



# UNDERCURRENTS

Newsletter of the Bluegrass Dive Club / [www.bluegrassdiveclub.com](http://www.bluegrassdiveclub.com)

March 2016

Volume 46, Number 03

## March Club Meeting

**Date:** Tuesday, March 8th  
**Time:** 7:30-PM (business)  
 Social at 7  
**Location:** The Racquet Club  
 3900 Crosby Rd.  
**Program:** A Tribute to Gordon

## President's Message

*By Tracey Combs*



The Bluegrass Dive Club family lost one of its members recently, Gordon Green. Gordon passed away February 17, 2016. We will be viewing a slide show during our March meeting for Gordon. He joined the BGDC family in 2006 and will be greatly missed. We offer our sincere condolences to Gordon's family and friends.

We have three more trips on the calendar for 2016. Bonaire is coming up just around the corner and St. Lucia is only a few months away. The Grand Cayman trip is in November. For those of you still looking for a dive trip, check out the website for more details. The Planning Committee is currently working on the 2017 Diving Calendar. If you have ideas or recommendations, please email Doug Geddes or talk to a Board Member at the meeting.

There are several upcoming events on the calendar. The always fun and sometimes profitable Derby Party is May 7<sup>th</sup> and the Pig Roast is August 13<sup>th</sup>. Mark your calendars and please note the venue changes for both parties. Our next meeting will be March 8, 2016 at the Racquet Club. You do not have to be a

member to attend, everyone is welcome!! I hope to see you there. 🚩



## The Editor's Notes

*By Bart Bertetto*



Hi everyone. I was very saddened to hear about Gordon as I'm sure you all were. I know he was a special friend to many members of the club. When I first joined I remember how he made me feel welcomed. On my first dive trip he put me up in his condo and made sure I had a great time. That's a nice guy. And he was an outstanding member and supporter of the club; it seemed he was on every trip and at every event. RIP Gordie. 🚩

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## 2016 BGDC Officer's

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Tracey Combs, President	621-4066
Corrine Mulberry, Vice President	913-0892
Mike Sullivan, Secretary	266-4516
Dan Miller, Treasurer	948-5133
Doug Geddes, Trip Director	621-3178
Rick Stephan, Safety Info Dir.	223-3719
Mike McCann, Webmaster	255-3937
Bart Bertetto, Newsletter Editor	502-299-3656

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## Vice President's Report

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*By Corrine Mulberry*



### **Program:**

We have a three part program planned for our March meeting: (1) a memorial photo show for Gordon Green will be displayed before the meeting (please send pics of Gordon to [traceysdc@gmail.com](mailto:traceysdc@gmail.com)), (2) our regular program will feature the recent Philippine's dive trip, and (3) Gordon's infamously recorded answer to "how's the diving" will be presented by John Geddes.

If you have diving information that you would like to present at a Club meeting (past or potential dive trip, etc.), I would love to hear from you. Please contact me so that we can get you on the calendar. 913-0892 or [mulberryc1@gmail.com](mailto:mulberryc1@gmail.com)

### **New Members:**

The Bluegrass Dive Club sends a hearty "WELCOME" to new members **Jefferson and Lili Graue** of Lexington, KY. Jefferson and Lili are both Advanced Open Water certified and have registered for the St. Lucia dive trip. Welcome to both Jefferson and Lili! 🇺🇸

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## Trip Director's Report

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*By Doug Geddes*



### **BONAIRE 2016**

We have 11 persons ready to head to one of our favorite dive locations in a couple of weeks. If you aren't going, then you will be missing a great trip. Too late to sign up, just pray for all of those going and wish them a safe and wonderful trip.

### **ST. LUCIA 2016**

We also have 11 persons that have either filled out a reservation or have monies on deposit for this awesome trip. If you are looking to spend your tax refund, then this would be the place to do so. Go check it out on the website before it is too late. Payments to the resort are due by April 1, so you need to think about this real hard. Great diving and a great place to hang out.

