



UNDERCURRENTS

Newsletter of the Bluegrass Dive Club / www.bluegrassdiveclub.com

June 2019

Volume 50, Number 6

June Club Meeting

Date: **Tuesday, June 25th**
Time: 7:30-PM (business)
 Social at 7

Location: **Bronte Bistro**
 Lexington Green

Program: Chuuk

President's Message

By Mark Kidd



Incredible that the year is half over!

Our Board is finishing the details on a trip to The Atlanta Aquarium and Jenny Springs in Northern Fla. With 200 foot visibility on most days, Jenny Springs is a pleasant way to spend several days exploring the 3 springs and a float trip on the properties.

The Atlanta Aquarium is famous for the whale sharks and beluga whales on display and now you can dive with them in the comfort of home.

I have tried for years to experience the thrill of diving with the largest fish in the world. Yes, the whale shark is a fish.

The great thing about this trip is it is not weather dependent and drivable. Atlanta is 6

hours down I-75 and Jenny Springs is another 5 hours.

I had a lot of down time this spring due to a nasty bug that did not go away but fortunately Stella and I are both feeling better and looking forward to the summer months.

Father's Day was spectacular with children and grandchildren with us for several days including a night at the Bluegrass Fair. I really would like to thank the Board and Stella for running things so well. I would like to see more smiling faces at the upcoming meeting, so why not join us. 🚩

The Editor's Notes

By John Geddes



This month we have some pic from the lucky DIVERS who made it to Little Cayman. If I don't use all of them in this issue, I will pass them on next month. 🚩

2019 BGDC Officer's

Mark Kidd, President	221-7104
Kris Harn, Vice President	333-6911
Kathryn Bowers, Secretary	619-0166
Dan Miller, Treasurer	948-5133
Trip Director - Open Position	
Bart Bertello, Safety Info Dir.	502-299-3656
Alex Fassas, Webmaster	582-1600
John Geddes, Newsletter Editor	608-0682

Vice President's Report

By Kris Harn



I look forward to seeing you all at our June meeting at Bronte Bistro. We will have appetizers/snacks at the meeting, June program to be announced at meeting.

If you have information on a potential dive trip. We would love to hear from you. Please contact us or come to a meeting and let us know what kind of trip you would like to go on. 🚩



Webmaster

By Alex Fassas



Not much to report on the Webmaster front. Email running, check. Website up, check. Regulator, BCD, dive gear in good order and packed, check. Oh, sorry, I was just getting ready for Little Cayman. 🚩

From the Treasurer

By Dan Miller



2019 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](#). 🚩



From The Secretary

By Kathryn Bowers



Minutes are on file for your viewing. 🚩



Cayman Trip Report

By Alex Fassas

Let me rub it in. Nine of the Bluegrass Dive Club members have recently returned from a wonderful week at the Little Cayman Beach Resort on Little Cayman Island. This trip marks the fifth time that we have visited this resort and world class Caribbean valet diving as a club. Our club has visited this resort in 1994, 1998, 2004, 2010, and now 2019.

I know that members of the club have visited here at other times as well.

The trip was from May 25 to June 1, 2019, we enjoyed 15 dives during the week. The 82-84 degree waters were nice when paired with visibilities of at least 80 feet and abundant healthy coral, fans, sponges, and variety of fish life. It is hard to believe that there was not a single underwater photographer among our club group. I asked a new friend from the trip, Ryan Goheen, of the U.S.A. (Under Sea Adventurers) Dive Club of Ft. Lauderdale, Florida and he kindly shared the first few of hundreds of photographs. Thank you Ryan, as some would say, "If you don't have any pictures, it didn't happen.

Our group was able to dive together the entire week on the Paradise Divers boat with Phil and Rhys as our crew and divemasters. Little Cayman Beach Resort had four 45' Newton dive boats and crew. While the diving was excellent, the handling, by the crew, of getting 12-14 divers in and out of the water was a well practiced rhythm. The dive sites were mostly less than a 10 minute boat ride to the north side of Little Cayman. Many of the sites are in or near Bloody Bay and the Bloody Bay Wall. It is a breathtaking to realize that the deep blue below the wall descends directly into the Cayman Trench with depths to 3,000 feet. Fathom that!

