.

23 TRAIN

Got weight problems? Dive pros offer their tips for shedding lead; the short-term and long-term pains of ciguatera poisoning; how to perfect shooting with no strobe; Lightroom tricks for mastering a **Develop module** workflow; when a record-setting dive becomes a tragic accident.

37

SCUBALAB Our team of test divers got 14 new BCs in the water; see which models earned Testers Choice and Best Buy honors.

63 TRAVEL

See the Red Sea like never before; discover the best eco-friendly destinations; take a trip to Tennessee for views in the mountains and run-ins with paddlefish; the best things to do on Curaçao.

46 WEST IS BEST

Stretching from "The Last Frontier" all the way south to the edge of Mexico's Baja California Sur, North America's Pacific Coast offers divers highlights in all shapes and sizes.

56 JEWELS IN THE GROUND

There's a dive site in eastern Slovakia unlike any other in the world. Here, advanced divers can venture deep into an abandoned opal mine, a treasure chest that produces brilliant stones.

COVER Moon jellyfish envelop a diver in southeast Alaska. Photo by Jennifer Idol

DISCOVER WHAT LIES BENEATH IN THE CAYMAN ISLANDS.



The highly sought-after experience of diving in Cayman doesn't limit itself to just its dramatic drop offs, bustling coral reefs or 365 world-class dive sites. Quite the contrary. It extends itself topside, where personal valet services for your gear and a dedicated dive community ardently await your arrival. In case you're wondering how perfection could possibly become more perfect in Cayman, now's the time to find out. Now's the time to find your Caymankind of diving.



LITTLE CAYMAN CAYMAN BRAC ONLY 1 HOUR FROM MIAMI FIND YOUR CAYMANK IND



www.divecayman.ky

PATRICIA WUEST joined Scuba Diving in October 1992, and has served as assistant, managing and senior editor. A diver for more than 25 years, she was named editor-in-chief in 2013.

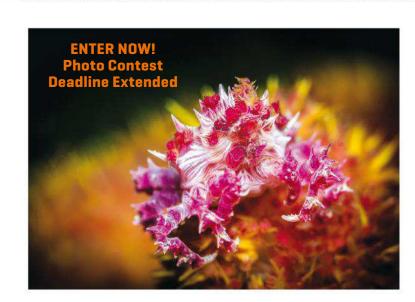
THE WILD WEST

Don't let a little cold water keep you from experiencing the spectacular diving off North America's Pacific Coast

N ifrst few years as a diver were spent exploring the coral reefs off South Florida and in the Caribbean Sea. I loved the easy, warm-water conditions, but in 2004, when I was asked to join a team of colleagues who were traveling to California to test BCs off Catalina Island, I jumped at the chance. It was October; the surface water temperature was a promising 72°, but at about 45 feet or so, an abrupt thermocline dropped the water temp to the upper 50s. Yes, it was cold, but what a stunning backdrop for the test. We dropped in on the island's east end, at Italian Gardens. To swim through the shamrock-green kelp is like walking through beaded curtains in a boho boutique — it's a sensual, colorful experience. Pouty garibaldis finned past, the brightest jack-o-lantern orange I'd ever seen underwater. Below us in the green water, a beefy black sea bass cruised by, and a bit later a young California sea lion zipped up to see what we were up to. In short, a lovely, rich habitat. Turn to page 46, to see what North American West Coast diving has to offer.

BY PATRICIA WUEST

EDITOR-IN-CHIEF



ENTER TO WIN Khaichuin Sim submitted his Anilao candy crab early, well before the deadline for our 14th annual Through Your Lens photo contest. The good news for you? The deadline has been extended, through June 7. Enter in Wide-Angle, Macro, Conceptual, and Compact Camera to win prizes from \$1,000 cash to exotic Aggressor Fleet liveaboard trips, from top-level gear from Cressi, Mares, Scubapro and Sherwood to gift certificates from Backscatter Underwater Video & Photo. Enter up to five images for free at scubadiving.com/photocontest.

Scuba Diving (ISSN 1553-7919) is published 10 times per year (J/F, Mar, Apr, May, Jun, Jul, Aug, S/O, Nov and Dec) by Bonnier Corp., 460 N. Drlando Ave., Suite 200, Winter Park, FL 327899. Vol. 27, Mo. 5, June 2018, Periodicals postage paid in Winter Park, FL, and additional offices. Subscription rate for one year (J li Ssues); U.S. 921.37, Canada 530.97, all other foreign countries 39.9.7. U.S. funds only. Contents copyright 2018 by Bonnier Corp. POSTMASTER: Send address changes to Scuba Diving, P.O. 6364, Harlan, IA 51593-1864, CANADA POST: Publications Mail Arearement Number: 40612608, Return undelievable Lonadian addresses to IMEX, P.D. Box 25542, London, ON NGE 682, For subscription questions, emails SCOustservice/addisfulfillment.com

S_,C_,U_,B_,A

scubadiving.com • edit@scubadiving.com

EDITORIAL

Editor-in-Chief Patricia Wuest Deputy Editor Mary Frances Emmons Managing Editor Andy Zunz ScubaLab Director Roger Roy Digital Editor Becca Hurley Assistant Editor Robby Myers Copy Chief Cindy Martin

CONTRIBUTORS

Brandon Cole, Deborah Dickson-Smith, Eric Douglas, Brent Durand, Nicole Helgason, Jennifer Idol, Davide Lopresti, Eric Michael, Brooke Morton, Erin Quigley, Allison Vitsky Sallmon, Steve Sanford, Martin Strmiska, Terry Ward

ART AND PHOTOGRAPHY

Art Director Monica Rodriguez Staff Photographer Jon Whittle

SALES

Vice President, Managing Director Glenn Sandridge glenn.sandridge@bonniercorp.com Associate Publisher Jeff Mondle 760-419-5898; jeff.mondle@bonniercorp.com Associate Publisher David Benz 850-261-1355; david.benz@bonniercorp.com Territory Manager Linda Sue Dingel 407-913-4945; lindasue.dingel@bonniercorp.com Detroit Advertising Director Jeff Roberge Advertising Sales Manager Lauren Brown 407-571-4914; lauren.brown@bonniercorp.com

BONNIER MEDIA

Executive Vice President Gregory Gatto Editorial Director Shawn Bean Creative Director Shawn Bean Editorial Operations Director Stephanie Pancratz Copy Chief Cindy Martin Group Marketing Director Haley Bischof Senior Marketing Manager Kelly Sheldon Marketing Project Manager Kelly Sheldon Marketing Project Manager Annie Darby Production Director Ria Viray Murray Associate Production Director Kelly Weekley Production Manager Stephanie Northcutt Digital Content Production and Presentation Director Michellina Jones Digital Producer Ashley Burns

BONNIER

Chairman Tomas Franzén Head of Business Area, Magazines Lars Dahmén Chief Executive Officer Eric Zinczenko Chief Financial Officer Joachim Jaginder Chief Operating Officer David Ritchie Chief Marketing Officer Elizabeth Burham Murphy Chief Digital Revenue Officer Sean Holzman VP, Integrated Sales John Graney VP, Digital Operations David Butler VP, Public Relations Perri Dorset General Counsel Jeremy Thompson Human Resources Director Kim Putman

All contents copyright 2018 Bonnier Corporation. No use may be made of materials contained herein without express written consent. For inquiries, please contact us at Bonnier Corporation, 460 N. Orlando Ave., Suite 200, Winter Park, FL 32789.

Publications Mail Agreement Number: 40612608 Canada Post Returns: IMEX Global Solutions, P.O. Box 25542, London ON N6C 6B2 Canada

Printed in the USA

Retail single copy sales: ProCirc Retail Solutions Group, Tony DiBisceglie

For reprints, email reprints@bonniercorp.com.

Occasionally, we make portions of our subscriber list available to carefully screened companies that offer products and services we think might be of interest to you. If you do not want to receive these offers, please advise us at 515–237-3697.



For customer service and subscription questions, such as renewals, address changes, email, billing and account status, go to: scubadiving.com/cs. You can also call 800-666-0016 or 515-237-3697, or write to Scuba Diving, P.D. Box 6364, Harlan, IA 51593-1864. KHAICHUIN SIM

improvement is our DNA decades of innovation.











938

IL PESCATORE CRESSI IL PESCATORE CRESSI In a room in their home in Genaa, the brothers Egidio and Nanni Cressi begin to make their first masks, with pieces of recycled inner tubes shaped on formers and assembled with a natural rubber solution, buckles and rubber loops. The first rudimentary masks are created in this way.

1943

SIRENA They are the first masks to be produced in a limited series, still by hand. Only one size is offered. They are similar, even if the second mask is in thicker rubber. This model is produced also with an incorporated snorkel, and remains in the catalogue for around 30 years.



MEDUSA GIGANTE The mask with a snorkel incorporated in a single unit with the side of the mask is the second historic Cressi model. The Medusa Gran Facciale, then, covers the face from forehead to chin, while the Medusa Gigante is equipped with two snorkels in-unit with the mask



1953

PINOCCHIO A milestone in the evolution of deep water diving with its anatomical shape The moulding for the nose allows it to be gripped with the fingers from the outside and facilitates compensation. It becomes the most famous mask in the world and is still produced by Cressi today.



LINCE OTTICA With the introduction of Pinocchio Ottica mask in 1963, whose optical glass may incorporate any type of corrective lenses for underwater vision, Cressi opens one of the first facilities specialising in this kind of product and develops a full range of optical

masks.





1978

PHIMA

The particularly robust mask is a single lens model offering a notable field of vision, an attractive and functional design and patented snap-fitting adjusters. The range includes the twin-lens Plumabux, the single-lens Minipiuma for small faces and the Dimshire attem Piumalux ottica.



2000

OCCHIO Designed for freediving and used by the Italian spearfishing champions, this model represents the new dimension of diving The world's first diving mask with two inclined lenses offers an extremely wide field of vision in all directions, in particular downwards, with a 30° improvement on masks. Twin-lens, the skirt in black rubber a traditional mask. Another avant-garde product design, that soon becomes the and easy strap adjustment by buckles: any prominence is eliminated.



2014

NANO CRYSTAL NANO CHYSTAL This model, created for advanced freediving, features an extremely hydrodynamic shape with a minimal internal volume, that does not require voluntary equalization. The new Integrated Dual Frame Technology System permits the silicone skirt to be smoothly method to the law for frame. mated to the lens frame



201

CALIBRO It is the first and the only mask in the world equipped with the exclusive Fog-Stop System that dnastically reduces the fogging on the lenses: near the nose there is a special pocket that prevents the condensation. Another step by Cressi toward the future.

CALIBRO: SUPERIOR MATERIAL QUALITY AND PERFORMANCE.

most copied and imitated.

BIG EVES





YOU CAN.

Do more of what makes you happy.

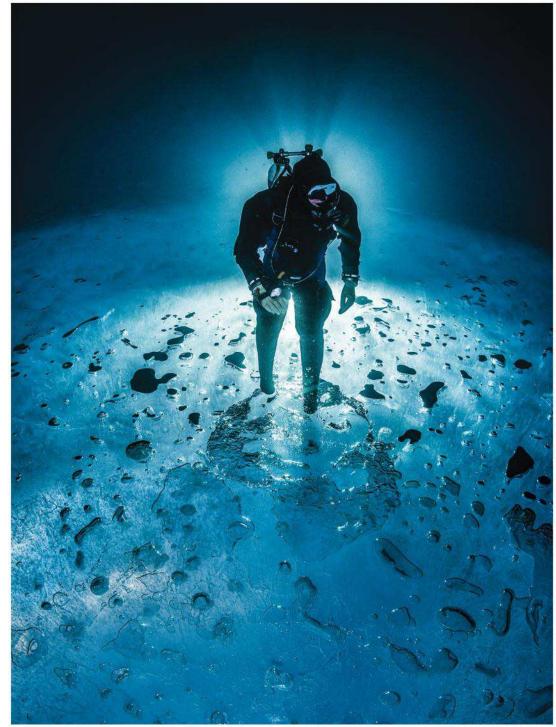
JOIN THE WORLD'S LARGEST DIVE EVENT. PADI WOMEN'S DIVE DAY IS JULY 21. padi.com/women

0

096/10 PADI

()

ASCEND_{JUNE 2018}



MIND GAMES Divers go where few have trod, sometimes to otherworldly spots like this landscape of the imagination. Photographer Martin Strmiska used an off-triggered subtronic mega strobe to mimic the sun behind an upside-down diver "standing" on the underside of ice and gas bubbles covering a lake near Bratislava, Slovakia. OUT OF THE BLUE: DISCOVER THE WORLD BELOW



10 GREAT BARRIER REEF 16 SWIMMING WITH SNAKES

18 OUR BIG, BLUE PLANET

Let's say you're in a restaurant and ask. 'Where is this fish from?' or 'How was it caught or farmed?' If you can't get that information. it's hard to identify whether that fish is from a sustainable source."

SEA HERO Page 13



LOUDER THAN WORDS

Australians are getting their fins wet in the fight to protect the Great Barrier Reef

BY DEBORAH DICKSON-SMITH



Col McKenzie Executive Officer, Australia's Association of Marine Park Tourism Operators



HOW TO BE-Come a cots Warrior

If you're a certified divemaster with a current commercial medical certificate and you'd like to take part in the CoTS Control Program's training course, or if you're interested in full-time employment as a CoTS diver, send resumes to Steve Moon at steve@ projectsglobal.net.

HOW TO BE A CITIZEN REEF WARRIOR

There are several citizen-science projects that you can contribute to, including Eye on the Reef, Coral Watch and ReefSearch.

■ Sign up for Reef-Search, and you'll be sent a field guide explaining how to contribute valuable data to scientists studying the Great Barrier Reef's health by spending 10 minutes of each dive looking for key species, checking coral condition, and making note of any rubbish found.

■ Coral Watch is focused on bleaching events and is managed by the University of Queensland. Your kit comes with a color-coded slate that helps you ID and record coral colors, which you can then upload via an app to a global database.

Eye on the Reef is managed by the Great Barrier Reef Marine Park Authority. Download the Eye on the Reef app or log in online to report your sightings. A sighting can include incidents such as a bleaching event, CoTS, stranded or sick wildlife, and coral damage. The biggest threat to the Great Barrier Reef is climate change, but perhaps equally damaging is apathy," says Col McKenzie.

For more than 30 years, McKenzie has been fighting for the health of Australia's Great Barrier Reef. In recent years, he's been outspoken about the damage done to tourism by published climate-science reports declaring that the reef is dead or dying. Instead of apocalyptic projections, he prefers a practical response.

"If people give up on the reef, then we really will lose one of the world's greatest natural wonders," says McKenzie. "We know the research and the threat, but to maintain hope, we need to see a practical response, which is why the local people are getting into the water and trying to make a difference."

Alongside the reef's official custodians — which include the Great Barrier Reef Marine Park Authority and the Association of Marine Park Tourism Operators — countless activists are working on conservation projects that include education programs, pollution control, coral nurseries and turtle sanctuaries.

McKenzie has now built his own army of conservationists. Under his guidance, and armed with only wetsuits, scuba gear and syringes, an underwater army of newly trained divers is taking on one of the more-significant threats to the Great Barrier Reef — the crown-of-thorns sea star — one shot at a time.

McKenzie heads up AMPTO, the organization that manages the Crown of

From left: A crown-of-thorns sea star devouring Australia's Christmas Reef; a diver injects a CoTS with bile salts.



Thorns Control Program in Queensland. Year-round, the program sees teams of up to 12 men and women taking part in nonstop 10-day containment voyages off the coast of Cairns and Port Douglas in Tropical North Queensland. After 42 years of research, it has been established that the quickest and safest way to kill this coral predator is with a single lethal injection of bile salts.

"We would be pretty happy in the past if we could take 500 crown of thorns in a day using the old method," says McKenzie. In a recent horrific outbreak on Swains Reef, a team of 25 divers killed as many as 47,000 CoTS in nine days.

The program is also providing valuable training and employment for young men and women in the local area.

"The Skilling Queenslanders for Work program takes unemployed youth, and we teach them to be occupational divers using the crown of thorns as the catalyst," says McKenzie. "What we're doing with our program is achieving good environmental outcomes for the reef, and changing lives."

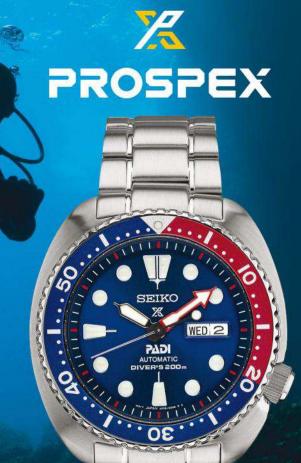
It takes the young divers six months to gain their divemaster status, and so far 230 trainees have graduated from the program and have dive qualifications, with an 85 percent employment rate.

One of the first recruits, Mathew Trueman, joined the program in 2010 and is now dive supervisor on board research vessel M/V Venus II.

"The look in a stranger's eyes as I take them below the surface is one I will never tire of — excitement, awe, trepidation and sometimes a little fear," says Trueman. "But, above all, the euphoria at the end of the dive, the congratulations, the excitement, the smiles. It's absolutely amazing."

McKenzie adds that it's "not all doom and gloom on the reef, as the media sometimes suggests.

"The Great Barrier Reef is spectacular and one of the few coral-reef systems where you can see whales, coral fish, turtles and big sharks on a daily basis. But people need to understand the threats, and how they can help," he says. "We believe the reef can be saved. Perhaps not all of it, but the vast majority of it will survive. The more we can help to minimize stress factors, such as water quality and CoTS outbreaks, the greater chance coral has to adapt to its biggest threat: climate change."



AUTOMATIC DIVER DIVE DEEPER INTO LIFE

SRPA21 | www.SeikoUSA.com

SEIKO



YEAR CERTIFIED 1992 Age when certified 19

CERTIFICATION LEVEL NAUI Assistant Instructor

WORDS TO LIVE BY

"Accept the things I cannot change, have the courage to change the things I can, and the wisdom to know the difference."