### **EAST CAYMAN 2016**

Still looking for the first reservation to be sent in, but I have heard there are people just waiting to sign up. Don't wait too long or we will have to cancel the trip if we see no action. We have a deposit that protected.

### **LAKE TRIP 2016**

Adam Kidd is supposed to be working on a "lake" trip, but no one has heard anything about it. Keep your July 13<sup>th</sup> weekend opened just in case he comes through.

### **DIVE COMMITTEE**

We will be having a planning meeting soon, so please send us your suggestions for next year or a year or two out. We will be glad to look into it for you.

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## From the Treasurer

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By Dan Miller



### 2016 Membership Dues

Student (High School or College ID)...	\$10.00
Single & Family (1 diver).....	30.00
Family (non divers).....	30.00
Family (2 or more divers).....	40.00

**Renewal:** Please send payment to the address listed below, please make sure there is a correct indication of your mailing address, phone number and it is very important to indicate an email address.

**Contact / Mail to:** Bluegrass Dive Club c/o  
Dan Miller  
824 Gunpower Drive  
Lexington, KY 40509

**New Members:** Visit the website to fill out an on-line form or to access a Microsoft Word printable form. [CLICK HERE](#). 🚩

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## From The Secretary

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By Mike Sullivan



### GENERAL MEETING MINUTES Tuesday, February 9, 2016

- I. CALL TO ORDER 7:42 PM
  - a. There are 18 members present.
- II. OFFICERS AND DIRECTORS REPORTS:

### III.

- a. TREASURER MILLER
  - i. Dan reviewed the Treasurer's Report as of 1/31/16.
  - ii. The Roatan trip closed-out in the January Treasurer's Report.
- b. VICE PRESIDENT MULBERRY
  - i. Corrine will buy 2 bottles of sunscreen w/out oxybenzone as door prizes in support of saving the coral reefs.
  - ii. The program in February will be a DVD of the Philippines by Noel Hall.
- c. SECRETARY SULLIVAN
  - i. No Comments.
- d. TRIP DIRECTOR GEDDES
  - i. The Philippines trip currently was enjoyed by everyone. The Club may go back in the future and try one week at Puerto Gallera and one week on a live-aboard from Mindoro Island.
  - ii. Bonaire trip is 13-20 March and currently the airfare is very expensive or unavailable for anyone considering the trip.
  - iii. St. Lucia 11-18 June has 10 people signed-up for the trip.
  - iv. Grand Cayman 12-19 November has no activity.
  - v. Trip Committee may look for a trip in July.
  - vi. May also consider a week Land Trip to Tanzania and a live-aboard for a week to follow in Zanzibar.
  - vii. The trip committee will meet soon.
- e. WEBMASTE McCANN
  - i. No comments

- f. NEWSLETTER EDITOR  
BERTETTO
  - i. Absent.
- g. SAFETY INFORMATION  
DIRECTOR STEPHAN
  - i. Absent
- h. PRESIDENT COMBS
  - a. Door prizes were won by Charlie Denham, Doug Geddes, and Mike McCann
  - b. A DVD on a great white sharp dive trip in Mexico was shown by Noel Hall.

ADJOURNMENT 8:40 PM

**BOARD OF DIRECTORS MEETING MINUTES  
Tuesday, February 23, 2016**

- I. CALL TO ORDER COMBS
  - a. Meeting began at 7:28 PM
- II. APPROVAL OF AGENDA McCANN
- III. OFFICERS AND DIRECTORS REPORTS:
  - a. TREASURER MILLER
    - i. Treasurer's Report as of 2-23-2016.
    - ii. Philippines trip refunds going out by email.
    - iii. Doug will contact UDT about credit card payments for trips.
    - iv. Final payment for St. Lucia trip is due March 31, 2016.
  - b. VICE PRESIDENT MULBERRY
    - i. Members submit photos of Gordon to Tracey for Slide Show presentation.
    - ii. March program is 2016 Philippines trip.
    - iii. April program is Bonaire trip.
    - iv. May program is Cave Diving.