While most of our dives started with a descent along the wall to 60-80 feet, we saw even more when we returned to the top of the wall and the coral gardens between 20-40 feet. I saw my first Nimble Spray Crab on one dive. A pod of three squid hoping that lunch would swim by entertained a group of us. Southern and yellow stingrays were plentiful. Hawksbill turtles swimming or eating, were kind enough to let us observe. More than enough adult and juvenile Drum Fish for an entire marching band drum line. Yellow grouper were a rare site. It still catches one off guard to see a Barracuda keeping a watchful eye on you. I spotted a Slender File Fish, only 1 inch long, hiding among a Gorgon in perfect camouflage. Queen Triggerfish, Queen Angelfish, Spotted File Fish, Honeycomb Cowfish, Pedersen Shrimp, Banded Coral,

Cayman Trip Report Cont

Shrimp, Arrow Crab, File Clam, and the list goes on.

I almost forgot to mention that the three buffet style meals each day were truly a wonderful feast with much variety throughout the week.

The Beach Nuts bar was a welcome gathering spot with very friendly and accommodating bar staff. In fact, all of the staff at the resort was all about great service and friendly attitude. I know that we will be returning to Little Cayman Beach Resort, come join us next time.

Upcoming Trip Plans

The club is putting final touches on a domestic dive trip and whale shark experience. Mark your calendars for Thursday, July 25 through Sunday, July 28, 2019. We will be making a road trip to Jenny Springs, Florida and a stop at the Georgia Aquarium in Atlanta, Georgia.

The Georgia Aquarium offers a Dive with Gentle Giants experience. You will get to dive with Manta Rays and Whale Sharks in the aquarium. This is no fish bowl, but a 6.3 million gallon and 33 foot deep habitat. More details at the club meeting on June 25th.

We have eight divers going to Papua New Guinea in September for a week of diving from the 4th to the 12th. Six are staying on to visit the Goroka Highlands Cultural Festival and will be headed home on September 16th.

Papua New Guinea

This trip will be one that people will be taking about for a long time.

We start out at the [Rapopo Plantation Resort](#) September 4th-12th 2019. This part of the trip includes 5 days of 2 tank dives.

On the last day, while letting our equipment get good and dry, we have arranged for a full day tour consisting of some of the local World War II sites. Some of the sites include Mt. Tarvuvur Volcano, Admiral Yamamoto's Bunker, and the Japanese Barge Tunnel.

These are just three of the several sites we will visit.

The second part of the trip is optional and starts at the end of the dive portion of the trip. It is a 5 day/4 night tour September 12th – 16th that include two full days with VIP Passes to the [Goroka Festival](#).

We will also travel to the village of the [Asaro Mudmen](#) to spend the day with them.

The trip page is up on the web site and waiting for people to sign up. We already have four people confirmed with at least two more seriously considering it. We only have 10 confirmed spots. If you are thinking about this trip now is the time to sign.

I would like to thank everyone for all your support and help the past two years I have been on the board. Because of some things that have changed over the past year I am not able to continue on the Board.

The Trip Director spot is still open and really needs to be filled so the club has a person actively looking for new trips. If you would like more information about it please feel free to contact me or another board member.

Again, thanks to everyone for your support and encouragement of the past couple of years.

We are always looking for new places to go so if you have any suggestions, let me know. 🚩



Safety Information Director

By Bart Bertello



I Learned About Diving

Safety from That

My mission is to provide you relevant safety information for your use. Each article will focus on a specific safety risk. I will draw from my experience, hopefully yours, and the dive community to highlight real risks that we must be aware of. So, if you see or hear of something that we could all learn from, please pass it to me. There is nothing like first-hand experience to drive a point home. This month's lesson is:

EAR EQUALIZATION- DON'T TAKE IT FOR GRANTED

I met a middle-aged guy recently who is an accomplished athlete and in excellent shape. A few years ago, he tried scuba diving and had a terrible experience vowing never again. He went through a full certification program, but on his open water checkout he could not equalize. Pushing to the point of pain, he suffered a serious Ear Barotrauma which then led to an even more serious infection. It all required a lot of medical treatment and a prolonged recovery and he is still not sure if his ears are back to normal. After much discussion, I concluded he never really learned to equalize in the pool although he thought he had. His story reminded me how critical and important proper ear equalization is to safe diving and your health.

