



# UNDERCURRENTS

November, 2005

The Newsletter of the Bluegrass Dive Club

Vol. 35, No. 11

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

## November's Club Meeting

**Date:** Tuesday, November 8th  
**Time:** 7:30-PM (business)  
 Social at 7  
**Location:** The Racquet Club  
 3900 Crosby Rd.  
**Program:** Dinner with pics from the past  
 and Elections

## President's Message

*By Mark Kidd*



As yet another year comes to an end the BGDC has several great functions coming up you do not want to miss.

The dinner meeting and club elections will be Tuesday November 8<sup>th</sup>.

Great food and a chance to meet many new and seasoned members of the club are standard reasons for taking advantage of the time.

We will have some images of club trips and other functions from bygone days when we looked different than we do now and, of course, elections.

As of this now I wish to announce that all of the current officers have agreed to run on the new slate.

While I feel they have all done a great job and deserve to be returned to office I will mention that we will entertain any new nominations from the floor.

I was excited to see Neil from New Horizons at our last meeting and hope that we all make him welcome and make full use of the discounts he has extended members of the club.

Finally... please plan now for our Christmas party on Saturday December 17<sup>th</sup> 7:30 at our home. All we ask is that you bring a dish to feed 10 to 12 vegetables, salads or deserts. The club provides the rest.□

See you Tuesday.

*Mark*

## The Editor's Notes

*By John Geddes*



Pics this month are from Paul Johns, with Dan Miller on their trip to Bonne Terre, MO in the old lead mine.

Next month George and I will share some of our pics from the British Virgin Islands. Sorry to miss the Dinner Meeting, but diving calls.

Thanks to Ralph and Sherry for the lake review.□

*The Mine Store in Bonne Terre, MO*



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## Co-Vice President's Report

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By Dan Miller and Carol Call



Report by: Dan Miller

### New Member to the BGDC

Please welcome our newest club member: Jim Lacy from Utah. We also had two first time visitors at our October club meeting: Karl Perrson (guest of Nathan Valentine) and Angela Serafini (guest of Andrea Surface), both are Open water certified divers from Lexington.

### Bonne Terre trip Debrief

Paul Johns and yours truly went diving at a unique inactive lead mine in Bonne Terre, MO October 21-23. We made 4 dives in *comfortable* 58 degree water with unlimited visibility. A few of the pictures from BT are contained within this newsletter.

### Dive advice

Follow these 14 steps to use less air and extend bottom time. (1) Repair leaking O-rings & fittings, (2) Overhaul your regulator, (3) Make sure your octopus doesn't free flow, (4) Streamline your gear, (5) Breathe deeply, (6) Breathe slowly, (7) Pause after inhaling, (8) Relax, (9) Improve your aerobic conditioning, (10) Move slowly, (11) Fin efficiently, (12) Don't use your hands, (13) Minimize your weight and (14) Stay warm.

### Etc.

Check out dive blog [www.divester.com](http://www.divester.com). Register to win free trips to Bonaire, Belize and an Explorers Venture liveaboard at [www.scubadiving.com](http://www.scubadiving.com). Do you like sharks? See an interesting 6:26 minute Great White Shark video at <http://media.putfile.com/air-jaws/320>.

### 2007 trip planning

Believe it or not we're already looking ahead to our 2007 dive calendar. We need input from the club members on where to dive in '07. We plan on having 2 big trips in addition to the typical filler dives, i.e. lakes, North Carolina wrecks, Florida Springs, etc.

Some ideas being bandied about include Curacao, Bonaire, Belize, Cayman Brac and Turks & Caicos.