Sea Hero JENNIFER DIANTO KEMMERLY

Empowering us all to help build sustainable fisheries

fter getting certified in college, Jenni-Afer Dianto Kemmerly embarked on life as a science teacher in the Florida Keys, where she could dive, dive, dive. But she had an epiphany as she noticed how passionate locals were about the creation of a national marine sanctuary, and how alert divers were to trends in the ocean. "It opened my eyes as to how engaged people can be when what they love, or need, changes," she says. Today she is director of Global Fisheries & Aquaculture at Monterey Bay Aquarium and heads its Seafood Watch program, which since 2001 has helped millions of consumers make informed choices in sustainable seafood.

Q: Tell us about Seafood Watch.

A: Many consumers recognize Seafood Watch because of our pocket guide, of which we've distributed more than 60 million. The original guide was a tent card in the aquarium restaurant to inform guests which fisheries and aquaculture operations were environmentally responsible. We saw the cards quickly disappearing as people took them home — and Seafood Watch was born! The program still operates under its original "Theory of Change": If enough consumers and businesses demand environmentally responsible seafood, fisheries and aquaculture operations will improve their practices, and ultimately governments will enact strong management of these natural resources. Today we are at a pivotal moment where public awareness is strong, businesses are committed, seafood producers are demonstrating change, and governments are increasingly engaged. The success of the Seafood Watch program means that fisheries and aquaculture operations are more sustainable, contributing directly to improved global ocean health and the well-being of more than a billion people who rely on fish for their livelihoods.

Q: Statistics on overfishing are disheartening — is it too late?

A: It's not. Seafood Watch, well, watches seafood — we assess the environmental performance of fisheries and aquaculture and make that information transparent. As performance changes, we update our assessments so we can see trends over time. With strong management — informed by science and with buy-in from stakeholders ranging from NGOs to the seafood industry — we have seen improvements. We like to bring consumers' attention to the fact that things do improve when all actors take responsibility for their respective roles.



People of action, **devoted** to protecting the planet's oceans and marine life through conservation, technology or by simply helping others. If you spot a Sea Hero, join Scuba Diving, Seiko and the 2018 Sea Heroes program by nominating him or her at scubadiving.com/seaheroes



Q: What are the biggest challenges to traceability?

A: Let's say you're in a restaurant and ask, "Where is this fish from?" or "How was it caught or farmed?" If you can't get that information, it's hard to identify whether that fish is from a sustainable source. That's because where a fish is from or how it was caught or farmed matters. A certain type of fishing gear might have more environmental impact than another. A certain country might have more lax laws regulating fisheries. Traceability can also help us begin to address illegal, unreported and unregulated fishing and seafood fraud — selling a lower-value fish as one of higher value. My work has shown me that if enough consumers ask, businesses respond. And if you are willing to ask about your wine selection, grass-fed, hormone-free beef, or cage-free eggs, why not ask questions about your fish?

Q: What are you are working on now?

A: Recently we launched a partnership with the Carnegie Endowment for International



Peace to engage governments in Southeast Asia to support fishermen and fish farmers interested in improving environmental and social responsibility and traceability. We also launched a Seafood Slavery Risk Tool so our business partners can identify fisheries where there is evidence of human-rights abuses and can help address the issue. Kemmerly displays an oversize version of the Seafood Watch pocket guide at the aquarium.

Q: How can divers help?

A: All divers have a passion for exploring, a curiosity about the marine environment, and knowledge of that serenity that one feels when immersed. They know what's at stake. So I'd ask that individuals ask questions at their point of sale

> RO-SHE SHEFERE

about their seafood. As dive communities, I'd ask that we educate one another, and engage local restaurants, retailers and seafood suppliers to make commitments to sourcing sustainable seafood. Because we all want our children and our global neighbors to have the chance to experience what we've experienced as divers and ocean stewards.

Each Sea Hero featured in *Scuba Diving* receives a Seiko Prospex Automatic SRPC07 watch worth \$525. For our December issue, judges select a Sea Hero of the Year, who receives a \$5,000 cash award from Seiko to further his or her work. Nominate a sea hero at **scubadiving.com/seaheroes**.

Live in the Moment.

See more at saltlife.com

PERFORMANCE WEAR

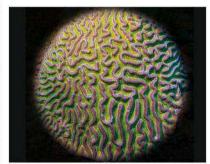
Pro Surfer and Musician, Tim Curran, ready to dive in his SLX UVapor Rash Guard and Aquatrunk Boardshorts with Vapor Stretch fabric.

+lefo,

CORAL SPOTTER

COLPOPHYLLIA NATANS (BOULDER BRAIN CORAL)

Sharpen your ID skills for the most intriguing coral species BY NICOLE HELGASON



Colpophyllia

natans is a dominant reef-building coral with wide meandering valleys stretching across the entire surface of the coral colony. This coral forms impressive domed boulders and is one of the most common corals in the Caribbean.

The boulder brain coral is a familiar species on shallow reef ledges and slopes. It can be found down to a depth of 165 feet but is often established much closer to the surface.

Colpophyllia

natans falls into the brain-coral category, and there are a few tricks to tell it apart from other species. First, **Colpophyllia natans** can grow into very large boulders hence its common name — but if you're met with a smaller colony, look closely at the small lines running from the top of the ridges to the center of the valleys.

The ridges of Colpophyllia natans remind me of a millipede, and that's how I remember this species. The meandering ridges resemble the back of the millipede with the legs trailing into the valleys. In the center of the valley you will see that all the lines lead to a small circular mouth — this is the coral polyp.

During the day, the polyps are retracted inside the valleys. But at night, polyps will emerge and sticky tentacles will inflate to catch plankton in the current. Colpophyllia natans can be brown, tan, gray or white, while some colonies have dark ridges with vibrant green valleys. Most often its ridges and valleys will be of contrasting color.



OCEANA Protecting the World's Oceans

Friends Support Each Other

Adopt-A-Manatee

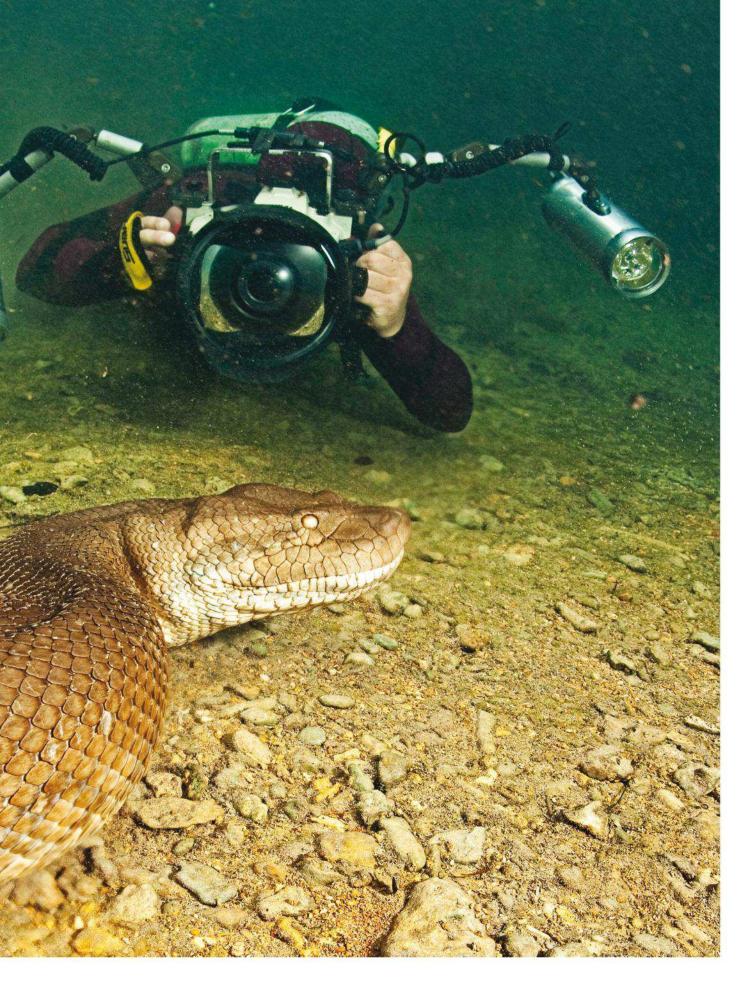
Call 1-800-432-5646 (JOIN) savethemanatee.org

IICOLE HELGASON; OPPOSITE: COURTESY MONTEREY BAY AQUARIUM

HERE THERE BE MONSTERS BONITO, BRAZIL

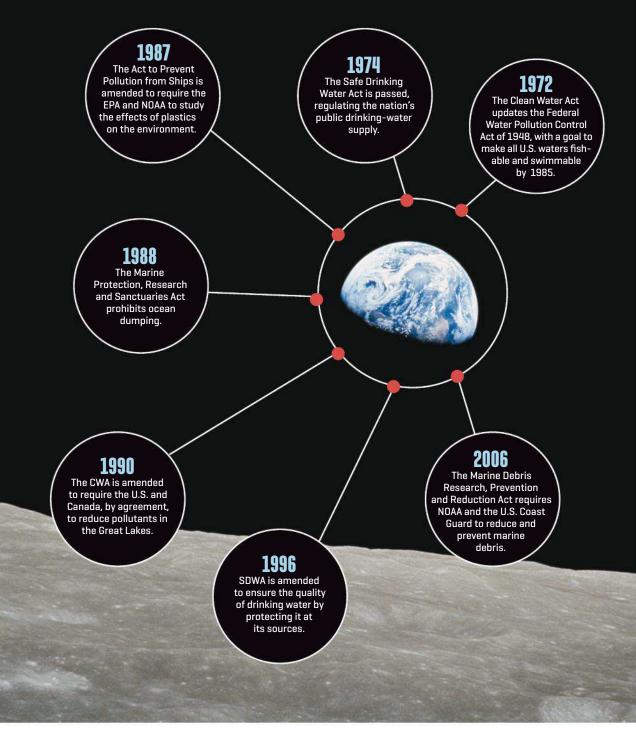
Scheduling a date with the green anaconda — Eunectes murinus — is no easy task. It took a ride down waterfalls with pricey equipment, a trek through sharp saw grass, and a plunge into murky water to come face to face with this 20-foot giant. "At first it's scary because you don't know the animal and everybody says it's dangerous," says Franco Banfi. "But after a while, you understand that nothing happens if you respect the snake. A small, venomous snake is scarier than a big one. At least you can see the anacondas clearly and know what they're doing."

PHOTO BY FRANCO BANFI



WATER, WATER EVERYWHERE

"... nor any drop to drink." Most divers know those famous lines from "The Rime of the Ancient Mariner," but happily that dire scenario has not materialized — yet. In the 50 years since Apollo 8 astronauts showed us just what a blue planet Earth really is, with this photo taken on Christmas Eve, 1968, from lunar orbit, strong water-conservation measures have been enacted in the U.S. Nevertheless, our water supply is threatened again, by climate change, development and more. Why does water conservation matter? Aside from the fact that 70 percent of our brains are water, "everything we do on the surface of Earth will be returned to us to drink," says cave diver, explorer and water-conservation advocate Jill Heinerth.



COURTESY NASA

а

Invite your friends

Help friends and family discover how easy it can be to get certified, and start enjoying your adventures together.

scubadivingintro.com
SCUBAINTRO





HOW LOW CAN YOU GO?

Recreational depth limits have been mutually agreed upon for years, but how we got there is a story

BY ANDY ZUNZ

Every major training agency lists 130 feet as the depth limit for recreational diving — beyond 130 feet, they require "technical" certifications, which delve more into issues such as decompression stops and nitrogen narcosis. This precedent can be traced to the U.S. Navy, which established the rule in the '50s and still requires permission from a commanding officer for a diver to exceed this limit.

THE 10-MINUTE SHIFT

"The 130-foot limit is an arbitrary depth adopted because it gave Navy divers about 10 minutes of (no-deco) time on compressed air; going any deeper made "In the early years of open circuit, the depth limit in the U.S. Navy was set at 130 FSW primarily because of the lack of good breathing performance."

no sense because the time available to do useful work was simply too short," writes Lawrence Martin in Scuba Diving Explained: Questions & Answers on Physiology and Medical Aspects.

"In the early years of open circuit, the depth limit in the U.S. Navy was set at 130

FSW primarily because of the lack of good breathing performance. To dive deeper than 130 FSW on a double hose was extremely risky," according to the experts at Dive Lab, a scuba-equipment testing facility in Panama City Beach, Florida.

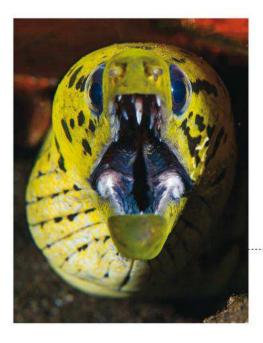
BETTER SAFE THAN SORRY

Another factor is the Navy's dive table, which lists a dive to 140 feet as having the same no-deco limits as a dive to 130 feet. So why not make 140 feet the limit?

"With tables, even going 1 foot beyond the increment mandates you move to the next increment. So, if you had a max depth of 140 feet and allowed yourself to descend to 141 feet, by the tables, you would have to calculate the dive as 150 feet," says Eric Douglas, a scuba-safety writer and former instructor. "If you failed to notice that until you surfaced, you might have omitted obligated decompression and, according to the tables, you couldn't dive for 12 to 24 hours."

A limit of 130 feet allowed a slight margin for error — a welcome factor for divers who'd never heard of a computer.





MORAY EEL

These slippery fish delight divers with their fluid movements, fearsome teeth and, sometimes, exquisite patterns

BY ANDY ZUNZ

W hether they're peeking out from crevices in the reef, weaving swiftly through the water column or hiding in the nooks and crannies of a wreck, moray eels are a welcome and sometimes common — sight for divers around the world. In all, there are about 200 species of moray eels. Here are some interesting facts about these fascinating fish.

Moray eels have two sets of jaws, à la Ridley Scott's horror creation in *Alien*. Rather than use suction to consume food as most fish do, moray eels use a hidden pair of pharyngeal jaws to thrust forward and grasp the prey once it's been trapped by the eel's oral jaws. The moray's oral teeth are pointed backward so prey have a tough time escaping.

Researchers from the University of Western Australia witnessed a laced moray eel tie itself into a knot in order to extract food from a bait bag, while another eel used its own knot as a paddle to gain better control over the bag.

Green moray eels aren't really green at all. That greenish hue is a result of the mucus covering the eel's scaleless skin. This secretion contains toxins that help protect it from disease and unwanted parasites.

Divers will often spot morays in a menacing pose, with mouths agape

SPECIES SNAPSHOT

GREEN MORAY EEL Gymnothorax funebris



MAX LENGTH: 8 feet WEIGHT: 65 pounds

CONSERVATION STATUS: Least Concern, IUCN Red List

DISTRIBUTION: Caribbean and western Atlantic

and teeth bared. But this is harmless; the eel is simply allowing water to flow through the oral cavity and over its gills to access oxygen.

8 FT.

5 With a diet consisting mainly of small fish, octopuses, squid and crabs, moray eels are carnivorous ambush hunters. Research shows that they can also hunt in tandem with other species such as grouper and coral trout. Eels will draw prey out of hiding and feast on the leftovers after the other fish attacks.

Chain moray eels can leave the water for up to a half-hour in order to hunt crabs in and around tidal pools.

7Morays are known to be aggressive, and their bite can injure divers. These eels are territorial — some species' territory extends over several miles — but usually attack only when they feel threatened.

Boray eels are primarily nocturnal. Some species also enter brackish-water areas such as tidal creeks and mangrove forests.

Experience Legendary Diving



AIR INTEGRATED

The Perdix AI is your

undersea adventures.

introduction to epic



For more info, scan QR Code.

SHEARWATER Powerful • Simple • Reliable www.shearwater.com

EXPLORE DEEPER

Define your diving beyond the basics with NAUI Worldwide, a leader in diver education since 1960. Offering courses in freediving, citizen science diving, underwater digital imaging, wreck diving, and more, NAUI training gives you unlimited access to explore the underwater world.

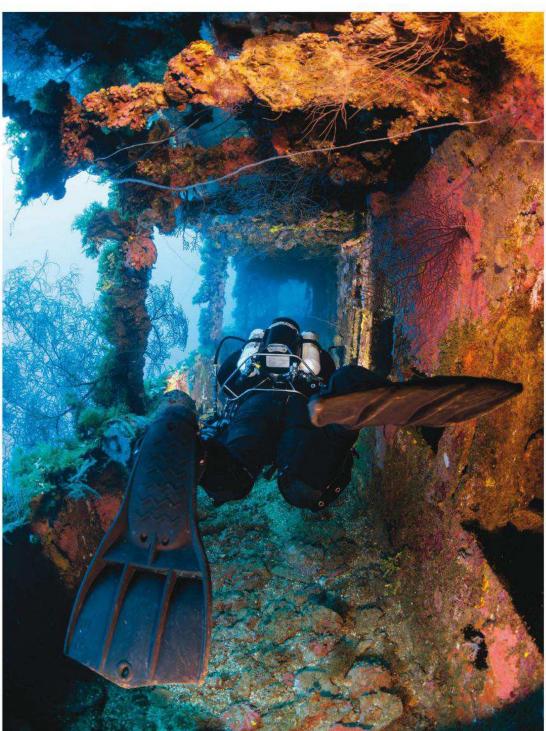
Let NAUI take you there!



Find a NAUI facility or instructor at naui.org/locate-dive-centers/



TRAIN_JUNE 2018



Shipwrecks — such as Truk Lagoon's *Fujikawa Maru* (above) — can be a refuge for marine life. Divers who penetrate wrecks must have pinpoint buoyancy control, being sure to not only avoid damaging growing coral and other life on the artificial reef, but also kicking up silt inside the wreck, which can turn a fun dive into a dangerous situation quickly. **Learn more about buoyancy control on page 24.**

TIME t

TIPS TO IMPROVE YOUR SAFETY, SKILLS AND BOTTOM

WHEN CIGUATERA STRIKES

27 SEE THE LIGHT

32 DOWN WITH SEASICKNESS

Regardless of the reason for diving below recreational depth limits, it requires specialized training and equipment. No amount of practice or ambition negates simple physics."