Ear equalization is absolutely critical to safe diving. Here is why: Equalization difficulty can be a major distraction when your attention and focus should be on all other aspects of safe diving such as your skills, your judgment, your equipment, the environment, etc. Many diving accidents, as are all accidents, are precipitated by a distraction (think texting and driving). Emotional factors

such as ear pain, anxiety, embarrassment, separation from the group, etc. just exacerbate the problem. In my previous research on Decompression Sickness (DCS), I saw contributing incidents of poor buoyancy control (bouncing up and down) on decent due to equalization issues. Consider the heavy current or low visibility situation. How about an equipment problem? You get the picture. If you are having difficulty equalizing, never forget that you are scuba diving first and foremost. Keep your head and work through it. Don't be afraid of aborting your dive if warranted.

Equalization of pressure in your ears is a physical exercise that gets easier the more you are conditioned to it. If I haven't dove in a while, before a big trip I try to hit the pool (one with a deep end) and practice clearing repeatedly. At the dive resort, if you think you might or you are having a problem, do some practice in shallow water or off the dock before going out on the boat. You just might save that expensive trip.

I found the attached article on Ear Barotrauma injury that is worthwhile reading.

See ya down there, Bart

EAR BAROTRAUMA: THE MOST COMMON SCUBA DIVING INJURY

By [Natalie Gibb](#)

Have you ever felt like you had water stuck in your ears or had muffled hearing after a dive? If so, you may have already experienced a mild ear barotrauma without realizing it. Ear barotraumas are the most common injury in recreational diving, yet with proper equalization techniques, they are completely avoidable. Learn about the kinds of ear barotraumas, how to recognize them, and most importantly, how to avoid them.

What Is a Barotrauma?

A barotrauma is a pressure related injury ("baro" refers to pressure and "trauma" refers to an injury). Many kinds of barotraumas are possible in diving, such as lung, sinus, and ear barotraumas.

Safety Info Cont.

What Causes an Ear Barotrauma?

An ear barotrauma occurs when a diver cannot properly [equalize the pressure in his ears](#) with the surrounding water pressure. Common causes of an ear barotrauma are ineffective equalization techniques, congestion, exceedingly forceful equalizations, or skipped equalizations.

At What Depth Is an Ear Barotrauma Likely?

An ear barotrauma can occur at any depth but is most common at shallow depths where the pressure change per a foot is the greatest.

If the pressure difference between the middle and outer ear is greater than about 2 psi (pounds per a square inch) a diver's eardrum will be distorted to the point that he is likely to feel pain and discomfort. This pressure difference can occur by descending as little as 4-5 feet without equalizing.

If the pressure difference between the outer and middle ear is 5 psi or greater, an eardrum rupture is likely. This pressure difference can occur by descending as little as 11 feet without equalizing.

Outer Ear Barotrauma

The Outer Ear. The outer ear includes the part of the ear visible outside of the head and the ear canal (the part of the ear that some people clean with a cotton swab). The outer ear is separated from the inner ear by the eardrum (tympanic membrane).

Causes of an Outer Ear Barotrauma. Normally, a diver's outer ear is open to the water and therefore experiences the same pressure as the surrounding water. Outer ear barotraumata occur when an object traps air in the outer ear, causing either an excess of pressure or a vacuum in the trapped air space as the Diver changes depths. Ear plugs, wax blockages, extremely tight fitting

hoods, and exostoses (bony growths) can all trap air in the outer ear.

Symptoms and Signs of an Outer Ear Barotrauma. During an outer ear barotrauma, a vacuum of pressure is created in the outer ear as a diver descends. This vacuum sucks the eardrum outwards and distends the blood vessels and skin of the outer ear. Divers experiencing an outer ear barotrauma have reported pain and difficulty equalizing during descent caused by the distorted eardrum. In extreme cases, the distortion of the eardrum from an outer ear barotrauma can cause a middle ear barotrauma. Signs of an outer ear barotrauma may include small amounts of blood trickling from the ear canal after the dive (from burst blood vessels in the outer ear).