Both land-based and liveaboard trips will be considered. Whether you like these locales or wish to go elsewhere, please email your preferences to Doug Geddes. We'll most likely plan these trips to occur between the months of January and early July to avoid hurricane season.□

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## Divemaster's Report

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By Doug Geddes



GALAPAGOS 2006

I hope all of you had the chance to read the trip report in Rodale's Scuba Magazine online trip reports about Ken's adventure. After reading it, I have decided I need to get in better shape to do this dive. When we first talked about this about trip, we said it wasn't for inexperienced divers. His encounter with the elements backs that up. I know I will be striving to work out and get in shape before this trip, in addition to losing a bunch of unneeded weight. We are going to be checking with a few places about using their facility for swimming and working out to get ready for this trip. If you know of a place, let me know. Maybe we can get a group discount or better yet, free. Either way, I know I will be working out before this one.

We are still working on our air travels, but we do have a final itinerary. We are leaving on July 25<sup>th</sup> and arriving in Quito. The next day we will go to another town for their open market. The next day we will travel to the island where we will board our dive boat for the next week. After the boat trip, we will head back to Quito and head out into the jungle for 4 days. We will be returning home of August 8<sup>th</sup>. Pricing for all of the above is still being worked on. As soon as we finalize our air arrangements I will be forwarding an email to the trip participants.

Check out our web site for further information. Even though the trip is full, you can still put your name on our waiting list.

### ROATAN, HONDURAS 2006

As I have said in earlier articles, this trip is going to fill up. We have a little over 30 persons with deposits and are expecting more. If you still have

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## Divemaster's Report Cont.

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an interest in this trip and have been waiting to make your decision, the time is now. Don't wait till all the spots are gone then decide you want to go. We only have 36 air spots and 22 rooms (44 persons). Go to our web site and fill out the reservation form and get it done. I don't want to hear you say, "I wish I had done it earlier". The pricing for this trip will never be as good as it is now. Roatan is known for its great diving locations and is rated as one of the best in the world. You asked for a good deal and we have one. Now is the time to for you to go ahead and sign up.□

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## Safety Corner

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By Rick Stephan



**Note:** *As the seasons change, we start to think about other things than diving. It won't be long though, until we're thinking about the Florida springs trip or winging our way to Honduras. While not many of us really like diving in cold, almost all of us have gotten cold while on a dive trip. A much higher power than even the Dive Club EC (ha ha) for some reason set the human thermostat at 98.6 F, and, we hardly ever dive in water that warm – hot tubs excluded. So, thermodynamically speaking, we get cold.*

*I found this article on the internet, and it is one of the most comprehensive I've read about simply getting cold while diving. (Yes, Doug it is long, but you can always read it in two sittings!) What are the factors in getting cold, who is more susceptible, and what can you do about getting warm? Read on, and add this information to your diving knowledge so you can be more prepared for those early spring dives, or even those long, repetitive dives in warm water.*



*Remember, safe diving is fun!*

**ACCLIMATIZATION TO DIVING IN COLD WATER**  
by Dr. Jolie Bookspan

Who gets cold when diving in cold water, and why?  
Is cold something you can get used to? How?

**BRIEF OVERVIEW OF SUSCEPTIBILITY TO COLD**  
Just as the "dose" of nitrogen or oxygen, meaning partial pressure and time exposed, are main factors in decompression sickness and oxygen toxicity

respectively, major factors in cold stress are temperature and length of exposure. As with dosage of any drug or substance, several interacting and competing mechanisms, in addition to the dosage, determine if you will be affected, and by how much.

You generate heat in many ways, lose heat in many ways, and have various anatomical structures and physiologic schemes to block heat loss and gain. Thermal scientists can put all the figures for heat generation, heat loss, and resistance to heat loss into mathematical models to estimate what your final temperature might be. But it is more involved than just saying that young or old, or big or small people have any one characteristic and therefore greater susceptibility.

Losing body heat, by itself, does not mean that you are chilling. You lose heat all the time. Your body generates heat in the process of being alive. If you didn't lose heat, your body would cook (sometimes it does, and that will be covered in another article on overheating).

Losing heat doesn't necessarily mean you are in danger of hypothermia or any other injury from cold. You need to lose some heat. Whether you stay comfortable or get cold depends on how much heat you keep and how much you lose.