ERIC MICHAEL is a former editor-in-chief of both Scuba Diving and Sport Diver magazines, a veteran ScubaLab test-team diver, and author of Dive Hacks since 2015.



THE LEAD DIET

Shed the pounds and get to your ideal diving weight

BY ERIC MICHAEL

et's talk about your weight problem. When you first learned to dive, you were probably loaded down with too much weight and simply didn't know any better. When you had trouble descending, you added a couple of pounds of lead. When you started to sink at depth, you blasted a quick shot of air into your BC and swam on, unaware that your imprecise balance of ballast and buoyancy was holding you back from true underwater bliss. On the dive boat, you watched as more-experienced divers loaded minimal weights into their pockets while you scrambled to find extra lead to get the job done.

Or so you thought.

"It's important to dive with optimal weight so you can easily adjust for buoyancy changes with depth — the more gas required to offset negative buoyancy, the more dramatic the effects of compression and expansion in the diver's buoyancy compensator," says Lauren Kieren, owner of Kieren Technical, a technical, cave and rebreather instruction company in High Springs, Florida. "In addition, diving with optimal weight is key to moving efficiently through the water, easily managing descents and ascents, reducing impacts to the environment by either touching the bottom or having excessive propulsion wash hit the bottom, and, of course, having a more enjoyable experience."

"Overweighted divers risk exceeding the ability of their BC or wing to maintain positive buoyancy while on the surface or neutral buoyancy while on their dive," says Tom "T.J." Johnson, instructor and owner of Dayo Scuba Center in Winter Park, Florida.

"Getting yourself weighted properly helps you conserve gas," says Patrick Hammer, owner and training director at Scuba Emporium in Orland Park, Illinois, "and makes you ultimately more comfortable underwater."

Fine-tuning the amount of ballast needed to counterbalance the inherent buoyancy of your body and your equipment is one of the most common and frustrating challenges for any diver. But once you get your optimal weight dialed in, you'll discover a world of difference in both your performance and enjoyment. Consider these tips from our experts in your quest to get down to your ultimate diving weight.

KNOW WHEN ENOUGH IS ENOUGH

There are many physical indicators that you're carrying too much weight. The key is to be honest and thoughtful about what you're experiencing and taking the right steps to fix it.

"When you're too heavy, you drop fast, burn gas fast and get tired fast," says Hammer, who has been a PADI course director for 43 years. "When you can hover with ease and glide through the water, you know you're weighted properly."

"If you are working hard to keep up with your buddy, it's possible you are not weighted correctly," says Kieren, a passionate cave diver and technical, CCR, and instructor trainer. "A few other specific things to look for include your overall body positioning in the water; divers who are overweighted will typically swim slightly heads-up and fin tips down since they are constantly fighting the negative buoyancy. Divers who are underweighted will swim with their head down and feet elevated, fighting the positive buoyancy by constantly swimming down slightly to move forward. Take notice of what your fins are doing. When you stop moving your feet, if you immediately sink, you're likely overweighted

or do not have appropriate gas in your BC to maintain neutral buoyancy. On the contrary, if you rise, you're likely kicking to stay down or have too much gas in your BC."

SEEK PROFESSIONAL HELP

One of the best ways to identify your weighting problems is to ask your favorite local instructor or even the pro on your next dive trip for an intervention. Trained eyes can spot issues and provide solutions.

"A dive professional has the experience to notice subtle cues to determine how to adjust a student's weighting," Kieren says. "Working with an instructor and focusing solely on buoyancy and weighting for a few dives is usually the most efficient way to get yourself dialed in."

"It helps quite a bit for anyone who knows what trim and buoyancy are to look at and assist you while working on

"Overweighted divers risk exceeding the ability of their BC or wing to maintain positive buoyancy while on the surface or neutral buoyancy while on their dive."

weighting," says Johnson, who teaches divers from open water through tec, cave and instructor. "A diver's attitude (angle in the water) might not be horizontal (the preferred posture), but they might think so. Taking pictures of the diver helps as well."

"I like to use clip-on weights with my students," Hammer says. "I have the diver with 1,000 pounds of gas or less do a surface weight check, then at depth I see if they can be neutral with ease, and if needed, I add clip-on weights until I see how much they need to become neutral."

FACTOR IN YOUR GEAR

With buoyant bones, fat cells and air pockets, your body is the strongest influence on your ballast needs, but your equipment can also add significant challenges to dropping weight. Besides your exposure suit — the most obvious culprit — your BC might be your biggest contributing problem.

"The type of BC is the foremost item for consideration," says Johnson. "You want one that's got integrated weights and weight pockets. Weight belts might work to get good buoyancy but might mess up your trim."

"BCs with appropriate lift capacity are essential," Kieren says. "We often see divers wearing BCs with air cells that are far too big, which allows gas to get trapped. Instead of managing the airspace by removing the excess gas, the tendency is to add more weight, which simply makes the problem worse. The gas can also become trapped while ascending, creating a hazardous uncontrolled ascent. A streamlined back plate and wing systems with appropriately sized air cells will help divers avoid many of these issues, and also place gas in the most effective positions to create a much more stable platform."

WORK IT OUT — AND TAKE IT OFF

With your problems diagnosed, solutions can be established easily, but you won't start to see results without trial and error.

"One of the most efficient ways to determine how much weight you need is to find a shallow body of water or pool to perform a weight check, alongside a dive professional or qualified teammate," says Kieren. "To do this, use a tank with around 500 to 800 psi remaining, don your complete scuba system and thermal protection, let all of the gas out of your BC, and try to hold position around 10 feet. Add or remove some weight until you are perfectly neutral while breathing naturally. This method will help you determine optimal weighting with the cylinders you are using (either steel or aluminum]."

"Keep in mind that the weight you finish with is good for only that type of water — fresh or salt," Johnson says, "as well as the type and thickness of exposure protection you use — wetsuit, drysuit, et cetera."

And don't forget that as you progress through your training to tackle new environments, change equipment, or experience weight loss or gain, you'll be continually adjusting your ballast weight to maintain optimal buoyancy. Fortunately, all this fine-tuning means you'll be underwater.

IN THE BAG

Tools to help you swim like the fishies

SEA PEARLS QUICK-ATTACH 2-POUND WEIGHTS \$25; seapearls.com

Clip these handy bullet weights to your BC to fine-tune your ballast in a safe and convenient way. The vinyl coating is chemically bonded to the lead for increased durability.



AQUA LUNG ROGUE \$579; aqualung.com

The Rogue has only a half-pound of inherent buoyancy, so it's a great choice for divers trying to decrease their load. The smart modular system empowers divers to fully customize their rig.

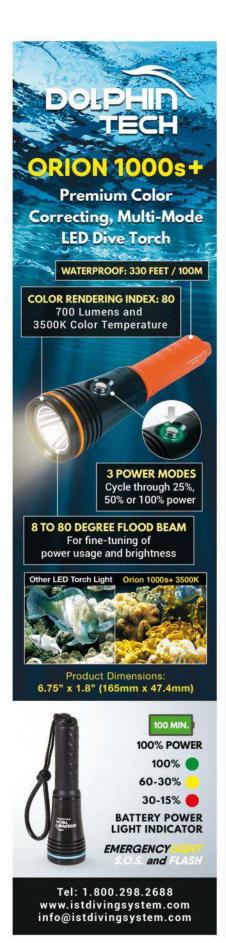


LAVACORE FRONT-ZIP Polytherm fullsuit

\$220; lavacoreinternational.com

It's technically a fabric, but it works like neoprene — but without the inherent buoyancy. The flexible laminate also can layer under a wetsuit.







What It's Like TO BE HIT WITH CIGUATERA

BY MARSHALL ADAMS AS TOLD TO BROOKE MORTON

When my family and friends boarded our charter for a week of diving and spearfishing in the U.S. Virgin Islands, we had no idea the vacation would come with lasting side effects.

On the second morning, we went diving off St. Thomas. Our friends went spearfishing, bringing back an 8-pound mangrove snapper. The captain filleted it, slicing open the liver and other organs.

Ciguatera is a toxin that lives in the organs of big reef fish: barracuda, eel, grouper — anything that feeds on smaller fish. I'd heard once in the Bahamas not to eat a fish that's larger than your arm, elbow to wrist. I used to think that following that precaution was enough.

That night, the captain fried the fish, which looked and smelled the same as any other. It was only after two hours passed that we knew something was wrong.

First came a tingling sensation on the

bottoms of our feet and in our fingertips. Then came the vomiting and diarrhea. Eight of us were sick at once, with the kids the worst. My daughter was delirious, losing all awareness of where she was. That sickness, and feeling overtired and spent, lasted two days; every time we thought it was over, another wave took hold. Needless to say, that snapper ruined our trip.

It's been years, and to this day, we still have neurological symptoms. My wife gets itchy palms if she drinks alcohol. We're all much more sensitive to heat and cold. My daughter still feels pain in her knees and joints that can last for days.

Maybe weirdest of all, we do still eat fish. We're just much more careful about the ones we say yes to.

And we're trying to get the word out: Ciguatera is a neurotoxin that stays in your body forever. There is no treatment.



BRENT DURAND is a professional underwater photographer, writer and workshap leader. View his images on social media or at brentdurand.com.

NO STROBES, NO PROB

Add vibrant color and contrast using a video light - no strobe required

BY BRENT DURAND

The first camera accessory most underwater photographers acquire after a housing is one or two strobes. The powerful flashes bring light and color back into the wide-angle or macro scene, becoming an essential component of the underwater camera rig.

But what if you're on a budget and only have your trusty dive light? Or if you shoot primarily video but want to experiment with the occasional still photo? The often-overlooked solution is lighting the still photo subject with your video light, referred to as constant lighting.

There are, of course, pros and cons to shooting still photos using a dive light.

THE PROS

1 Adds vibrant light to the scene with gear you may already have.

2 Capitalizes on your camera's burst mode for capturing fast macro action (strobes are hindered by their flash recycle time).

3 Easier shooting with the camera's Auto modes.

THE CONS

1 Not as powerful as a strobe flash. A flash will excel at freezing fast action, especially for wide-angle (like a fast-swimming sea lion).

2 Best results will come from powerful video lights with a wide flood beam.

Ready to get started? Here are some tips to help bring home some great photos lighted with your dive or video light.

1 Use your light on high power. This will produce the best color and help your camera deliver the sharpest images possible.

2 Get close to your subject. The closer your camera is to the subject, the less



Vivid shots of macro life — like this blenny — can be attained using constant lighting.

distance the light has to travel in the water, creating a brighter and more vivid image. Your macro goal should be to make the subject as large as possible in the camera LCD/viewfinder. Your wide-angle goal should be to get as close to the subject as you can while still seeing the other composition elements in the frame.

3 Relax and keep the camera as still as possible. This will minimize blurring and create sharper images. For macro shots, try stabilizing yourself with a reef stick carefully placed on bare rock or in the sand.

4 Review each image in order to improve the shot, looking specifically at composition, exposure via the histogram, and angle of the light. You also want to be sure the shutter speed is faster than 1/60 in order to minimize blurring.

PHOTO GEAR BAG

Editor's picks for powerful video lights



BIGBLUE VL6000P \$499.99; bigbluedivelights.com This 6,000-lumen video light provides an extra-wide 120-degree beam — perfect for lighting wide-angle photo and video scenes. Four power settings, replaceable battery, lighted battery indicator and a red focus light make this ready for any creative use.



SEALIFE SEA DRAGON FLUORO-DUAL BEAM

\$499; sealife-cameras.com A single button toggles between a wide flood light for photo/video, a narrow spot beam for diving, and a powerful blue light that reveals the fluorescence of critters at night. Mask and camera filter included.



LIGHT & MOTION SOLA VIDEO 2000 S/F

\$400; lightandmotion.com Compact, bright and versatile, this light delivers a 2,000-lumen flood beam for wide-angle shooting, plus a narrow 600-lumen spot beam for macro. Highlights include a 55-minute burn time, colored battery status and an easy-to-use on/off switch.

IMAGING TRAIN

t



WHAT'S WRONG WITH THIS IMAGE?

Mastering a Develop Module workflow

BY ERIN QUIGLEY

There's yin and yang involved with postproduction in Lightroom. Building an assetmanagement strategy in the Library Module often seems more like a chore than a creative endeavor,

while editing in the Develop Module requires creativity and artistic vision.

Despite their differences, both sides of the Lightroom coin are essential to reach the ultimate goal of optimizing each image.



WORKFLOW MASTERY

In the Library Module, mastery evolves from understanding the concept of Lightroom's database, and, more important, from being able to troubleshoot tiangl koefuffle

any organizational kerfuffle. In the Develop Module, mastery comes from knowing which tools are best suit-

from knowing which tools are best suited to a particular task, and having as many as possible in your bag of tricks.

At first, the process can be frustrating.

Developing an analytical eye takes time, and understanding the functionality of the Develop Module tools is easy compared with the more-advanced skill of diagnosing an image.

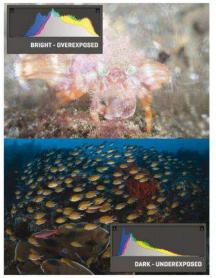
I'm often asked how I know where to start when I begin editing, and though sheer experience plays an enormous role, there are a few basic questions that help to determine the initial direction of any Develop Module workflow.

FIRST QUESTIONS TO ASK

1. Is the photo too light or too dark? This might seem rudimentary, but it's surprising how many people try to correct color before being able to see it. The photo's tonal range must be in the ballpark before you can accurately approach color. Always adjust tonal problems before any other editing.

2. Does the photo have a noticeable color cast? If you can see it, it's strong

Fig. 1



enough to interfere with Camera Calibration (more on that later) and contrast corrections.

3. Are there specific parts of the picture that you want to change while others can remain as they are? If so, make global adjustments of white balance and tone to the subject first, knowing you'll rely on the local tools to adjust the rest.





4. Will the image be going to Photoshop? This might influence when and if the picture gets cropped in Lightroom, and whether you attempt backscatter removal in Lightroom at all.

If I know an image is destined for Photoshop, especially if there's

compositing involved, I leave the photo uncropped because I want to have all pixels available for use.

If I'm going to have to do a significant amount of backscatter, bubble or object removal, then I don't waste my time with Lightroom's clumsy Spot Removal tool.

CAMERA CALIBRATION

Camera Calibration is often overlooked in the editing process, probably because of its position at the bottom of the panel stack and because its use is somewhat mysterious.

Nonetheless, it's an important first step for every RAW file because it determines the contrast and color interpretation of the photo, which can greatly influence other decisions you make as you work on the file.

By default, the camera profile applied to RAW images as they're imported is



called Adobe Standard, a profile made by Adobe specifically for your camera based on extensive testing.

The idea is that the same scene photographed by different cameras will look the same once the Adobe Standard setting is applied (assuming that other color settings such as White Balance are also identical).

All of your camera's color profiles should appear in the Profile menu. These profiles are created by Adobe to emulate the effect of selecting that color profile and using the JPEG format on your camera. Don't worry about the color sliders below the profile menu — they're meant for advanced users.

The Camera Calibration panel gives you the opportunity to apply a profile of your choice. If your image is a JPEG, PSD or TIFF, you can skip Camera Calibration since it works only with RAW files.

BASIC WORKFLOW

- 1. Camera Calibration
- Crop, unless Photoshop will be used
 White Balance
- Tonal Adjustments (skip Clarity, Vibrance and Saturation until the end)
 HSL
- 6. Detail for import sharpening

7. Jump to the Adjustment Brush, Graduated Filter and Radial Filter to make local edits

8. Add Global Clarity, Vibrance and Dehaze as a finishing touch (only if needed!)

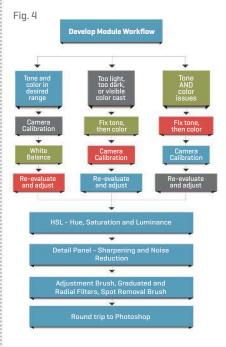
9. Round trip to Photoshop if needed

Deciding on an initial direction isn't always easy, so here's a flowchart at the bottom to help you get started.

Just remember: Fix the biggest problem first.

PRO TIP

Stay loose! Post-processing is fluid; it often requires jiggling settings that have already been adjusted on a first pass. Don't be rigid about workflow, and remember to analyze each image separately for its specific needs.





ERIN QUIGLEY is an Adobe ACEcertified consultant and awardwinning shooter. **Goaskerin.com** provides tutorials and instruction for underwater photographers. **ERIC DOUGLAS** has been a dive instructor, medic, and author on scuba safety and adventure. Visit his website at **booksbyeric.com**.



DYING TO BRAG

Seeking a personal best, a diver focuses on all the wrong numbers

BY ERIC DOUGLAS

E verything was in place. Don felt good and was ready. Tonight was going to be the night he set a new personal depth record and broke 250 feet of seawater on a single tank. He couldn't wait to get back to the dive shop and tell the gang.

THE DIVER Don was a 27-year-old male. He was

an avid diver and had made more than 100 dives in the previous two years. He held an advanced open-water certification and was in good shape with no known health issues. He was a big man — his doctor had told him he should lose some weight, but it wasn't causing any immediate health problems so it wasn't a big concern for Don at the time.

THE DIVE

The plan was simple. Don recruited three dive buddies to help him set a personal depth record. He wanted to brag that he had been below 250 feet on a single tank of air. Don's buddies set themselves up at various depths along the way to serve as support divers in case something happened.

The only time they could all get together was after work, so they were going to make this dive at night. Don reasoned that diving at night would make it easier; they would be able to see one another's dive lights if they got separated.

They were diving in a protected ocean cove and entered from shore. The underwater terrain dropped off quickly, going hundreds of feet deep before leveling off. Instead of descending directly down a line, Don planned to follow the bottom terrain to reach his goal.

Surf was mild for the entry, and the dive began without any problems. Visibility was limited at the dive site because of recent storms, but there was never any discussion of aborting the dive.

THE ACCIDENT

The team included four divers in two buddy groups.