- v.
- vi. June is Club social month.
- vii. July program is St. Lucia.
- viii. August is Club Pig Roast, August 13, 2016 at Doug Geddes' house.
- c. SECRETARY SULLIVAN
  - i. No comments.
- d. TRIP DIRECTOR GEDDES
  - i. St. Lucia trip currently has 10 people.
  - ii. Bonaire trip has 11 people signed-up.
  - iii. Look for an email about a Vivid-Pix photo contest for Bonaire.
- e. SAFETY INFORMATION DIRECTOR STEPHAN
  - i. Newsletter article will be about history of wetsuits and how they work.
- f. NEWSLETTER EDITOR BERTETTO
  - i. Absent.
  - ii. Newsletter articles due no later than Friday.
- g. WEBMASTER McCANN
  - i. Currently working on 2015 taxes.
- IV. NEW BUSINESS COMBS
  - a. An email will be forthcoming about ideas for future trips.
- V. MEETING ADJOURNED AT 8:55 

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## Safety Corner

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By Rick Stephan



*Remember, safe diving is fun!*

**Note:** *This month's article was inspired by our recent trip to the Philippines. While the air temperatures were generally into the mid- or upper 80's each day, the water was cooler. At Puerto Galera it was mid-70's, and a number of your intrepid BGDC cohorts got a bit chilly, several resorting to buying hoods or thicker wetsuits.*

*We know that we would always opt to be more comfortable in the water, but getting chilled also becomes a safety issue. Cold divers can lose focus, use their air more rapidly, get cramps, etc. – all not desired situations for a safe dive.*

*This article is from [explainthatstuff.com](http://explainthatstuff.com) (cool name, huh?). It talks about why we get cold so quickly in the water, and why neoprene wetsuits work. Added to this is a short history of who first patented the wetsuit (No, it was NOT Charlie Denham..!)*

*Remember to always check out prevailing conditions before you go on any dive trip and bring the proper equipment to match the situation. Also, not mentioned in this article is the importance of hydration. Keeping your body hydrated means your blood volume will be proper, and the blood flow will help keep your vital organs warmed better.*

*Read on then, and understand one of the simple, but important concepts that helps us keep safe during our dive excursions. And remember, safe diving is fun!*

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## Wetsuits

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by [Chris Woodford](#).

If you live in a chilly place like the UK or North America, you probably don't set foot in the sea except in summertime. But if you're lucky enough to own a wetsuit, you can swim, surf, or go scuba diving whenever you please. These miracle clothes aren't meant to keep you dry—you get as wet as ever in a wetsuit—but they do keep you safe and warm when the water would otherwise be cold enough to kill. Let's take a closer look at how they work.

Wetsuits are not that different from ordinary, warm clothes—and they work in a very similar way. When you step outside on a chill winter's day, you pile on layers of clothes to keep you warm. You probably know that more thin layers keep you warmer than one thick layer, because several thin layers trap warm air in between them—and it's this air that helps to keep you warm.

How do the layers work? Heat tends to flow from hotter objects to colder ones nearby; that's a basic rule of physics called the second law of thermodynamics ("thermo" = heat, "dynamics" = motion, so "thermodynamics" is the science of how heat moves). Let's say you're standing outside on a winter's morning. If your body temperature is 37°C (98.4°F), and the air around you is just 8°C (46°F), heat flows from your body into the air and your body rapidly starts to cool. It's worth noting that the rate at which your body loses energy is directly related to the difference between your body temperature and the temperature of your surroundings. (That's called Newton's law of cooling.) So the colder the water, the faster you lose energy.

Put on lots of layers and trap warm air in between them and the heat has to flow through a series of warm "airlocks". Air is mostly empty space, so these airlocks are effectively barriers that stop heat escaping. If it's harder for the heat to escape, it's a whole lot easier to stay warm.

Stopping heat from escaping this way is called insulation. We insulate the walls and roofs of our homes for the same reason. Insulation means providing a barrier to stop heat escaping. We often think of ourselves trying to "stop the cold getting in." But there's not really any such thing as cold. Cold is just a lack of heat. What we really mean is that we're trying to prevent the heat from getting out.