Treatment and Prevention of an Outer Ear Barotrauma.

Unless an outer ear barotrauma has caused a middle ear barotrauma, the burst blood vessels or damaged skin of an outer ear barotrauma will generally heal themselves. To prevent future outer ear barotraumata, a diver should avoid the use of tight-fitting hoods and earplugs, and make sure his outer ears are free of wax and other blockages.

Middle Ear Barotrauma

The most common kind of ear barotrauma experienced by recreational divers is the middle ear barotrauma.

The Middle Ear.

The middle ear is an air-filled chamber separated from the outer ear by the eardrum and the inner ear by two thin, tissue-covered openings called the round and oval windows. The eustachian tube connects the inner ear to the back of the throat, allowing a diver to equalize the

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pressure in the middle ear with the surrounding water pressure by adding or venting air through the eustachian tube. A series of three connected bones called the "ossicles" connects the eardrum with the oval window, transferring sound to the inner ear.

Causes of a Middle Ear Barotrauma. A middle ear barotrauma occurs when a diver cannot equalize the air pressure in his middle ear with the surrounding water pressure. A middle ear barotrauma may occur on descent, when a diver's inability to equalize causes a vacuum in the middle ear, sucking the eardrum and tissues in the middle ear and eustachian tubes inwards. On ascent, the inability to equalize the middle ear air space can cause a build-up of excessive pressure, flexing the eardrum outwards.

Middle ear barotraumas can be caused by eustachian tube blockage due to swelling or congestion (which is one of the reasons it is a bad idea to dive when you are sick). Many divers, especially [child divers](#), may have tight or small eustachian tubes that do not allow the efficient passage of air to the middle ear and can lead to a middle ear barotrauma when proper descent techniques are not followed. New divers are particularly prone to middle ear barotraumas as they are still perfecting their equalization techniques and are likely to equalize either too forcefully or not enough, leading to over or under-pressurization of the middle ear.

Signs and Symptoms of a Middle Ear Barotrauma

On Descent: Divers experiencing a middle ear barotrauma on descent report a buildup of pressure and eventually pain, accompanied by an inability to equalize. I have also experienced soreness and pressure in

my eustachian tubes as they begin to collapse from the negative pressure.

If a diver continues to descend without equalizing, the vacuum in his middle ear cavity may eventually pull on his eardrum to the point that it bursts. Divers who have thus perforated an eardrum report a build-up of pain and pressure and then a feeling of relief as the eardrum bursts. This sensation is usually followed by a rush of coolness as water flows into the middle ear. Middle ear barotraumas can lead to inner ear barotraumas (which are much more serious) by exerting pressure on the round and oval windows.

After the Dive: Mild middle ear barotraumas may be recognized after a dive by the feeling of "fullness" or "water in the ears" that cannot be relieved. This sensation is caused by the accumulation of blood and body fluids in the eardrum and middle ear, not by water in the outer ear. Divers experiencing a persistent feeling of water in their ears after a dive would be well advised to be examined by a doctor and to not dive until sensation subsides.

Muffled hearing, dizziness, popping or crackling sounds while moving the jaw (caused by air entering accumulated fluid in the middle ear), soreness of the eustachian tubes and ears, squeaking noises during equalization on subsequent dives (caused by inflamed eustachian tubes), and fluid leaking into the throat from the eustachian tubes are all signs of a middle ear barotrauma.

Classifications of Middle Ear Barotraumas

Diving doctors occasionally use the TEED system to classify middle ear barotraumas.

Type I: Portions of the eardrum are red, possible distortion of the eardrum (in or out)

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Type II: Completely red eardrum, possible distortion of the eardrum (in or out)

Type III: Type II, but with blood and fluid in the Middle ear.

Type IV: Perforated eardrum with any other accompanying symptoms

Treatment of Middle Ear Barotrauma

A diver experiencing the signs and symptoms of a middle ear barotrauma should go to a diving doctor or ENT specialist immediately for a diagnosis. The severity and treatment of a middle ear barotrauma vary on a case-by-case basis.