One diver accompanied Don to 100 feet, and then stopped to wait for his return. He planned to give Don air from his alternate air source in case Don was running low. Don was not carrying an additional air source.

The two remaining divers from the other pair buddied up with Don to continue his descent. At the next stage, around 150 feet down, one of the divers became separated from Don and the last remaining diver. After searching for the others in the poor visibility, he decided to return to the surface.

He said later that he felt the effects of nitrogen narcosis and didn't feel comfortable continuing with the dive under those circumstances.

Finally, Don and the fourth diver reached 200 feet, but at that point, Don's last buddy signaled that he had vertigo and could not continue. Don escorted the diver back to 160 feet, where the diver indicated his symptoms were decreasing.

At that point, Don decided to attempt the depth record on his own and continued his descent by himself.

Don's partially skeletonized body was found nine months later by another diver, below 200 feet.

ANALYSIS

One of the most common questions nondivers ask is, "How deep have you gone?" For some divers, being able to answer with an impressive number is a point of pride.

In many locations, there are amazing shipwrecks or exotic reefs below the recreational diving limit of 130 feet. Most of the time, though, there isn't much to see below 130 feet that you can't see much shallower. The recreational depth limit was put in place as a point where divers could reasonably see most of what the ocean has to offer and still be able to make it back to the surface without having to complete mandatory decompression or face issues such as nitrogen narcosis and oxygen toxicity.

Regardless of the reason for diving below recreational depth limits, it requires specialized training and equipment. No amount of practice or ambition negates simple physics.

With each atmosphere of pressure, you consume the air in your tank that much faster. This is a basic rule taught during open-water training. If it took you two hours to breathe down a standard scuba cylinder sitting on the surface, it would take you an hour to do so at 33 feet. That assumes you are sitting quietly on the bottom, not swimming and breathing harder than you did at the surface. At Don's goal depths, a standard scuba tank will last only a fraction of the time it would on the surface. This is even more six atmospheres of ambient pressure those effects are significant. Nitrogen narcosis can lead to feelings of euphoria, poor judgment and confusion.

Night diving can be beautiful and mesmerizing. You are likely to see animals and reef behavior on a night dive that you would never see during the day. Diving at night can also remove references to up and down and deprive you of sensory feedback. A night dive is no place to be narced. In this case, the low visibility reported by Don's dive buddies likely served to make the situation worse.

A final cause for concern with diving air at depth is oxygen toxicity. At 218 feet, the oxygen in air becomes toxic. Oxygen toxicity can lead to seizures and unconsciousness. A seizure underwater is a recipe for drowning because an unconscious diver cannot

"The effects of nitrogen narcosis take hold as shallow as 100 feet. Below 165 feet — six atmospheres of ambient pressure — those effects are significant."

of a problem in Don's case because they were diving diagonally instead of making a vertical descent to the bottom. Making this dive, in the way they attempted it without additional scuba tanks or greater-than-normal air supplies — is nearly physically impossible without running out of air before they surfaced.

Another cause for concern with this dive - and a great example of the need for additional training - is the lack of planning for decompression after the dive. According to the U.S. Navy Dive Table 5 (1999), five minutes of bottom time at 200 feet requires 7:40 of mandatory decompression at 10 feet. Five minutes at 250 feet requires 11:20 of decompression. Don probably didn't plan to spend more than a minute at his maximum depth but based on this profile, he likely would have needed several minutes of required decompression even using a dive computer that reevaluated his depth and time every minute of the dive.

Don's cause of death was ruled a drowning. One scenario is that nitrogen narcosis caused Don to become confused and he ran out of air at depth. The effects of nitrogen narcosis take hold as shallow as 100 feet. Below 165 feet — retain a regulator in his mouth. In Don's case, he was alone, so there was no one there to catch his regulator.

We will never know what happened in Don's last few minutes, or whether he reached his goal. He may have had a seizure and lost consciousness. He may have been so disoriented by the effects of nitrogen narcosis that he simply ran out of air and didn't realize it. Ultimately, he drowned alone because he wanted to make a dive to a depth he was not prepared for so he could brag about a number.

LESSONS FOR LIFE

■ Get the training to make the dive. Divers often make dives below recreational depth limits safely. To do so, they need special equipment, training and breathing-gas mixes.

Plan the dive. Once you have the training and equipment, plan the dive to make sure everyone comes back safely.

■ Don't let goals get in the way of common sense. Don died for ego and bragging rights. Anyone with advanced training could have told him there were problems with this dive, but he wanted to brag.



ASK DAN How can I avoid seasickness?

BY DIVERS ALERT NETWORK

I've been a diver for many years, and have suffered seasickness on almost every boat dive. It's about to make me consider giving up diving. Can you help me?

otion sickness results from a disconnect between the eyes and the vestibular system [the semicircular canals of the inner ears]. The brain receives conflicting signals from the eyes, which suggest that the body is stationary [based on its position relative to the boat], and the inner ears, which sense that the body is moving.

Signs and symptoms of motion sickness include sweating, nausea, headache, drowsiness, increased salivation, dizziness and vertigo (a sensation of spinning). Vomiting may bring temporary relief, but the symptoms will not resolve completely until the inner ear acclimates to the motion — or some effective treatment is found. Generally, the more time a person spends on a boat, the less severe the sickness becomes. Even in the absence of treatment, seasickness tends to diminish after a few days. For some people, adjusting to the motion may occur readily, but readjusting once they're back on land might take some time [often as much time as was spent on board]. This is known as *mal de debarquement* or disembarkment syndrome.

MEDICATIONS

The three medications that are most commonly used to treat seasickness are dimenhydrinate, meclizine and scopolamine. Dimenhydrinate, the active ingredient in Dramamine and Gravol, is effective for many people but can cause drowsiness. Meclizine is the active ingredient in Bonine, Anti-vert and Dramamine 2, and is a good alternative for people who are particularly susceptible to the drowsiness that dimenhydrinate can cause. Both dimenhydrinate and meclizine are available over the counter in the U.S. Scopolamine is a prescription medication in the U.S. and is available as a transdermal patch [Transderm Scop].

Whether a drug is safe for use while diving depends on how it affects the person who is taking it. One must consider any side effects the drug causes and whether it controls symptoms adequately. For these reasons, it is important to have experience taking any medication you plan to dive with before you go diving. Before you use an oral medication or a Transderm Scop patch to prevent motion sickness, try taking the recommended dose (or wearing the patch) on dry land for at least 24 hours. If side effects occur, discontinue using the medication and avoid it in the future. Beside being potentially distracting or

"Plainly stated, there is no cure for motion sickness, but a plethora of medications, devices, procedures and herbal remedies are touted to alleviate its symptoms."

disorienting, some side effects might be similar to symptoms of decompression sickness, which might mask symptoms or cause diagnostic confusion.

As with any drug, discuss with your physician your intention to use one of these medications in the context of diving. If your doctor is unsure about what to advise, he or she can call DAN for a consultation. Always remember to do a thorough self-assessment before entering the water to make sure you feel well. If you experience any unusual symptoms while underwater, abort the dive.

OTHER THERAPIES

Aside from these drugs, other strategies for minimizing seasickness include sufficient rest and hydration, and eating plain foods such as saltine crackers, which can help to absorb excess stomach fluids. Consuming ginger can be helpful. Wristbands that stimulate the Nei-Kuan pressure points are effective for some people (and completely useless for others). These points are located between the two prominent tendons in the wrists, about 1 inch from the palm of the hand. Some of these bands feature electrodes and utilize mild electrical stimulation, while others feature a hard button and rely on mechanical pressure for their effectiveness.

Aboard the boat, there are a few additional tips that might help. Keep your face away from engine exhaust fumes and in the breeze if possible. Focus your eyes on the horizon or other distant objects, and consider your position aboard the vessel. Avoid high places, and stay toward the middle of the boat to minimize the movement you're subjected to. Limit alcohol consumption, and take steps to reduce anxiety, fatigue and overheating. Injuries and infections of the inner ear can make people more susceptible to seasickness.

Plainly stated, there is no cure for motion sickness, but a plethora of medications, devices, procedures and herbal remedies are touted to alleviate its symptoms. If you have discovered a safe system that works for you, stick with it.

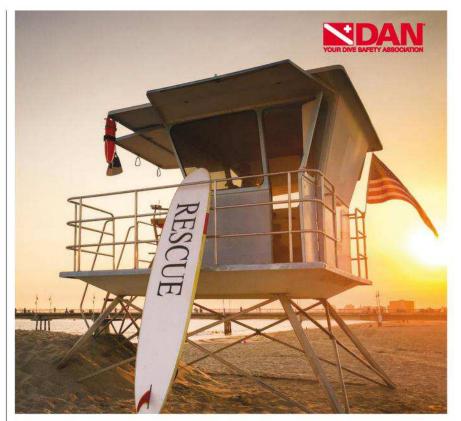
For more on motion sickness and diving, visit dan.org/health.

SCOPOLAMINE

Before you use a Transderm Scop patch to prevent motion sickness, try wearing a patch on dry land for at least 24 hours. If side effects occur, remove the patch and avoid scopolamine in the future.

To use the patch, wash and dry the area behind your ear, and affix the patch at least one hour before boarding the boat. Avoid alcohol while wearing the patch.

People with glaucoma or an enlarged prostate should not use scopolamine. If the medication gets on a finger and then into an eye, pupil dilation will likely result. Side effects of scopolamine include dry mouth, drowsiness and blurred vision. Less frequently, disorientation, memory disturbances and serious side effects such as hallucinations might occur. ■ Some of these side effects (and some symptoms of scopolamine withdrawal, which can occur after three or more days of use) might be confused with symptoms of decompression sickness, so pay careful attention to symptoms after diving, and don't hesitate to seek evaluation by a physician trained in dive medicine.



YOU MAY HAVE ONLY MOMENTS TO RESPOND.

BE PREPARED WITH DAN SAFETY GEAR

Every day, divers and emergency-response personnel around the world trust DAN safety gear to perform in an emergency. That's because DAN products are developed, tested and refined with input from leading researchers and doctors. Built to withstand even the harshest marine environments, DAN safety gear helps ensure you are always ready to respond at a moment's notice.



OXYGEN UNITS | FIRST-AID KITS | ACCESSORIES



DAN.org/STORE

Finding peace on vacation

Even a non-diving mom loves Kids Sea Camp



GIVE THEM A WEEK THEY WILL REMEMBER FOREVER

Article by Janet Martin, three-time Kids Sea Camp family and a non-diver

So, I wanted to tell you about two things that happened to me today that reminded me of Kids Sea Camp. To be truthful, there is really not a day that goes by that someone in our family doesn't speak of Kids Sea Camp.

It is August 15. This morning, when I woke up and went downstairs to the kitchen to make coffee, I looked out the window saw the subtle changes of the season. The color of the water was different, the wind was blowing the trees differently and, when I opened the door, the air had a crispness to it and it smelled different — it smelled like fall! Ahh! I love fall, but it means winter is just around the corner. I am not a fan of winter. I try to embrace it, but my thoughts always return to Kids Sea Camp. I think of Kids Sea Camp and I'm a non-diver. that's how amazing the weeks are.

The second thing that happened was with my son. We went to get the mail, and he received an envelope from PADI. He was beyond excited. Enclosed was his PADI Seal Team card. His smile will be in my memories forever. He is a PADI Seal because of Kids Sea Camp. Kids Sea Camp is special to us. Perhaps that is why we think of it often. Our children now can explore



and experience things in life that before they would not have had the opportunity to do.

My name is Janet Martinz. My husband, Tim, and our two children, Isaac (8) and Allie (5), would like to tell you about our experience with Kids Sea Camp. It has taken me a long time to focus on describing what Kids Sea Camp truly means to me. I have had a lot of thoughts run through my head, but I keep coming back to the word "peace." Kids Sea Camp means peace to me. Sort of silly, I know, because you would not naturally put these two things together.

Our journey with Kids Sea Camp began with a desire to get back into traveling. After the long winters everyone has endured on the Northeastern coast, we were looking for a vacation where we would be happy, comfortable and accommodating, and of course, Tim has to dive.

I often read my husband's dive magazines (being a non-diver) to see what is happening in the dive world. I came across a Kids Sea Camp advertisement and asked Tim, "What do you think about this? Should we call and see what this is about?" (Keep this in mind, this is not something we would ever do.) Curious and desperate to find a solution, he called (I believe several times). We had a lot of questions. The Martins are thoughtful and practical decision-makers; we fail horribly in the "quick decision" department.

So in July 2013, the Martins did something we have a hard time doing — we took a leap of faith and went to Cayman Islands at Cobalt Coast for the Kids Sea Camp experience. In return, we



got peace ... we finally got peace. Kids Sea Camp literally

changed our lives forever. It was one of those "ah ha" moments, or for some, one of those handfuls of moments that have forever affected them. Corny, I know, but it's true.

I still remember the feelings I had on the first morning when I arrived in the Grand Cayman for the first time. I was in awe.All that was going through my head was the fact that all of these kids do this with their families — and they are happy, they get along and these kids can dive! I want this for my children. I want Tim to dive with Isaac and Allie. I was getting more excited by the moment.

It amazes me still that kids can dive! I wanted this for my children so badly that I was somewhat obsessed with it. I



spoke of diving and Kids Sea Camp to Tim all year. I know he was tired of me talking about it. But, I felt Isaac and Allie had found their "thing." Really, I was so happy.

We live in a small, rural area with limited opportunities. We essentially have to create opportunities for our children, and this is an opportunity that I am glad we chose.

Kids Sea Camp's goal is to take care of you, and everything was taken care of. They provide a safe diving haven for families. Everyone at Kids Sea Camp had the same goal for their families. This is something that we really appreciated. We were so happy with the Cobalt Coast vacation that we have returned every year. Tom and Margo Peyton relieved our worries, which ultimately led to peace.

Kids Sea Camp was run like a well-rehearsed orchestra. I don't know how else to describe it. It was a beautiful week-long masterpiece. Everything just worked. Every beat and note was

perfectly in place. Tom and Margo constantly made sure everything was perfect.

At the end of the latest Kids Sea Camp trip in St Lucia at Anse Chastanet, Isaac, only eight, was able to participate in his first 12-foot dive with his instructor and his father. WOW! The thought makes me speechless, and happy tears come to my eyes. Allie was in the SASY unit looking at and swimming with the resident reef fish. Her week in St Lucia allowed her to



find her "inner fish" ANSE CHASTANET and become even more

passionate about animals and sea life. Her happiness gives us peace.

Kids Sea Camp has become (in our lives) this thing you do every year. People need to go to the dentist, eye doctor, hairdresser, get new shoes. The Martins need to go to Kids Sea Camp.

For us, like everyone, time is precious.Vacation time for us is hard to get, so planning a vacation with our precious time is stressful. Kids Sea

Camp has given us peace about our time. Peace, for our family, has come on many different levels. Tim is able to go diving and not have the worry of me or the kids — I'm at peace. He is under the water, escaping his mind and responsibilities — he's at peace. I know where my kids are and who they are with. Tim is diving, food is great, the place is great — I'm at peace. The kids can come and go, eat and drink, meet new friends, dive, play and learn we are all at peace.

Sometimes it is big moments that change our lives — births, deaths, marriages. Sometimes it is people or situations. I can honestly say Kids Sea Camp is one of those moments for us. The people we have met and the experiences we've had all have contributed to the peace we desired for our precious time. Peace...it's important, it will change your life ... it is good for you.





TRANSFORM YOUR PHONE INTO A TOOL FOR OCEAN PROTECTION



DIVE AGAINST DEBRIS® MOBILE APP GET IT ON Google Play

Download on the App Store

PROJECTAWARE.ORG



▼▲ 12:30



GET A LIFT

We tested 14 jacket, back-inflation and women's BCs

BY ROGER ROY AND ROBBY MYERS PHOTOGRAPHY BY JON WHITTLE



PRICE \$499.95 CONTACT CRESSI.COM

With almost no inherent buoyancy, the Carbon manages to be comfortable and supportive without being bulky. It can easily be fine-tuned for a snug fit, and took the high score for stability. One diver noted that it "lets you float in most orientations with little effort." The weight pockets slide right in, and took top scores for loading and ditching. Eight metal D-rings, an octo pocket and two zippered cargo pockets leave plenty of room for accessories, although the pockets zip toward the back, making them tougher to access. The Carbon features a number of extras,

but that's not why divers overwhelmingly chose it as their favorite. Like an alchemist turning lead into gold, the Carbon takes all of the basic elements of a good BC and makes them shine. The Carbon is our Testers Choice for jacket BCs.

OVERALL COMFORT		
	- t	
POOR	EXCELLENT	
STABILITY A	ND ATTITUDE CONTROL	
	D D	
POOR	EXCELLENT	

HEAD-TO-HEAD TESTING



HOW WE TEST ERGO TEST

HOW WE SCORE

Test divers assigned scores

to BCs in each

evaluation cate-

gory as follows:

ROGER ROY

has been a diver

for more than 35

years and ScubaLab

, director since 2013. He first learned to

dive while working

as a firefighter,

training to join

the department's

search-and-

rescue team.

5=excellent

4=very good

3=good

2=fair

1=poor

ScubaLab test divers equipped with underwater slates and waterproof test sheets recorded their observations about each BC's performance and assigned scores and notes in each of the following categories:

ASSEMBLY Ease

and security of making tank and hose attachments

LOADING WEIGHTS

Ease of loading and security of integrated-weight system

COMFORT Overall comfort, both in and out of the water

ADJUSTABILITY

Ease of adjusting and range of adjustment

ATTITUDE AND STABILITY In swim and

Cont'd on pg 38>>

SCUBADIVING.COM JUNE 2018 / 37



>> Cont'd from pg. 37

vertical (head-up and head-down) positions; overall sense of control of attitude

STOWAGE

Usefulness and accessibility of cargo pockets, Drings, loops, etc., for securing accessories

VALVE OPER-

ATION Ability to control when inflating/deflating by power inflator and manually; ergonomics of the controls

ASCENT CONTROL

Ability to maintain desired ascent rate and attitude

SURFACE FLOAT-ING POSITION

Comfort and stability while inflated at the surface

DITCHING WEIGHT SYSTEM Ability

to drop weights quickly; weights secure from accidental ditching

OBJECTIVE TEST

We conducted three in-water tests (in fresh water) on each BC to measure criteria important to performance and safety.