### Why ocean water cools your body so quickly

Now imagine that instead of standing outside in the cold air, you're swimming in the freezing cold ocean in the middle of winter wearing only a pair of boardshorts! Unless you live in the tropics, the ocean water where you live will get very cold in winter. In a fairly cold, coastal country like the UK, the water temperature dips to about 6–8°C (43–46°F) in February/March, when the sea is at its most bitter. Venture into water that cold without a wetsuit and you risk a life-threatening condition called hypothermia, where the inner "core" of your body gets so cold that it doesn't warm up again. It is very dangerous to swim in water that cold. Your heart stops beating properly and you can die in a matter of minutes.

There's an added problem because water is very different from air. Air is a thin gas, while water is a heavy, dense liquid. So, when you swim, there are far more water molecules surrounding your body. The water molecules are also much nearer to one another, so they can conduct heat more efficiently than air. This is why water carries heat energy away from your body around 25–40 times faster than air. It's also why, on a warm summer's day, you can get in the ocean and feel freezing even when the water and the air are the same temperature: you feel cold because the water is ferrying heat away from your body like a conveyor belt!

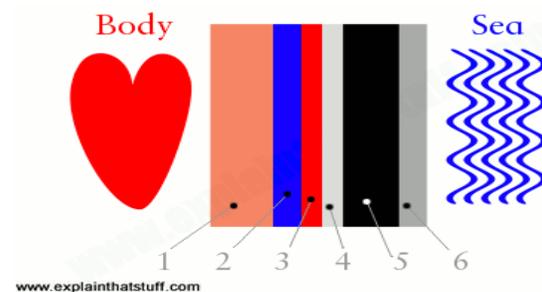
### How does a wetsuit work?

What's so good about neoprene?

Put on a wetsuit and everything changes. A wetsuit is made from multiple layers and, most importantly, a thick layer of synthetic rubber called neoprene. If you're interested in

chemistry, neoprene is the generic name for an organic (carbon-based) chemical called polychloroprene, which is a polymer (a very large molecule made from endlessly repeating building blocks called monomers), typically built from the monomer 2-chloro-1,3-butadiene. Unless you're a chemist, that will mean nothing and you won't care! The really important thing about neoprene is that it's a kind of foam rubber with a cellular structure that has nitrogen gas bubbles trapped inside it, which make it a particularly good heat insulator.

Layers, layers, layers!



Most wetsuits are made from multiple layers—and these help to trap and reflect heat much like any other insulating clothes. Some are lined with a thin layer of metal such as titanium or copper to reflect your body heat back inside. That helps to keep you even warmer than a normal wetsuit. Also, as you step into the ocean, a small amount of water seeps in between the neoprene costume and your skin—and stays there. Your body quickly warms this water up to something approaching normal body temperature. So now, between you and the sea, there's an insulating layer of rubbery material, some warm water, and multiple layers of insulation—all working together like a kind of personal, all-over body radiator! Not all wetsuits are the same, but these layers are typical of what you might find between your warm body and the cold sea:

1. Your own skin.
2. A thin layer of trapped water warmed by your body.
3. A layer of nylon or some other comfortable fabric to stop the neoprene rubbing and chafing your body.

4. A thin layer of heat-reflecting material based on a metal oxide of titanium, copper, silver, magnesium or aluminum.
5. A thick layer of neoprene containing trapped bubbles of nitrogen. This is the most important part for keeping you warm.
6. A durable outer layer made from some water- and abrasion-resistant material.