In very mild cases, many doctors will prescribe a simple decongestant to help clear the eustachian tubes and fluids from the middle ear. Antibiotics may be prescribed if an infection is suspected. Topical drops are inadvisable; they are designed to alleviate outer ear problems only.

Equalization, changes in altitude, and diving should be avoided until the middle ear barotrauma is healed. This can take a few days to a few weeks for mild barotraumas, and up to a few months for a ruptured eardrum. Divers who have ruptured their eardrum should be examined by a doctor before returning to diving.

Inner Ear Barotrauma the Inner Ear

The inner ear is responsible for both hearing and balance. Separating the inner ear from the middle ear are the round and oval windows. These openings are covered by some of the thinnest, most delicate tissues in the human body.

The oval window is connected directly to the eardrum by a chain of bones called the ossicles. As the eardrum flexes inwards and outwards, the ossicles transfer this motion to the thin oval window tissue which is pulled outwards and inwards in conjunction with the eardrum. The round window of the inner ear flexes in response to the movement of

the oval window. If the oval window flexes into the inner ear, the round window will bulge out to compensate. The Round window is also affected by changes in endolymph (or inner ear) fluid pressure.

Causes of Inner Ear Barotrauma

Damage to either the round window or the oval window is classified as an inner ear barotrauma.

Improper equalization techniques or the inability to equalize the ears are the most common causes of an inner ear barotrauma. Forceful Valsalva maneuvers (blocking the nose and blowing) can cause a round window rupture if executed when the eustachian tubes are congested or blocked. Blowing hard with a blocked eustachian tube increases the pressure of the inner ear fluid (endolymph) which can blow out the round window.

Continuing a descent while unable to equalize can lead to an inner ear barotrauma. As the eardrum flexes inwards, the pressure is transferred directly to the oval window via the ossicles, causing the oval window to flex inward in conjunction with the eardrum. At this point, the ossicles either press through the oval window (perforating it) or the increased pressure in the inner ear from the oval window pressing in causes the round window to bulge out and burst.

Signs and Symptoms of Inner Ear Barotrauma

Divers with an inner ear barotrauma experience the tearing or perforation of the round or oval window as a distinct event. Most divers report an immediate feeling of vertigo, possibly accompanied by nausea or vomiting. Vertigo and vomiting can be disorienting, even life-threatening, underwater. Hearing loss and tinnitus (buzzing or ringing ears) are also common signs of inner ear barotrauma.

Treatment of Inner Ear Barotrauma

Inner ear barotraumas are among the most serious ear injuries a diver can experience. They require immediate medical attention both for treatment and diagnosis, and may often be confused with inner ear decompression

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sickness. While inner ear barotraumas sometimes heal themselves with bed rest, they frequently require surgery and may be a contraindication for diving in the future.

How Can a Diver Avoid an Ear Barotrauma?

- Don't dive when sick or congested. The eustachian tubes may be congested or swollen and will not allow for efficient equalization.
- [Learn to equalize properly.](#)
- Never equalize forcefully.
- Equalize once on the surface before descending. This provides a cushion of air in the middle ears pre-opens the eustachian tubes and gives you a margin of error in case you neglect an equalization in the first few feet.
- If you commonly have ear problems, descend feet first and head up.
- If you commonly have equalization problems, some doctors recommend practicing equalization on land daily. With practice, equalization becomes easier as you train your body to equalize properly.
- If you are prone to equalization problems, confirm that you can equalize your ears on land before departing on the diving trip. If you can't equalize on land, you will not be able to equalize under water.
- Don't use earplugs, tight hoods, or anything else that can trap air in the outer ear.
- Don't continue to dive with even a mild barotrauma. Further diving will only exacerbate the injury. 🚩



Bluegrass Dive Club 2019 Calendar

June

- 11, Tuesday Board Meeting
25, Tuesday Dive Club Meeting



July

- 9, Tuesday Board Meeting
23, Tuesday Dive Club Meeting

August

- 13, Tuesday Board Meeting
27, Tuesday Dive Club Meeting
First person to tell me gets a drink...



September

- 10, Tuesday Board Meeting
24, Tuesday Dive Club Meeting