FLOW RATE TEST

We tested the ability of each BC's exhaust system to prevent uncontrolled



BEUCHAT masterlift x-air comfort

PRICE \$506.22 CONTACT beuchat-diving.com

With its rigid back pad wrapped in plush foam and huge air cell that hugs your body snugly without being too tight, it's no wonder test divers found the Masterlift to be what one described as "extremely comfy and secure." Testers had initial hesitation with the BC's quickrelease tank band but felt it was very secure once they figured out how to adjust it. The weight pockets slide in easily, and the design allows you to actually see the buckles. There's also a Velcro flap that cinches after the buckles are in; some divers found the extra beltand-suspenders security a bit of overkill. The Masterlift took the highest score for stowage thanks to its roomy pockets. They feature internal D-rings and bungee cords, and remain easily accessible, even when this beast of a BC is fully inflated. Multiple divers picked the Masterlift as one of their favorites of the test.

OVERALL	COMFORT

POOR	EXCELLENT
STABILITY AND ATTITUD	ECONTROL
POOR	EXCELLENT

MARES prestige

PRICE \$550 CONTACT mares.com

Most divers liked the Prestige's Slide & Lock weight pockets, which display a green indicator when locked and require a two-step process to secure. However, a few divers tended to hit the lock button on the handles while trying to shove them in, activating the lock early. The BC's low-cut air cell took top score for surface floating position. Underwater, the BC fit nicely and kept the tank "rock solid," as one tester said, with no rolling or pitching. "Goes horizontal to vertical and back without thought" is how the diver described its stable attitude control. The cargo pockets are a bit tight, but the octo pocket, D-rings and grommets are well-placed. The easy-to-find dump valves operated flawlessly, and the ergonomic inflator won praise for its textured buttons and precise buoyancy control, earning the best score in the category for ascent control.

OVERALL COMFORT







MARES prime

PRICE \$380 CONTACT mares.com

This budget-friendly starter BC lets you add optional integrated-weight pockets. We tested it with integrated weights, which have a pinch-to-release system that worked well. Divers found the Prime easy to set up and adjust, and stable underwater, with what one diver called "really good attitude control." Divers noted a bit of squeeze on the surface but also a nice heads-up position. Its plastic D-rings are sparse, but it has useful octo and gauge pockets. There are large cargo pockets, but testers really didn't care for the hookand-loop flaps that secure them, which close tightly but are tough to open and interfere with accessing contents. The Prime doesn't skimp on lift — we measured 50 pounds in size large. The Prime has the same inflator as the Prestige, and took similarly high scores for ascent control and valve operation.



SEAC

PRICE \$589 CONTACT seacusa.com

The ruggedly built Pro 2000 combines a thick, cushioned back pad with an air cell that provides 41 pounds of lift in size medium to create a beefy BC that is comfortable and capable. The tank-band-mounted trim pockets made securing the tank more difficult. The integrated weights, on the other hand, couldn't have been simpler to load — the visible externally mounted buckles were easy to line up and popped right into place. The BC's attitude and stability were rated very good, although some divers noted it favored a slightly vertical orientation. Its floaty disposition and stiff inflator buttons — which were a little too eager to add and dump air — made it difficult for some to maintain neutral buoyancy. Testers found the cargo pockets tough to reach, but the large number of D-rings and drop-down pocket leave plenty of storage options.





ascent in the event of a stuck power inflator. Each BC, at 10 feet and loaded with 20 percent of the manufacturer's claimed buoyant lift, was held upright while the power inflator and upper exhaust were simultaneously activated for 20 seconds. Industry standards require that, at the conclusion, a BC has not become positively buoyant.

BUOYANT LIFT

Each BC (in size medium unless otherwise noted) was fully inflated with the power inflator while mounted upright to a neutrally buoyant bucket, which was then progressively weighted until the BC would not support another pound without sinking.

INHERENT BUOYANCY

To determine how weighting would be affected by built-in buoyancy, each BC (in size medium unless otherwise noted) was submerged and air was removed from bladder, pockets, padding, etc. Weights were then added in half-pound increments until the BC would support no further weight without sinking.

This year's BCs had a wide range of accommodations for accessories. The **Beuchat Master**lift's roomy pockets feature internal D-rings and bungee retainers, and remain easily accessible even when the air cell is fully inflated. Aqua Lung's Roque has more modest-size cargo pockets, along with some attachment points. Riptide's Mutineer and Mira have no cargo pockets and only a pair of D-rings, but do have several places to add optional D-rings and a hidden Velcro pocket in the back pad to store a folded SMB or lift bag.





TUSA

PRICE \$369 CONTACT tusa.com

There's nothing fancy about the Liberator, but divers found much more than meets the eye. It took top score for assembly thanks to its simple, effective tank strap and tank-buckle cam. "Wow" was how one tester described the BC's comfortable, supportive fit. Although it has a fair amount of padding, it was almost dead neutral in the water. One diver noted that it was "so lightweight, I don't even feel like I'm wearing a BC." Divers found the Liberator stable and flexible, and able to easily switch between vertical and horizontal attitudes. Its inflator is ergonomic (except for the oddly shaped mouthpiece) and provides precise flow control. The zippered cargo pockets are big and easy to access. Providing performance well beyond what you might expect from such a budget-friendly BC, the Liberator is our Best Buy.



ZEAGLE

PRICE \$499 CONTACT zeagle.com

- 15/

The Bravo earned the second-highest score for assembly — no small feat considering the hassle that can come with some double tank bands. The Bravo uses an adjustable quickrelease valve strap to hold things in place, and divers appreciated the assist. Weights load easily, with plastic D-rings attached to the outside of the pockets, giving additional leverage. It scored second place for ditching; one diver commented, "Sure thing — one pull." The Bravo earned very good scores for stowage thanks to its cargo pockets, six stainless Drings and two sets of grommets. The BC was very comfortable, but some found the sizes a little large - including medium-size divers in small BCs. It was stable but tended to pitch slightly on the surface and underwater. Its exhaust valves and inflator were very good for maintaining buoyancy and controlled ascent.







AQUA LUNG Rogue

PRICE \$579 CONTACT aqualung.com

The Rogue shares a modular design with Aqua Lung's Outlaw, but without the Outlaw's überminimalist approach. The Rogue's harness (rated very good for comfort) uses the same quick-release connectors that allow up to 27 size configurations of back plate and straps. But it has more lift — with a 35-pound air cell — four stainless D-rings, a right-shoulder exhaust, and drop-down cargo pockets big enough for an SMB. The integrated weights mount vertically, which lets them dump in a flash but makes them a pain to load. With its bigger air cell (compared with just 12- or 25-pound for the Outlaw) and larger harness, the Rogue can't quite compete with the "div-ing without a BC" feel of the Outlaw. But it was chosen among the favorites of multiple divers and is worth a look from those who want more lift and extras than the Outlaw offers.

OVERALL COMFORT





BEATING THE BAND

Among the favorite tank-band buckles was Scubapro's Super Cinch, which has a quick-release stainless latch and a Velcro-secured strap that was secure and simple to operate. Another favorite was Aqua Lung's GripLock, which also has a guickrelease metal latch with a Velcro strap-length adjustment, but with a slightly lower profile than Scubapro's. Not new but still drawing praise from test divers was Tusa's Ritetite. which has a twoposition cam that holds the strap in place when closed halfway, making it much easier to set up.

BACK-INFLATION BCs

CRESSI commander

PRICE \$549.95 CONTACT cressi.com

The only BC in its category with a full back plate, the Commander also had the largest air cell, with several pounds more lift, and big cargo pockets. That makes the Commander larger than the others but didn't hurt it in performance. The well-padded harness earned very good scores for comfort, and the big air cell is well-contained with a wraparound bungee system that keeps it streamlined. While the back plate makes it less compact than the others, it doesn't carry a weight penalty, with the Commander weighing within a few ounces of the average in its category. The zippered cargo pockets are easy to access and, along with the Commander's eight metal D-rings, earned the top score for stowage. Some divers found the weight pockets digging into their hips, but the no-fuss Flat Lock latches were rated very good for loading and ditching.





SCUBALAB

S

SOFT VS. HARD

Like all things scuba, soft and hard BC back plates seem to have their partisan camps. Since this test included a split of backplate types across all categories six with soft plates and nine with hard — we thought it would be interesting to compare comfort and stability scores by backplate type. The results? Combined comfort scores were within one-tenth of a point between soft and hard plates. Stability scores were slightly higher for hard plates, but that was likely more a function of fit than design type, since more of our soft-plate BCs were available in limited sizes. So what did we learn? That comfort and stability in a BC is less about design type than it is about all the complex details of how that design is executed.



RIPTIDE MUTINEER PRICE \$549 CONTACT istsports.com

Riptide has reintroduced its BC line, now distributed in the U.S. through IST Sports. Lightweight (under 6 pounds in our test size) and with a soft back plate, the Mutineer packs up tight for travel. The harness, with a cummerbund and wide back pad, doesn't have much cushioning but has some cool details such as sliding sternum strap mounts and shoulder straps that swivel on D-rings. That helped it tie the top score for comfort, and the wide adjustment range was especially welcome considering we had a single size to test. The integrated weights load easily from the top through wide zippers and are rated for 12 pounds each. Secured by Velcro with flaps protecting the pocket corners, they were secure but simple to release with the web loops, though divers with heavier weight loads had to finagle them out of the pockets after ditching.





ZEAGLE covert xt

PRICE \$349.95 CONTACT zeagle.com

When we tried the original Covert, we joked that its fit reminded us of a corset. With an overhaul of the harness, air cell and integrated weights, it's less like an undergarment and more like a tactical vest. Despite minimal padding, it received top scores for comfort and stability and diver comments like "snug and comfortable" and "precise attitude control." The Covert XT has picked up a few ounces, but it's still under 6 pounds in medium. And all the changes have made it better, with more-rugged materials (especially in the air-cell cover), more lift and more options for storage, including web loops to secure accessory pockets. The redesigned integratedweight pockets load easily from the top and take 14 pounds, while rear trim pockets hold 10. Even better than the original, the Covert is our Testers Choice for back-inflation BCs.







RIPTIDE

MIRA

PRICE \$549 CONTACT istsports.com

The Mira appears virtually identical to Riptide's Mutineer, with a cummerbund, soft back plate and a pair of tank bands, as well as swiveling shoulder straps and a sternum strap that can be quickly moved up or down about 3 inches. That helped the Mira tie the top score for adjustability, and earn a very good score for comfort. For stowage, it suffered competing aqainst jackets with big cargo pockets. But while the Mira comes with just two D-rings, it has sleeves to add up to nine more. Some test divers noted more inherent buovancy than they liked, and wished there were rear trim pockets to distribute the weight. But divers found the Mira travel-friendly, and rated it very good for surface floating position and overall assembly, singling out features such as the unobtrusive but useful carry strap and mesh rear pocket for a strobe.

OVERALL COMFORT





SEEING IS BELIEVING Integrated-

weight pockets can be a real hassle if you have to struggle to engage the lock. Most BCs make a nice, reassuring click when you hit the sweet spot, but sometimes it isn't audible or you think you hear it even when you don't, leading to accidentally dropping weight. External or partially visible buckles, such as those on the Seac Pro 2000 and Beuchat Masterlift X-Air, take out the guesswork and make it easy to line up the lock and visually confirm your lead is properly stowed, even if you missed the initial click. The



Mares Prestige takes this idea a step further with the colorcoded indicator on the pocket's handle to let you know you're good to go.

WOMEN'S BCs

SCUBAPRO

BELLA

PRICE \$656 CONTACT scubapro.com

The graphics on this redesigned jacket are an eve-catcher, but there are also lots of new details, including a quick-connect tank buckle and a new shoulder-strap design with triangular stainless connectors. The result? The Bella was rated excellent for setup, with one tester calling it the "best tank band in the test." Women divers praised the Bella's fit, giving it the top score for comfort and for stabil-ity and attitude control. "Perfect buoyancy," one diver commented. It took top scores for ascent control, valve operation and surface floating. The integrated weights, which secure with a buckle, were rated good for ditching and very good for loading - "Couldn't be easier," one tester said. Some divers found the pink accents a bit much, but when it came to performance, the Bella was a standout. The Bella is our Testers Choice for women's BCs.

OVERALL COMFORT

ter ter entre		
POOR	EXCELLENT	
STABILITY AND ATTITUDE CONTROL		
POOR	EXCELLENT	



winning BCs?

While test divers rated each BC on nearly a dozen separate factors, as always two were key: comfort and stability. Other factors are important (sufficient lift, weight-system operation, valve and exhaust controls, storage), but if a BC doesn't fit well and provide stability and control, the rest

doesn't matter.



ZEAGLE MARINA PRICE \$525 CONTACT zeagle.com

Like the Bravo, the Marina's back plate is made of heavy webbing with generous padding. But the two are quite different, with the Marina's back pad, waist section and air cell tailored for women. Female test divers judged the effort successful, giving the Marina very good scores for comfort and stability. The integrated weights, which handle 10 pounds each, were rated very good for loading and took top score for ease of ditching. A pair of rear trim pockets are well-placed but pretty tight, with the max 3 pounds each. The BC was rated very good for ascent control and valve operation, though more than one diver noted the rock-hard inflator mouthpiece. Zippered pockets are large and accessible though snug on the surface; with functional octo pockets and six stainless D-rings, the Marina took top score for stowage in its category.





IN A PINCH

Pull-to-release integrated weights are wellregarded for their smooth, simple release system. Pinch-to-release systems, such as those used in the Mares Prime and Scubapro Bella, add another step to the ditching process. But the benefit is they help ensure weights aren't accidentally ditched, a nuisance at the surface but a danger if it happens at depth. Some test divers have questioned whether a panicked diver would be able to operate the two-step release during an emergency. But in our experience, panicking divers are perfectly capable of undoing everything and anything. The problem isn't that they don't know how to drop the weights, but that they don't think to do so when they need to. Thorough training and adequate practice will always be the most important safety factors on any dive.

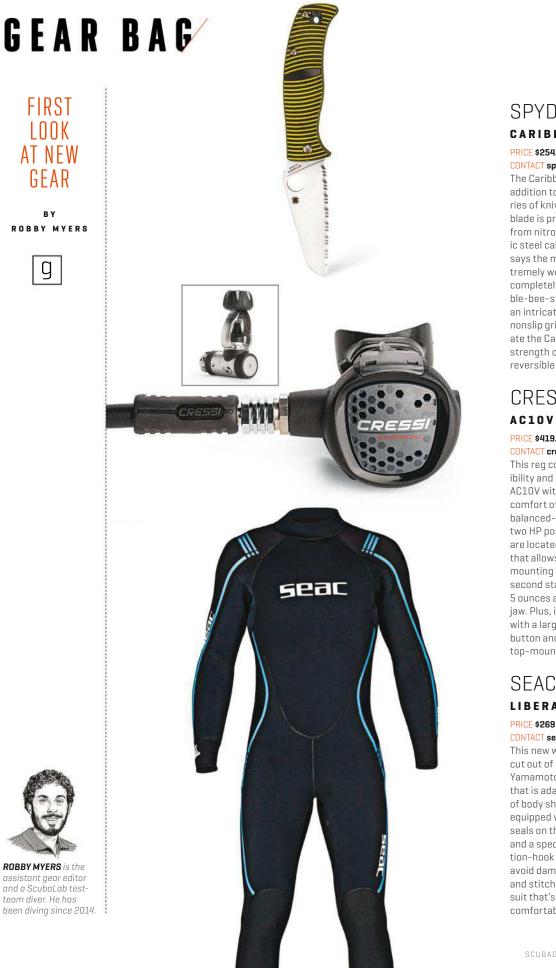


TEST TEAM

(LEFT TO RIGHT) TOM WUEST, PATRICIA WUEST, MIKE HURLEY, BECCA HURLEY, ROBBY MYERS, ROGER ROY, DAVID WOODS, MELISSA SMITH, ANDY ZUNZ AND KAITLIN DANCA GALLI

TEST DIVES WERE CONDUCTED AT BLUE GROTTO DIVE RESORT IN WILLISTON, FLORIDA.

> FOR COMPLETE TEST RESULTS, GO TO SCUBADIVING.COM/SCUBALAB.



SPYDERCO CARIBBEAN LEAF

PRICE \$254.95

CONTACT spyderco.com The Caribbean Leaf is the latest addition to Spyderco's Salt Series of knives. Its full-flat ground blade is precision-machined from nitrogen-based martensitic steel called LC200N. Spyderco says the metal holds its edge extremely well and, like H1 steel, is completely rustproof. The bumble-bee-striped handle features an intricate scale pattern for a nonslip grip. You'll also appreciate the Caribbean Leaf's highstrength compression lock and reversible titanium clip.

CRESSI AC10V XS-COMPACT

PRICE \$419.95 CONTACT cressi.com

This reg combines the flexibility and performance of the AC10V with the lightweight comfort of the XS Compact. The balanced-piston first stage has two HP ports; its five LP ports are located on a rotating turret that allows for a host of hosemounting configurations. The second stage weighs less than 5 ounces and is easy on the jaw. Plus, it keeps things simple with a large, perforated purge button and an easy-to-operate, top-mounted Venturi switch.

SEAC

LIBERA 3.5

CONTACT seacusa.com

This new wetsuit is anatomically cut out of high-quality 3.5 mm Yamamoto neoprene for a fit that is adaptable to a variety of body shapes. The Libera is equipped with smooth-skin seals on the wrists and ankles. and a specially designed injection-hook Velcro neck closure to avoid damage to the suit's lining and stitching. It all adds up to a suit that's well-made, warm and comfortable.