### Keep that water out!

For a wetsuit to work properly, any water that seeps in has to stay inside and stay warm. If a wetsuit fits badly, or isn't well sealed, the warm water layer will constantly "flush" in and out and be replaced by cold water from the sea—which, if you think about it, would be almost the same as wearing no wetsuit at all. As wetsuit inventor Hugh Bradner (see below) first realized, a neoprene wetsuit keeps you warm *in spite of* the fact that it makes you wet, not because of it. Even so, stopping cold water from flushing in and out is vital. That's why the seams of a wetsuit (where the separate panels of neoprene are joined together) are held together with special waterproof tape. They are also "blind-stitched": instead of the stitch holes going all the way through, they go only part of the way through the neoprene from the inside. That means there are no stitch holes in the outside of the neoprene to let in cold water. For the same reason, wetsuits have tight-fitting cuffs and legs.



Photo: Above: A tough brass zip and thickened rubber flaps keep water out of the back of this winter wetsuit. Below: This is what a wetsuit looks like inside. The outer neoprene is lined with smooth nylon (which feels better on your skin). The seams of the suit are blind-stitched and taped to stop cold water getting in and warmed water getting out.

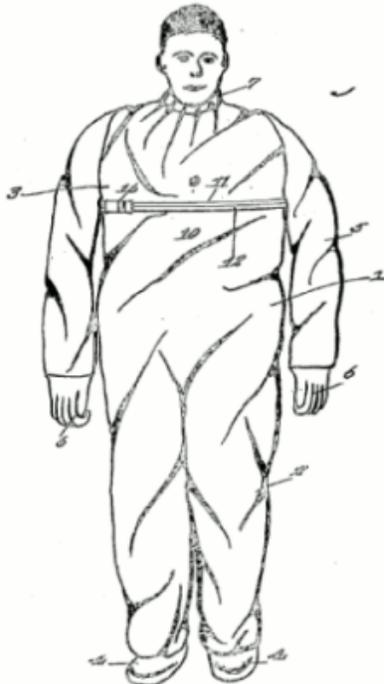
### Different types of wetsuits

Different wetsuits are available for different conditions. They come in different thicknesses of neoprene to suit different times of year and you can get "steamers" (full-length suits that cover your entire body), "shorties" (which have short sleeves and legs), or just vests and trunks. For total winter protection, you also need neoprene gloves, boots, and sometimes even a neoprene hood.

All this gear might look downright weird, and it can take a while to put it on and take it off, but once you're inside, you're ready for anything the ocean can throw at you—even in winter!

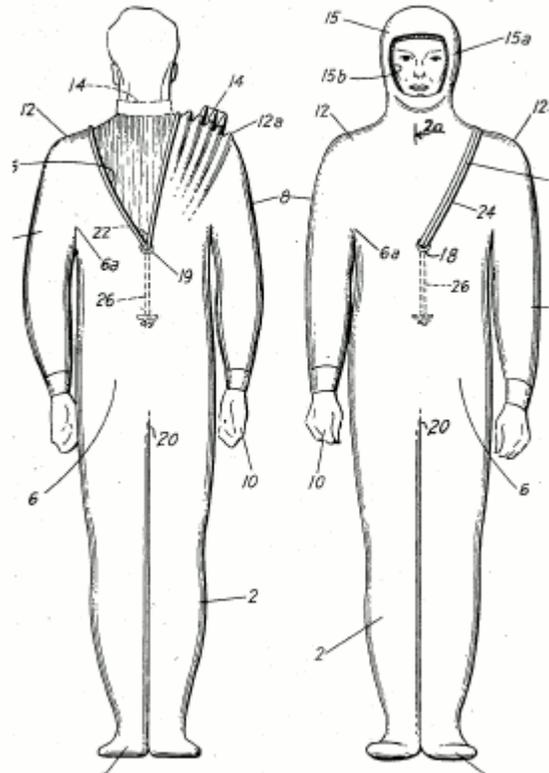
## Who invented wetsuits

**T. E. AUD**  
**March 19, 1929.** LIFE SAVING SUIT **1,706,097**  
 Filed Feb. 23, 1927



www.explainthatstuff.com

**Jan. 15, 1952** **H. L. WILLIAMS** **2,582,811**  
 GARMENT  
 Filed Jan. 31, 1947



www.explainthatstuff.com

Most histories of surfing and diving credit this superb invention to Hugh Bradner (1915–2008), a University of California at Berkeley physicist who developed the idea in 1951 while working for the US Navy. Dr. Bradner was responsible for the modern-style neoprene wetsuit—but he didn't invent neoprene (that was one of the synthetic fabrics developed by Wallace Carothers, pioneer of nylon) or come up with the idea of an insulated suit you can wear to save your life in the water.