WEST IS BEST

WHY ARE WEST COAST DIVERS SO SURE THEIR REGION IS SECOND TO NONE? HERE ARE SEVEN SPOTS FROM ALASKA TO BAJA THAT MAKE IT MIGHTY HARD TO DISAGREE.

t's 3,000 miles as the crow flies, more or less, from Prince William Sound, Alaska, to Cabo San Lucas, at the tip of Baja California Sur, Mexico. What do the stops along this mammoth stretch of rugged, heartbreakingly beautiful coastline have in common? Great diving, at spots from Port Hardy, British Columbia, to Puget Sound; Monterey, California, to the Channel Islands; and Isla Guadalupe to the famous Arch at Cabo's Land's End. There are common sights — pinnipeds, anyone? — but far more that's unique, and worth exploring.

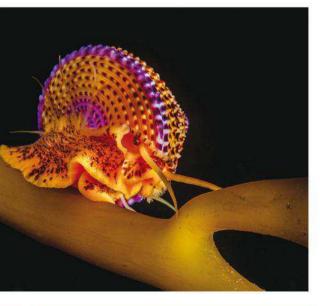


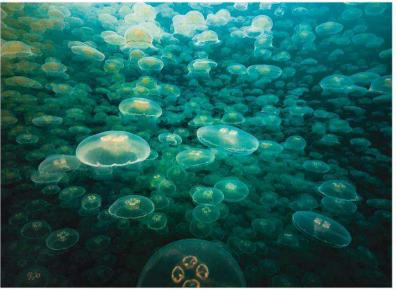




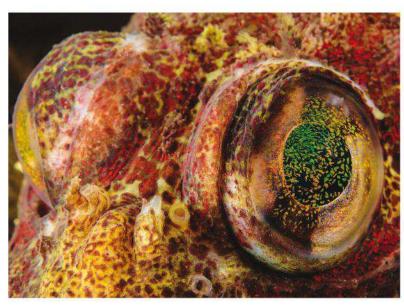


















Prince William Sound

ALASKA, USA

Alaska is one of our last great wildernesses, with remote diving amid prolific wildlife. I first experienced Resurrection Bay from Seward with Dive Alaska on my quest to dive all 50 states. Invertebrate life dominated, from lion's mane jellyfish to giant plumose anemones. I learned that salmon sharks inhabit Alaska and returned to dive with them in Prince William Sound. I visited Ravencroft Lodge, where not only did I see salmon sharks, but also jellyfish smacks that rival tales of Jellyfish Lake in Palau. Orcas, Dall's porpoises, and soaring bald eagles dotted the landscape. While I don a drysuit, diving in summer is not a cold endeavor. Alaska is the first place I've found that's big enough for my imagination, drawing me back again and again. —JENNIFER IDOL





THREE THINGS TO LOOK FOR

1. Look Sharp Observing salmon sharks is a snorkeling endeavor that raises adrenaline from hours searching for them, punctuated by lightning-fast, fleeting encounters. 2. Smack Attack Look for hazy water that resolves into moon jelly smacks as deep as your limits allow, and dense enough to block any sight of your buddy. Parts Is Parts Elusive giant Pacific octopuses can be found by looking for parts of tentacles or movement under rocks at the edges of plumose anemone fields. From top: An aerial of Shoup Glacier shows significant glacial retreat; a male salmon shark descends in Prince William Sound.

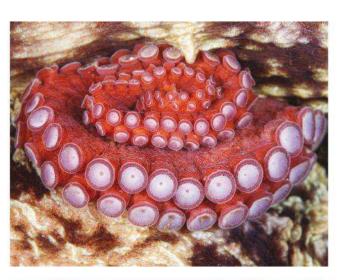


Vancouver Island

BRITISH COLUMBIA, CANADA

Four C's sum up scuba diving around BC's Vancouver Island: cold, current, color and critters. My drysuit conquers the first challenge, while careful planning — I dive during slack, the mellow period between swift tidal exchanges — helps me survive the second. Properly prepared, I revel in the C's born of the nutrient-powered marine machine ever at work in the rich waters off Canada's westernmost province. My five fave dive regions, each worthy of a weeklong expedition (or more), are Port Hardy atop the north, Barkley Sound on the west, Victoria to the south, and Campbell River and Nanaimo sharing the east. Even with more than 2,000 dives logged around this remarkable 300-mile-long island, I have only just begun to scratch below the surface. —BRANDON COLE







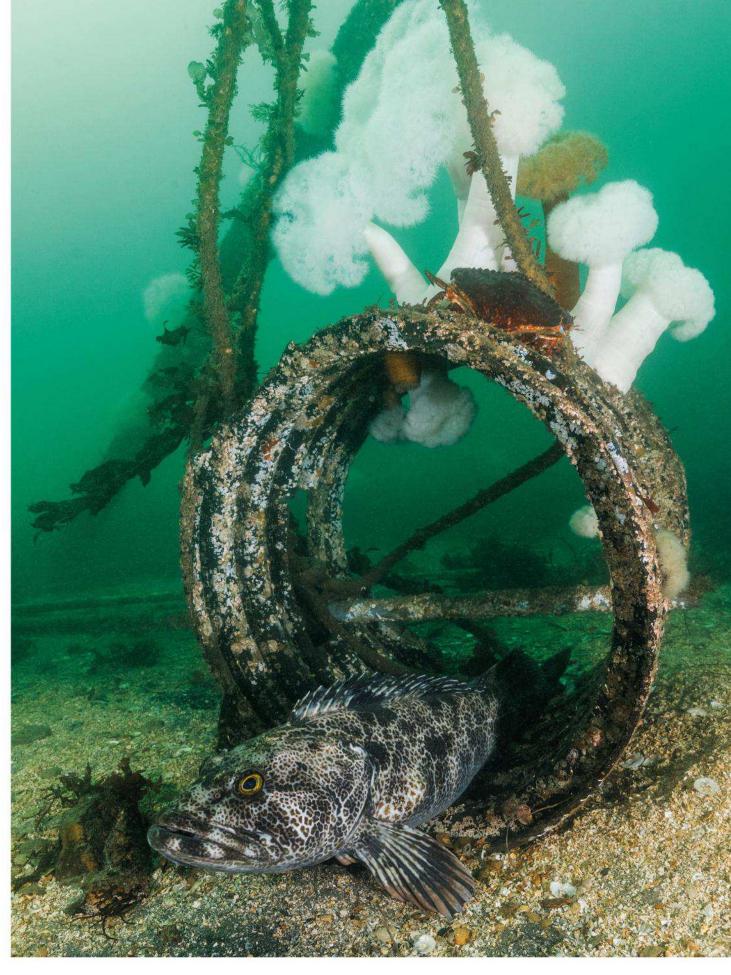
THREE THINGS TO LOOK FOR

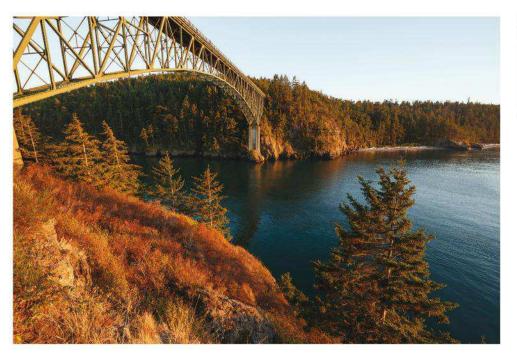
1. Big Critters This is the realm of the giant Pacific octopus, playful Steller sea lions twice your size, and Muppet-faced wolf eels. Even anemones grow to epic proportions.

2. Get Wrecked Nanaimo is

shipwreck central, with a fleet of purpose-sunk vessels awaiting exploration, and choices for both rec and tec skill levels. **3.** Art Made Easy One magically becomes Monet when pointing a camera at lush walls smothered in sponges, anemones and soft corals.

Clockwise, from left: A candy stripe shrimp on its crimson sea anemone home; giant Pacific octopus suckers; plumose sea anemones thrive on the Cape Breton shipwreck.









Puget Sound washington, usa

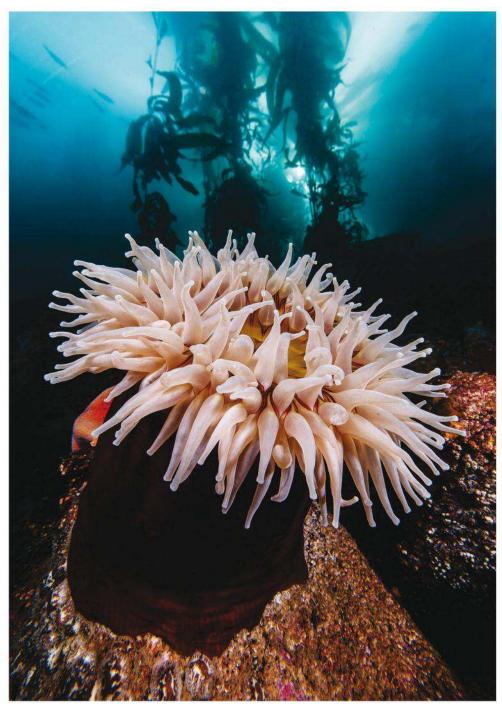
With abundant marine life and dozens of excellent shore sites, settling in the Evergreen State 30 years ago was a no-brainer for me. I was always feverishly saving pennies for my next air fill: The cheap 24/7/365 access to kelp beds, walls, artificial reefs. boulder fields and muck sites was irresistible. It still is. These days I occasionally upgrade to boat excursions to reach sites too far from water's edge, but the majority of my bottom time still begins with a hike, cameras in tow. Puget Sound's protection from the ravages of the open Pacific is another huge bonus, allowing me to splash in peace, even when winter storms are hammering the outer coast. From Whidbey Island down to the bottom of Hood Canal, Washington's inland waterways are a phenomenal place for divers to call home. -BRANDON COLE

Clockwise, from left: Huge lingcod are found in Washington's artificial reefs; a view of Deception Pass State Park, where a dive site can be found under the bridge; an orca breaches off the coast of Washington.

THREE THINGS TO LOOK FOR

1. Man-Made "Build it and they will come" is the mantra at Edmonds Underwater Park, where a jungle gym of beams and boats is a magnet for marine life such as lingcod, cabezons and rockfish.

2. Dive In Puget Sound's scuba scene is hopping with fun people, active dive clubs and top-notch dive shops. Wherever your interests lie, Washington's dive tribe is quick to welcome newbies and veterans. **3. Weird and Wonderful** Experience nightly freak shows under Seattle's skyline at sites such as Alki Junkyard and Cove 2, where you can find bearded poachers, stubby squids, grunt sculpins and warbonnets.





Monterey california, usa

I'm 60 feet down at Point Lobos Marine Reserve, and it feels like I've traveled 60 years into the past. Only five minutes into my dive, l've passed three dog-size cabezon and come face to face with the largest lingcod I've ever seen, a toothy monster nearly 4 feet long. Above me, a dense school of blue rockfish moves lazily through the kelp canopy; below, every rock is obscured by thick invertebrate life. This area has been protected for decades, and the pristine results are astounding. It's little wonder this is the crown jewel of central California diving — and that's saying something, since the Monterey/Carmel region is so jampacked with remarkable sites that it attracts divers from all over the globe. -ALLISON VITSKY SALLMON

A fish-eating anemone sits beneath kelp in the Monterey Bay National Marine Sanctuary.

THREE THINGS TO LOOK FOR

1. Awesome Anemones From fluffy white plumose giants to jewel-like corynactis and showy, fish-eating beauties, Monterey's waters are loaded with these lovely invertebrates. 2. Sea Nettle Jellyfish Few experiences are more mesmerizing than diving with these pulsing, golden invertebrates. Blooms are localized and transient, so if you hear of one, plan a dive immediately. **3**. **Big Sur Coastline** It's well worth taking a surface interval to drive along this stretch of Highway 1 and view the vistas touted as some of the most gorgeous in the United States.



Channel Islands

CALIFORNIA, USA

My love affair with kelp began during my first dive at Santa Barbara Island, the southernmost of the Channel Islands National Park. The park is a vast, diverse area encompassing five distinct islands — Santa Barbara, Anacapa, Santa Cruz, Santa Rosa and San Miguel — and hundreds of dive sites; a feature of most is the towering giant kelp. In the years since my first kelp dive, I've explored as many of these sites as I possibly could, and though the water color and denizens differ from island to island, the sun rays piercing the majestic kelp forests are the common thread that continues to fuel my passion for classic California diving. -ALLISON VITSKY SALLMON



THREE THINGS TO LOOK FOR

1. Playful Pinnipeds Raucous California sea lions are a main attraction at Santa Barbara Island, but pinniped encounters are common throughout the islands.

2. Northern Nudis These colorful, delicately beautiful invertebrates can be found all over, but they are especially common and varied in the northernmost islands.

3. Seeing Red And orange; the islands' most photographable subjects — including gorgonians, garibaldi, cabezons and fish-eating anemones — are easy to spot.

A mass of California sea lions mugs for the camera at the sea lion rookery off California's Santa Barbara Island.



Isla Guadalupe Baja california, mexico

What makes diving with the white shark unique and fascinating is the awareness of being in front of an animal that is not at all intimidated by us. It simply observes — when it approaches the cage, you can almost feel the gaze of that incredible black eye. Isla Guadalupe is the perfect destination: It's not easy to reach, but the crystalclear water and plethora of white sharks do justice to the long crossing. Contrary to what you might think, you never feel fear around these sharks, only a profound respect for one of the most ancient predators of the sea, so powerful and so fragile at the same time, and threatened by a changing climate. –DAVIDE LOPRESTI



THREE THINGS TO LOOK FOR

1. Roll Call Each white shark at Guadalupe is photographed and cataloged; the shape of the fins and its side spots are unique identifiers, like our fingerprints. **2. Life Lessons** Adult sea lions chase young sharks and bite their fins, thought to be an attempt by the pinnipeds to dissuade sharks from developing a taste for sea lion. **3.** Island Origins This UNESCO World Heritage Site constitutes the summit of a volcanic cone that emerged more than 150 miles off the coast of Baja California. A great white shark patrols the water off Isla Guadalupe while photographers view from a cage.



Cabo San Lucas BAJA CALIFORNIA SUR, MEXICO

Cabo San Lucas was once synonymous with bachelorette parties and Spring Break, but that image masks a key draw: There's great diving here. New divers can get comfortable close to Lover's Beach at Pelican Rock, which starts at about 20 feet. Deeper pinnacles — up to 120 feet — with froqfish, tarantula-like crabs, nudis, scorpionfish and other macro life engage advanced divers. To the east there's Sand Falls, product of a 3,000-foot trench that creates a "waterfall" as grains cascade into the abyss. Everybody gets a kick out of the omnipresent playful sea lions, along with mobula rays, baitballs, and schools of parrot, surgeon and barberfish. North and east, dive sites are flung out across mammoth Bahia San Lucas, where humpback whales are not uncommon. -MARY FRANCES EMMONS





THREE THINGS TO LOOK FOR

1. Hide-and-Seek Baby sea lions are a trip, and the moms are chill with divers. But best to mind your manners when large males bomb through to check on their harems.

2. Now You See It Just past the Arch, at a site called the Point, the cargo ship Lundenberg was uncovered by Hurricane Odile in 2014, creating a whole new playground.

3. How the Other Half Lives If

you're into boat porn, you'll get an eyeful at the Cabo San Lucas marina, where some of the world's most amazing yachts are regulars.

From top: Humpback whales pass by the coast of Cabo San Lucas while migrating for the winter; a view of the arch at Land's End.

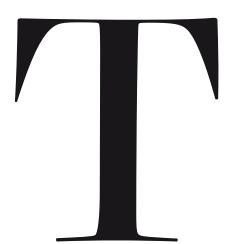
A vertical shaft called Fedö connects two flooded floors at the lowest levels of the abandoned mine.

the second

JEWELS in the GROUND

WHERE MINERS ONCE EXTRACTED THE WORLD'S MOST SPECTACULAR OPALS, TODAY ONLY DIVERS CAN APPRECIATE THE BEAUTY OF SLOVAKIA'S FORGOTTEN TREASURE CHEST UP CLOSE

> TEXT AND PHOTOS BY MARTIN STRMISKA



THE PORTAL LIES IN A SMALL MEADOW BENEATH A RIPE DECIDUOUS FOREST. MILES of excavated tunnels lead from the dark below to the surface, ending at a number of entrances — some visited occasionally, others all but forgotten. Nowadays this one, called Jozef, is the only one still used as an entry to the underground.

All around, trees teem with fall colors. As a visitor enters, the atmosphere changes dramatically. Behind a thick wooden door, the pleasant warm breeze with the smell of fallen leaves is replaced by heavy, humid 39-degree-Fahrenheit air. Hundred-year-old nicks from miners' mattocks are still visible on colorful walls. Divers pass through horizontal tunnels, carrying heavy equipment on their backs, following an experienced guide, shifting direction, changing shafts, entering another tunnel. Finally, a set of muddy stairs brings them to the lowest unflooded level. The entrance to the crystal-clear water is just around the corner. Without their guide, they would never find their way out.

The opal mines are located in eastern Slovakia near the city of Prešov, in the district of Červenica. Seventeen levels of tunnels, shafts and adits stretching more than 13 miles were manually excavated in the volcanic hills, some down to a depth of more than 150 yards. In 1922, the five lowest levels were flooded. The area today is a protected region of the country, and the mine itself is preserved for its mineral deposits. At its height, more than 350 workers and up to 13 grinders were employed here; today 16 species of bats are the only inhabitants of the cold, dark tunnels.



Deeply Desired

Unlike other gems, opals do not form crystals. Their amorphous silica structure diffracts light — deep inside itself, an opal contains the colors of all other gems at once.

The oldest mention of opals dates to the fifth century B.C., in a work by the Greek poet Onomacritos. Romans prized opals 200 years before the Christian era. Pliny the Elder — a Roman author, naturalist and naval commander who lived in the first century A.D. - wrote in his Historiae Naturalis Libri XXXVII that "to describe them is a matter of inexpressible difficulty, for there is amongst them the gentler fire of the ruby, the rich purple of the amethyst, the sea-green of the emerald, all shining together in an indescribable union." According to Pliny, the Roman senator Nonius was so obsessed with his opal ring that he chose exile rather than surrender the ring to Emperor Marc Antony. Napoleon is said to have given a 700-carat black opal called "Burning of Troy" to the Empress Joséphine.

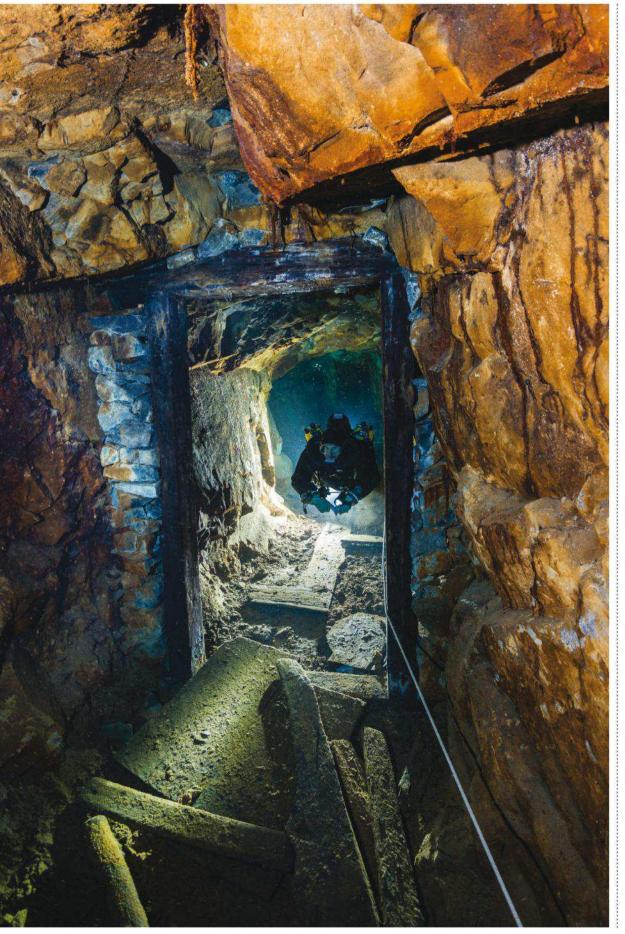
Many of the better-known opals in history were mined in the Slanské Hills, until the early 19th century the only major opal mine in the world.

The first written mention of extracting opal gems in the Slanské Hills dates to 1597, but it was a Viennese jeweler who brought Slovak opals to the peak of their fame in the late 19th century.

Nowhere else in the world were opals mined on this scale. Around 150 years ago, about 25,000 carats a year were produced, as many as are mined in Australia today using a surface-mining method. The world's largest opal weighing 3,035 carats — was brought to light here 240 years ago. Its value is estimated at \$500,000 USD; today the stone, which once was counted among the imperial jewels of the Austro-Hungarian empire, is held in the Natural History Museum of Vienna.



From left: an unused entrance; ore with opals; a doorway leading deeper into the underworld.



NEED TO Know

WHEN TO GO The water temperature is stable throughout the year. During heavy rains, visibility can drop slightly, but in general, it's great year-round.

GETTING THERE

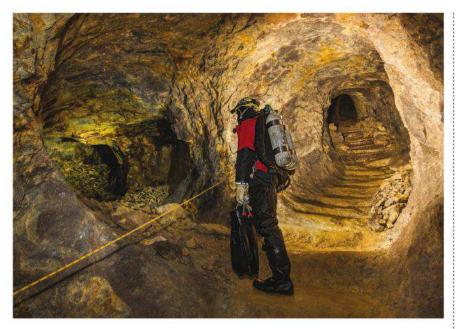
Budapest and Vienna are the closest international airports and are served by many major airlines flying from the U.S. Renting a car at the Budapest airport and driving 185 miles to the Slanské Hills is the best option.

OPERATOR Peter Kubička, a cave-diving and UTD instructor, is responsible for all diving activities at the mine (opalmine .eu). All dives are quided cave dives. Full cave certification is required, as well as a medical statement and dive insurance. **PRICE TAG** About \$75 USD per dive. ACCOMMODATIONS Opal guest house

(penzionopal.sk) is located in the village of Zamutov, about 7 miles away. Be sure to book several months in advance.

WHAT IT Takes

Divers must be in good physical condition. Carrying equipment down to the lowest level requires quite a bit of exertion. Headlamps are necessary for the walk through completely dark tunnels. Outfit yourself in the warmest undergarments you have, preferably with a heating system; good dry gloves are recommended. The slightly acidic, 37-to-41-degree-F water takes away any warmth very quickly. Bring a shoulder strap to carry your camera gear down the tunnels and stairs.



Divers descend muddy stairs to access flooded tunnels (left). Gas trapped at the ceiling — colored by the minerals that create opals — makes beautiful reflections.

3 TIPS FOR SHOOTING

1 Have an external light source. Capturing attractive images requires an external source of light such as a powerful video liaht. triggered strobes, or a combination. The terrain makes it easy to hide a strobe behind a corner, or just behind a diver's back. The best recipe for me is to first find a structured corner. nicely colored wall or an interesting object, and light it gently with on-camera strobes. Then aim a second, off-camera light at a diver. The trick is letting the off-camera light play the main role — the more the on-camera strobes are used to light the scene, the flatter the image will be.

2 Great buoyancy and orientation is critical. The tunnels are low and narrow. At the bottom there is a layer of superfine sediment that often screws up a photo shoot before it even starts.

3 Make a plan. In most parts of the mine, narrow tunnels mean there is very limited communication possible. A detailed predive plan makes things much easier.

Diving into History

Divers entering the mines warm up nicely carrying their heavy rigs and stages more than 40 vertical yards down to the small entry pool — the first splash of 39-degree water changes that. It takes a few fin kicks to pass through silty waters disturbed while kitting up; once the view opens, any thoughts of cold disappear, replaced by the pure pleasure of observing the most intense play of colors a cave diver can hope for, on walls covered in shades of purple, red, orange and white lining long tunnels filled with clear water.

Slovak gems are highly prized for their opalescence, or reflection of iridescent light. Here in the mine, the connection between the source and result is clear. As the predominant color changes dramatically from one room to another, it evokes the variations of color in an opal gem.

The lowest levels of the mine yielded the best opals. Throughout the endless corridors, traces of human effort remain — ladders, tracks, construction equipment. Here time stopped a hundred years ago. One can almost see the workers in 1918, leaving their tools as they exited for the day. But it's the walls that attract the eye. Walls in dry parts of the mines have been contaminated for centuries by constantly dripping water containing various chemical compounds, but the acidic water in the flooded tunnels keeps the original view clear and untouched.

The color scheme is determined by the process of mineralization. Gravity allows rust stalactites to form on the ceiling, reaching from a few inches to nearly a yard in length. In some parts, the decoration looks just as rich as in limestone caves, but these limonite structures are fragile and collapse easily from just the touch of exhaled bubbles.

In some places, exhaled gas remains trapped at the ceiling, forming small capsules, some big enough to reflect light from a diver's torch, creating a glistening sheet. When light sources are combined and the capsules move, the result is a play of light even more difficult to describe than the opal itself.

Over the decades, hundreds of tons of volcanic material were brought to the surface using railways; even more rubble was stored in unused tunnels. While the tunnel walls are stable, the artificial "walls" created by such material are a potential threat. When these collapse — and they occasionally do — rocks obstruct the tunnel, smother the guide line, and leave the diver in zero visibility.

The water in the tunnels is extremely cold, 37 to 41 degrees, and strongly mineralized, with a mildly acidic pH that emphasizes the cold. The main vertical mining shaft, called Fedö, connects two flooded floors, a sort of trachea of the lowest levels. Iron rails here are covered in a sheet of white mold. In some places, the rails connect and then disperse again in several directions. A white mist floats over the railways like a morning haze, disappearing in a black tunnel. You half expect miners pushing trolleys to show up any second. Although diving the mines can feel like exploring a cave, the fact that all of this was created by human hand can't help but evoke memories of those who walked these corridors a long time ago.





With Your Voice We Can Make A Difference

Sea Save Foundation strives to protect our oceans by raising awareness about the beauty of marine ecosystems and their fundamental importance to human survival. We seek solutions, advance public policy, and drive advocacy.

Join our efforts: Donate. Volunteer. Advocate.





1-310-458-1020

email: Salmon@SeaSave.org

SeaSave.org

A Cotton Photo

TRAVE JUNE 2018



Hundreds of miles south of Egypt's tourist hubs, Sudan's Suakin Archipelago offers divers the chance to travel back in time, to a version of the Red Sea where hammerhead, silky (above), and gray reef sharks outnumber divers. The payoff for a long journey is the type of thriving life that led Jacques Cousteau to set up camp for an extended stay in the '60s. **Learn more on page 64**.

68 ECO-CONSCIOUS

t

THE

BEST SPOTS FOR SAVVY DIVERS

DESTINATIONS 70 DIVING WITH DINOSAURS

> 74 Curaçao Calling

The immobile divers are intertwined with undulating shark bodies. There must be 50 or 60 of them. Just as quickly as the hammerheads came out of the dark, they disappear like ghosts again." SOUTHERN CHARM PAGE 64



SOUTHERN CHARM

Turn back the clock as you explore a more-pristine, less-visited version of the Red Sea

STORY AND PHOTOGRAPHY BY MARTIN STRMISKA



You really *can* have too much of a good thing.

As an underwater photographer, I've learned this the hard way when a rich dive offers too many subjects. I fall victim once again in the southern Red Sea at Dahrat Abid with hammerhead sharks on the prowl.

We're hanging at 115 feet near a wall that plunges another 400 feet to the bottom. I glance at my computer — 25 minutes of bottom time and 10 minutes no-deco time — when, in the distance, the silhouettes of large undulating bodies with wide, flat heads start to manifest.

It seems to be a tease nothing shows up. Instead of waiting around, I opt to spend my remaining 10 minutes at nearby coral blocks filled with glassfish. As I set up on the wall and start shooting, sounds of clicking shutters and strobes being recycled are replaced by the sound of divers' shakers going mad.

I turn back to the group of divers hanging in blue water and kick my fins as fast as I

1

can. When I start recognizing the silhouettes in the distance, I know that I have just missed an intense moment. The immobile divers are intertwined with undulating shark bodies. There must be 50 or 60 of them. I arrive on the scene with five minutes to go, but the hammerheads do not stick around. Just as quickly as they came out of the dark, they disappear like ghosts again.

I try to catch my breath while I observe the faces of astonished divers and listen to the shouts of happiness. During our safety stop, I go through the images of that coral block and glassfish, and hope that my camera conjured one shot of hammerheads too. It didn't. But something tells me it will capture plenty of amazing moments as the M/Y Andromeda liveaboard ushers us around the deep south of the Red Sea.

TROPICAL TOUCH

The ship's flag barely moves. The mirrorlike surface of the water reflects nothing but light blue skies as the sun burns with an unseen force. The view out to the sea from the back deck of *Andromeda* resembles the scenery you would expect in Egypt — clear skies and water shimmering in all shades of blue.

Yet something is different. I've often wondered what a typical Red Sea liveaboard excursion lacks in creating a classic tropical impression. It seems the answer is an island with palm trees and white sand. A place where you could step and let your toes sift through the finest white sand.

In Egypt, there's always been just a yellow rocky coast in the distance; always the



same sign of hot, arid desert. Now, as we head farther south than most Red Sea itineraries off the coast of Sudan, there are white sandy caps sticking out of the mirrorlike surface. We're not quite in Egypt anymore. I could get used to this.

IN DEEP LOVE

As we make our way toward Sudan's border with Eritrea over several days — stopping for dives along the way — the question hangs in the air: Will the diving this far south be worth the long journey? This morning the answer resounds clearly — yes!

The concentration of life around the Suakin Islands has no precedent in the Red Sea. Each of the seven islands offers unique sights underwater, even though they share a resemblance above the surface. They all amaze our group with rich plateaus and the deepest drop-offs

M/Y Andromeda offers spacious lounges and the chance to see barracuda. Opposite: A coral ring outside Sanganeb Lighthouse.



5 REASONS TO DIVE ANDROMEDA

1 Solitude and Adventure Unlike other parts of the Red Sea, Sudan's reefs are still relatively remote, and hence less exposed, offering privacy for divers. Andromeda's crew works to avoid other dive boats on sites.

2 Experience Andromeda has been visiting the Suakin Islands since 2010. Dive guides have discovered many new spots, which are scheduled only on Andromeda's itinerary.

3 Access It's one of the only liveaboards offering twoweek "Deep South" cruises. The Suakin Islands are definitely the place where divers want to spend as much time as possible. This two-week cruise offers up to six days in the deep south.

4 Service The yacht offers plenty of space, great food and quality equipment.

5 Local Flavor The fruit shishas — or water pipes — served in Andromeda's Arabian salon, using fresh fruit heads are fabulous.





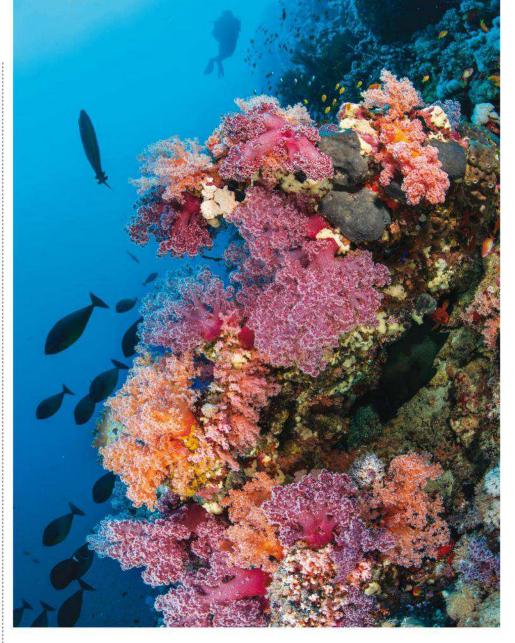
FOR MORE, GO TO SCUBADIVING.COM/ LIVEABOARDS you could imagine; we explore one covered in green and yellow corals, and then another drenched in purple and pink. At Gab Miyum, we're surrounded by 20 curious silky sharks, and at Dahrat Abid, 100 hammerheads swim by.

The unique diversity on display allows everyone to find a different subject of interest. While one diver is enamored with a school of giant sweetlips, another admires the tornado of barracuda a few away.

All seven islands are just a few miles away from each other. Schools of fish that swallow divers and darken their view, the unexpected encounters with large pelagic animals, and the concentration of life per square foot fascinate our group of international divers. The coral reef of Dahrat Abid reminds me more of Indonesia than the Red Sea. Concentration of marine life as intense as Eqypt offered decades ago is down here still to experience, pristine reefs living intact for centuries. The dense coral reefs here are still inhabited by giant jacks and chevron barracuda, and the deep is still patrolled by big tuna and gray reef sharks.

Everyone's heartbeat kicks up another notch at Ambar Reef. If seeing the large school of hammerheads at about 130 feet wasn't enough, we come across a massive population of bumphead parrotfish that have made their home here. They like hanging out in rough shallows at the top of the reef, where careless divers and too-keen photoqraphers could risk an injury. Approaching them in the worst weather, just like today's, is not an easy task, but the payoff is up-close photo ops with the goofy-looking fish.

The most memorable experience here is the raid of unicornfish. A bevy of thousands of unicorns surrounds





my buddy so he disappears from view.

REMNANTS OF THE PAST

Pioneer Jacques Cousteau was so amazed by the variety of life at Shaab Rumi that in 1963, he constructed a habitathere. Precontinent II — one



in a series of underwater "villages" created by Cousteau — let him and a few other marine biologists live at a depth of 30 feet for up to four weeks. The best-preserved structure here is a garage for the submarine, a metal mushroom that sits with three legs at the sandy bottom in 35 feet

From top: the Suakin Islands' colorful walls; Precontinent II; Andromeda's honeymoon suite. Opposite: the bow of Umbria.

of water. Its large welded cap — stretching 12 feet across — is covered in hard and soft corals. White whip corals hanging down from its structure illustrate how long this has been here, just like the old mushroom tells the story of Cousteau. Aside from looking into the past, the dive has very little to offer. For the real thrills, Andromeda's rubber RIBs bring us outside the atoll to the southern plateau.

This site reminds me of a miniature of Shaab Rumi.

A large school of chevron barracuda and big-eye jacks frequent the area, but the most interesting inhabitants are potato grouper. There are around 30 individuals hanging around and playing a game of hide-and-seek another challenge for keen photographers.

The Sanganeb Lighthouse, built on the southern side of the coral ring, can be seen from miles away. For us, it is a clear sign that the two-week cruise is ending. The top of the lighthouse offers a neverending view of the northern turquoise shallows. The coral ring has two plateaus to dive - one in the north and another in the south. On our dive, I take advantage of the tall lighthouse as one of the few landmarks in the Red Sea that a photographer can include in split-level frames.

We make our final dive at the wreck of the *Umbria*. In the deep south, *Andromeda*

NEED TO KNOW

When to Go Winter (December through March) is generally better for hammerhead sightings as the water gets colder (71-77 degrees F). The summer mating season starts earlier than it does farther north. From April through July, huge schools of mating fish are frequently seen. Masses of oriental sweetlips are typically seen on every corner of a reef, with a chance to see hammerheads available in deeper water.

Operator Andromeda [cassiopeia safari.com] is a 130-foot yacht with a 26-foot beam and 13 double cabins that each have a private bathroom. The liveaboard has a large sun deck, a dive deck with two handheld showers, and two Zodiacs. One- and two-week

was the only boat at a majority

of the sites. We were spoiled.

Having the company of two

other boats here takes away

Diving Umbria — a 500-

foot ocean liner scuttled with

thousands of bombs aboard

during World War II - feels

the feeling of solitude.

itineraries to the northern and southern Red Sea are offered.

Traveling Tips The U.S. Department of State labeled Sudan with a Level 3: Reconsider Travel advisory at time of press. Visit travel.state.gov to see details on the advisory and particular areas of conflict to inform your plans. Avoid bringing alcohol into the country; it is often confiscated. You can buy alcohol aboard *Andromeda*. Emirates offers flights into Dubai from most major airports. Connecting flights are offered from Dubai to Port Sudan.