Four years before Bradner's invention, on January 31, 1947, Harvey L. Williams of Hadlyme, Connecticut filed a patent application (US Patent 2,582,811: Garment) for a "one-piece, step-in and slip-over-the-head" diving suit with elaborate mechanisms to keep the water out and multiple layers to keep the diver

warm—and, as Williams' patent notes, there were earlier suits too.

The earliest example of a waterproof diving suit I've found is [US Patent 1,706,097: Life-saving suit](#), filed on February 23, 1927 by Thomas Edgar Aud of Herndon, Virginia. Much more like a modern dry-suit than a neoprene wetsuit, it was "made of some suitable strong and durable water-proof material, such as soft vulcanized rubber or any suitable combination of rubber and fabric" and designed as "a suit for life saving, swimming, and analogous purposes, which may be applied with great ease and speed and which will effectively seal the entrance opening against the intrusion of water." It's important to remember that inventors like Aud didn't have access to neoprene, which was only discovered in 1930.

Where Hugh Bradner deserves real credit is for figuring out that the cellular structure of neoprene makes it a superb wetsuit material. Like many great inventors, he chose not to patent his idea, wrongly believing that only a few hundred people might wear wetsuits. How wrong he was! His invention made it possible for *millions* of people to take up cold-water sports such as year-round surfing, swimming, and diving. Many people got rich off the back of this great idea, but Hugh Bradner's reward is ultimately greater: his name will always be honored as the inventor of the wetsuit.

Artworks: Early diving suits by Thomas Aud (left) and Harvey Williams (right) courtesy of US Patent and Trademark Office. 

## Bluegrass Dive Club 2016 Calendar

- |                       |                           |
|-----------------------|---------------------------|
| ▪ January 10          | Board Budget Meeting      |
| ▪ January 12          | General Meeting           |
| ▪ January 26          | Board Meeting             |
| ▪ <b>Jan 23-Feb 6</b> | <b>Philippines Trip</b>   |
| ▪ February 9          | General Meeting           |
| ▪ February 23         | Board Meeting             |
| ▪ March 8             | General Meeting           |
| ▪ <b>March 13-20</b>  | <b>Bonaire Trip</b>       |
| ▪ March 29            | Board Meeting             |
| ▪ April 12            | Board Meeting             |
| ▪ April 26            | Board Meeting             |
| ▪ <b>May 7</b>        | <b>Annual Derby Party</b> |
| ▪ May 10              | General Meeting           |
| ▪ May 31              | Board Meeting             |
| ▪ June 14             | General Meeting           |
| ▪ <b>June 11-18</b>   | <b>St. Lucia Trip</b>     |
| ▪ June 28             | Board Meeting             |
| ▪ July 12             | General Meeting           |
| ▪ July 26             | Board Meeting             |
| ▪ August 9            | General Meeting           |
| ▪ <b>August 13</b>    | <b>Annual Pig Roast</b>   |
| ▪ August 30           | Board Meeting             |
| ▪                     |                           |
| ▪ September 13        | General Meeting           |
| ▪ September 27        | Board Meeting             |
| ▪ October 11          | General Meeting           |
| ▪ October 25          | Board Meeting             |
| ▪ November 8          | General Meeting           |
| ▪ <b>Nov 12-19</b>    | <b>Grand Cayman Trip</b>  |
| ▪ November 29         | Board Meeting             |

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## **Dive Committee Members**

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Doug Geddes – Chairman	621-3178
Tracey Combs	621-4066
Ralph Covington	621-3862
Mike Sullivan	266-4516
Ed Sullivan	C@Meeting
John Geddes	223-7926
Corrine Mulberry	913-0892