Price Tag A two-week liveaboard trip starts around \$3,100 before fees. Nitrox is available at an additional charge.

similar to the popular *Thistle*gorm farther north in the Red Sea. It is about the same size and has similar character and charm. Hard corals growing on the railings remind me of small colorful nests. Many are homes for small coral creatures such as banded dascyllus and red-spotted coral crabs.

Large parrot fish feed on the coral during the day. At night, they find a place to sleep and create a slimy wrap around themselves, but small cleaner shrimp often find a way past this defense and into the bubble. Both walkways around the captain's bridge pull divers into a magical mood and are popular spots for wideangle photography, but the real jewel Umbria has to offer lies inside its trunk - Fiat 1100 Lunga cars. They are lined up nicely in complete darkness. Similar to motorbikes in the Thistlegorm, they are the most popular subject for photographers.

Scrolling through my photos at the end of the two-week excursions eyeing everything from an underwater habitat to relics of war — I see this Red Sea excursion was well worth the journey after all.





READERS CHOICE REGIONAL WINNERS

PACIFIC AND INDIAN 1. Hawaii

2. Indonesia Palau (tie) 4. Maldives 5. Queensland, Australia

CARIBBEAN/ATLANTIC

1. Bonaire 2. Cayman Islands 3. Mexico 4. Roatan 5. Belize

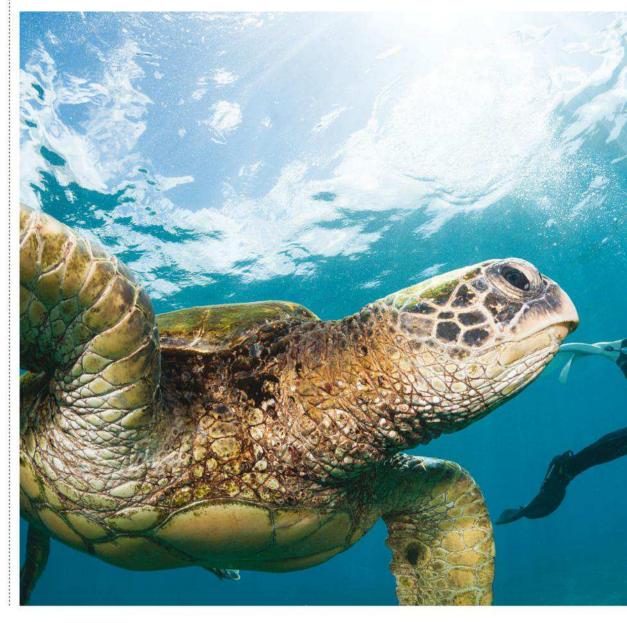
NORTH AMERICA

1. Monterey, California 2. Florida Keys 3. Channel Islands, California 4. North Carolina 5. British Columbia

What is Readers Choice?

More than 3,000 readers rate their experiences in our annual survey. Winners are selected via average scores.

Explore a dozen more Readers Choice categories at scubadiving.com/ readerschoice.



READERS CHOICE: MOST ECO-FRIENDLY DIVE DESTINATIONS

The Hawaiian Islands, Bonaire and California's Monterey Bay raise the bar when protecting the marine environments we love

BY BROOKE MORTON

A aking a commitment to protecting the ocean is crucial to the sport of diving. And so it is that we are most drawn to the places that understand the dire need to preserve threatened habitats and animals. In these locales, not only can we immediately appreciate the results of others' conservation efforts, we can also contribute.

HAWAII

GREEN PARTY In 2015, Hawaii became the first state to ban plastic bags at grocery checkouts. In 2017, the Sheraton Maui Resort stopped offering guests single-use plastic straws.

PARKS AND REC When President George W. Bush established Papahānaumokuākea Marine National Monument in 2006, he secured 140,000 acres of underwater habitat surrounding the string of islands found northwest of the main Hawaii chain. Then, in 2016, President Barack Obama more than quadrupled its size to a half-million square miles. Although diving isn't allowed in this marine park, the diving community



still benefits from this habitat, which shelters 7,000 marine species, including green sea turtles and Hawaiian monk seals.

ELASMOBRANCHING OUT Among divers, Kona is synonymous with mantas — that's largely thanks to the conservation efforts of those who spend the most time with them. Keller Laros, an instructor at Jack's Diving Locker who was named a *Scuba Diving* Sea Hero in 2014, is one of the co-founders of the Manta Pacific Research Foundation, which not only studies behavior but also implements safe-diving practices to ensure the population isn't threatened. The guidelines include timing exhalations to keep bubbles from touching the mantas, and refraining from all touch.

Clockwise, from left: A sea turtle catches some rays off Maui, Hawaii; a sharknose goby perches on coral off Bonaire; a California sea lion poses near the Monterey coast.

BONAIRE

RADICAL PRECEDENT In 1979, Bonaire established its national marine park — the first such effort in the Caribbean to preserve underwater resources. This nearly 7,000-acre park protects what lies from the high-water line to 200 feet deep, with the goal of keeping what delights divers and marine life alike around forever.

BUDDING SUCCESS Buddy Dive Resort, voted a Readers Choice top dive operator, has been committed since 2012 to working with the Coral Restoration Foundation to regrow the island's elkhorn and staghorn corals. The main nursery is located off the satellite island of Klein Bonaire. Any divers with strong buoyancy skills are invited to join the efforts.

NEST EGGS One of the flagship species of the Bonaire National Marine Park is the green sea turtle, which relies on the island to nest. During the 2017 nesting season, 132 sea turtle nests were counted between Bonaire and Klein Bonaire, an





READERS CHOICE **WINNERS**

The best operators, resorts and liveaboards to get you this experience in these destinations, as chosen by readers.

BEST DIVE RESORTS Buddy Dive Resort

Bonaire buddydive.com

Capt. Don's Habitat Bonaire habitatbonaire.com

Divi Flamingo Beach Resort & Casino Bonaire diviresorts.com

BEST DIVE OPERATORS Buddy Dive BEST LIVEABOARDS Kona Aggressor II

qoscubadivemaui

Bonaire

Bonaire

buddydive.com

Capt. Don's Habitat

habitatbonaire.com

Dive Oahu, Hawaii

Kona Honu Divers

konahonudivers

diveoahu.com

Jack's Diving

Locker

Hawaii jacksdivinglocker

.com

Hawaii

.com

Hawaii

.com

Dive Maui

aggressor.com

effort overseen by the group Sea Turtle Conservation Bonaire.

MONTEREY, CALIFORNIA

MOST POPULAR The Monterey Bay National Marine Sanctuary, covering 6,094 square miles of ocean, is home to several of the most beloved dive sites in Northern California: Breakwater in Monterey, Pinnacles in Carmel Bay, and Whaler's Cove in Point Lobos State Natural Reserve. The

276 miles of coastline and underwater habitat support a wealth of eco-diversity.

BIG PERSONALITIES This sanctuary also supports 36 marine mammal species. The list includes Bryde's whales, blue whales, Dall's porpoises, fin whales, harbor seals, humpback whales, killer whales, northern elephant seals, southern sea otters, Steller sea lions and many more.

REACH OUT The Monterey Bay National Marine Sanctuary has one of the country's most active volunteer networks, with a sweeping array of options available to citizens. Every July, divers can join MBNMS's efforts in the Great Annual Fish Count — organized by Reef Environmental Education Foundation — to help track local populations of California sheephead, giant sea bass and more.

SCUBADIVING.COM JUNE 2018 / 69



JENNIFER IDOL is the first woman to dive all 50 states in the U.S., author of An American Immersion, and a PADI AmbassaDiver. She's also a member of the Ocean Artists Society.



KNOXVILLE

Good food, great views and ancient fish await in the Volunteer State

BY JENNIFER IDOL

B ordering the Tennessee River and Great Smoky Mountains, Knoxville, Tennessee, balances city comforts with remote natural landscapes. Dive into the extraordinary at local quarries, and hike to nearby waterfalls. Saunter down the river with the Three Rivers Rambler steam trains, or settle down for food from vegetarian and gourmet restaurants to breweries and meaty barbecue.

IF YOU HAVE ONE DAY

Open on weekends and just an hour from Knoxville, Loch Low-Minn Scuba Diving Resort in Athens, Tennessee, is a recreational dive spot worthy of a place Fossil records of paddlefish (above) trace to 50 million years before the first dinosaurs.



NEED TO KNOW

When to Go May through October offers accessibility to all attractions and mild weather, with water at its warmest by end of summer.

Dive Conditions Drysuits are optimal for deeper dives, but 5 mm wetsuits with hood and gloves are sufficient during summer.

Operators Full dive-equipment rental is available at both quarries and at Ski-Scuba Center. Philadelphia Quarry (**phillyquarry.com**), Loch Low-Minn Scuba Resort (**lochlow-minn.com**), Ski-Scuba Center (**skiscuba.com**).

in your logbook. Paddlefish (*Polyodon spathula*) were stocked in this quarry, making it one of the few places where you can dive with this prehistoric fish. Paddlefish — distinguishable by their lengthy rostrum, or snout — are considered North America's oldest surviving animals. They can grow up to 7 feet long and weigh more than 200 pounds, but range here from 3 to 5 feet long. They avoid dive classes and prefer the steep walls found in the quarry. There is so much to see here, it's worth a full dive day followed by local cuisine in Knoxville.

IF YOU HAVE TWO DAYS

Start at Great Smoky Mountains National Park with sublime views from the observation tower at Clingmans Dome. [Just remember to give yourself about a 12-hour break between dives and hike.] Return to spring-fed Loch Low-Minn for an afternoon dive to see its numerous attractions. Statues, artificial wrecks and even a shark sculpture entertain. Bass and sunfish swim in the shallows amid underwater vegetation. Visibility is good enough to warrant bringing cameras. Temperatures range from 70 degrees F on the surface to the 50s at depth.

IF YOU HAVE THREE DAYS

Indulge in breakfast at the French Market Crêperie before heading out for an active day. Change scenery by visiting Philadelphia Quarry, accessible year-round and just over a half-hour drive from Knoxville. Attractions such as boats, benches and freshwater fish keep dives engaging. Watch for nesting male bluegill sunfish in early summer. Another spring-fed quarry with good viz, this site also offers night dives. Rent a paddleboard or kayak at Volunteer Landing with Billy Lush Boards and Brew on the Tennessee River to enjoy either sunrise or sunset, depending on your dive plans.



WHAT'S ON YOUR DIVING BUCKET LIST?

The new limited edition PADI® replacement cards showcase four of the world's most iconic dive destinations.

SARDINE RUN, SOUTH AFRICA • RAJA AMPAT, INDONESIA SILFRA FISSURE, ICELAND • GALAPAGOS ISLANDS, ECUADOR

Whether you're a new diver or a seasoned pro, carry one of these cards as inspiration to start checking off your bucket list dives. Learn more at **padi.com/newcard**.



Photo: Silfra Fissure by Alex Mustard





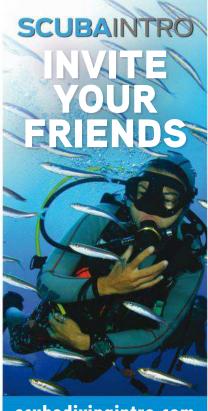
VISIT US ONLINE AT: WWW.SCUBADIVING.COM



- Change Your Address
- Check Your Account Status
- Renew, Give a Gift or Pay a Bill
- Replace Missing Issues

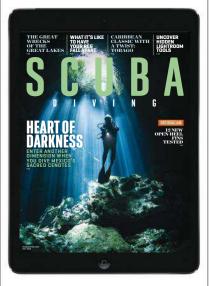
Just log on to: scubadiving.com/cs





scubadivingintro.com

Print Subscribers Get **FREE** iPad[™] access!



Download the app today for instant access!

To Subscribe go to: scubadiving.com/subscribe

Apple, the Apple Logo, and iTunes are trademarks of Apple Inc., registered in the U.S. and other countries. iPad is a trademark of Apple Inc. App Store is a service mark of Apple Inc.





EXPERIENCE GUIDED DIVES: In Highly Decorated Cenotes Open to All Levels of Certified Divers • Cave & Rebreather Diving TRAINING: Cavern to Full Cave Certification • Sidemount • Rebreather • Tek

Playa del Carmen, Riviera Maya, Mexico infoenjoydiving@gmail.com www.cavetrainingmexico.com Photo ©HyunDuk Kim

Dive Deals

Cozumel

DIVE WITH MARTIN SCUBA Dive your computer limits! 4 day/2-tank boat dive \$255 • FREE Sherwood gear use • Dive, Hotel & Condo pkgs. MC & Visa accepted - No fees. 1-888-512-8747

STACEY@VACATIONCONNECTIONNRH.COM

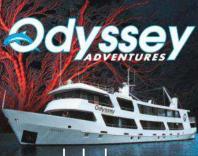
Promote Your Dive Deals!

Contact: LINDA SUE DINGEL lindasue.dingel@bonniercorp.com

the way to see TRUK LAGOON

- Includes all meals, beverages & transfers
- Free Nitrox
- Tech diving available
- Nine spacious suites

1-800-757-5396



www.trukodyssey.com info@trukodyssey.com





"ScubaLab's test divers awarded the Sea Dragon 2500 our top score for light output, and no wonder; in our lab test, it pumped out even more than its claimed 2,500 lumens."

-**Roger Roy** Gear Editor Sport Diver Magazine



- : CRI 90
- 🎟 60 min
- \$* 5000k
- ♀ 120°
- 3 Power Levels
- 200ft / 60m

Beam angle stated above water. Light include grip, tray, battery, and charger.



www.SeaLife-Cameras.com



CURAÇAO

The C in the ABC Islands offers a roll call of Caribbean diving highlights that includes walls, reefs, wrecks and shore dives

BY TERRY WARD

MUSHROOM FOREST

📕 You can feast your eyes on some of the healthiest coral reefs in the Dutch Caribbean at this popular west coast boat dive. Fungi-esque piles of star coral that are eroded underneath create the illusion of a forest full of 'shrooms. And it's magical, indeed, with schooling yellow snapper, turtles, spotted morays and much more sharing the reef.

👩 DEN PARADERA 🗲 HERB GARDEN

Curação's famous herbalist, Dinah Veeris, created a healing oasis at her historyfilled herb garden, where you can learn a lot about the island's wellness traditions that have been passed down by elders. Browse the shop for herbal salves to go.

SUPERIOR PRODUCER

3 Float like a butterfly and fin with care as you penetrate the wheelhouse and cargo holds of Superior Producer, which sits upright at 100 feet outside the port of Willemstad. Easily accessed as a shore dive with a quide, this is a deep dive patrolled by grouper and barracuda. Cruise ships interfere with availability, so check with your quide before planning a trip.

KLEIN CURAÇAO

It's well worth booking a day trip to dive this small island [klein means "small" in Dutch) located southwest of Willemstad. The reefs on its eastern side are the most beautiful, with forests of soft and hard corals, and good currents that bring in schooling barracuda and snapper.

DIVERS GUIDE AVERAGE WATER TEMP From 78 to 82 degrees F WHAT TO WEAR 3 mm in summer, 5 mm in winter AVERAGE VIZ From 60 to 100 feet WHEN TO GO Year-round, with calmest weather from April to June OPERATORS Go West Diving, Ocean Encounters Curaçao, West End Divers

LANDHUIS CHOBOLOBO

See where the island's famous liqueur, Curaçao, is distilled at this historic 19th-century mansion. Liquors made from the island's laraha citrus fruit have been distilled here since 1896. Take a self-quided tour and enjoy a free tasting.

WATAMULA

🖸 Named after the Dutch word for "water mill," this adrenaline-charged boat dive off the island's west end comes with currents that might be flowing north to south, south to north, or swirling in a circle all around you. Settle in for a fabulously fun drift dive and a spectacle of schooling chubs, ocean triggerfish, rays and turtles.

LUKE'S COCKTAIL BAR

Craft cocktails in the Caribbean? Why not. Perfectly chiseled ice cubes, cocktails that get set aflame, and some innovative twists on your usual mojito or mule are the order of the day at this bar in the trendy and historic Pietermaai District.

DIRECTOR'S BAY Macro fans go gaga at this popular shore dive where froqfish and seahorses are commonly seen, and a large octopus dwells in the rubble. A shark fence [said to be placed here as protection for directors of the Shell oil company who used to frequent the beach) is decaying but is covered in sponges and corals. You can fin to the nearby Tuqboat wreck from here too.

BEACON POINT

Currents sweep this site on the western tip of Caracas Bay, bringing with them a good chance of spotting barracuda, jacks and grouper off in the blue. The main draw is the chance to see some pretty pristine pillar corals, said to be the largest formation in the Caribbean.

HOFI CAS CORA

U The brunch-only menu at this farm-to-table restaurant in Willemstad features organic ingredients grown right on property, with egg dishes, waffles, scones, wraps and more on the menu. Yoga classes are also taught on-site.

> TERRY WARD got certified in Florida's springs for a college course, and has since dived everywhere from Halmahera, Indonesia, to Norway's icy Svalbard archipelago.

YOU CAN.

Experience more of the extraordinary.

Become a PADI Advanced Open Water Diver. padi.com/aow

Since 1966, PADI remains committed to: EDUCATION | EXPLORATION | COMMUNITY | CONSERVATION



The Way the World Learns to Dive*

The Sealife

Encounter. Capture. Create.

The SeaLife DC2000 gives you almost infinite control. With its large 1" backlit CMOS sensor, RAW shooting capability and lightning fast shutter, you'll always get the perfect shot. Capture any sea creature with a remarkable 4" close focus and available macro and wide-angle lenses.

The DC2000 has a large 3" high-res display and features a waterproof inner-camera ready for your top-side adventures.



The DC2000 has impressive 1.5"/ 4cm Macro ability. Image taken with a DC2000 and Super Macro Lens.



www.sealife-cameras.com facebook.com/SeaLifeCameras

20 SONY® 1" Sensor ► 4 Dive Modes M Manual control RAW Capture HD Full HD 🔶 WiFi / Bluetooth®

Use with SEADRAGON lighting