You lose heat in several ways. You also generate heat and store heat. No one variable such as gender or skin surface area makes anyone more susceptible to chilling or hypothermia than anyone else.

Losing body heat, by itself, does not mean that you are chilling.

*The diving dock in the Mine*



### FACTORS IN SUSCEPTIBILITY

**SURFACE AREA TO MASS RATIO.** Much is made of the "surface area to mass ratio." What is it? Your heat production is roughly proportional to your body mass. On the other hand, radiation of heat from your body to the environment is in proportion to the area of your skin that covers you. The proportion of how much external surface area you have compared to how much internal mass is your ratio.

Car and home heat-redistributors are built to have long thin shapes. Their high surface area-to-mass ratio gives

## Safety Corner Cont.

off, or radiates, lots of heat. Imaginatively, they are called radiators. Long, thin spaghetti cools rapidly. Short, round, bulky, baked potatoes stay hot longer.

Like spaghetti, your fingers and ears are long and thin with much exposed surface. Fingers and ears chill faster than your torso. Fingers have less total surface than your torso, but a higher ratio. Your torso, very much like a potato, has more internal mass compared to its outer surface of skin, giving it a lower ratio of surface area-to-mass.

Bodies, and body parts, that have a large surface area compared to their mass, can radiate more heat than those with smaller surface area-to-mass ratios. Although a higher ratio does allow more relative heat loss, it is not the main determinant of chilling. Someone with a larger ratio can lose more heat through that particular pathway yet still not be at greater risk of chilling, because of all their other heat-conserving and generating mechanisms. Moreover, a larger person has more total surface area and loses more total heat than a smaller person. For example, a large male has more total surface area, and so loses more total heat than a smaller man or woman, but is not more susceptible to chilling for that one reason.

*An Ore Car from down under*



AGE. Young children are less able to thermoregulate in the cold than adults for a variety of reasons including size, active heat generation, vasomotor control, and other factors. Risk of chilling also generally increases with aging, although changes in physical fitness and body composition that accompany aging, is often confused for aging itself.

BEHAVIOR. Is the person who gets out of the water first, really the cold one? A thermal stress workshop held at the Institute for Naval Medicine in England by the Diving Medical Advisory Committee discussed what they called the non-responder to cold. They stated, "It is still not known what the differences are between the man who responds to and complains of the cold, and another man who cools and is unaware that he is cooling. Presumably this latter type of diver is a potential hypothermic casualty."

MEDICATIONS. Medications called beta blockers are commonly prescribed for migraine headache. They are also sometimes taken for high blood pressure, although other medications have gained greater acceptance as anti-hypertensives. People taking beta blockers sometimes report reduced cold tolerance. A possible reason is that beta blockers, particularly a class called non-selective beta blockers, were found in some studies to block non-shivering thermogenesis, which is one small means of heat production.

EXERCISE. Contrary to popular belief, you won't always get colder by exercising in cold water. Both heat loss and heat production increase when exercising in cold water. Whether you get cold or warm depends upon which you have more of. Often the exercise can generate enough heat to overheat you, as US Navy divers found out during Desert Storm operations in the Gulf.

FITNESS. Your thermal tolerance can improve with physical fitness, although cold tolerance better increases with exercise in cold conditions than from exercise alone. In other words, to get used to the cold, you need to be out in it, Often.

PROTECTIVE CLOTHING. Clothing studies yield interesting results. Subjects' core temperatures are sometimes lower with protective garments than without. Lack of input from cold receptors in their hands, decreased the body's ability to make the needed blood flow changes necessary for cold protection. Sensory information from cold receptors in the extremities seems of high importance in thermoregulation. Still, protective clothing is important, and makes a life-and-death difference in extreme cold air and water. Protective clothing protects you from losing more heat than you can replace.

GENDER. Women are not more susceptible to hypothermia than men, as commonly thought. To the contrary, several studies show women are often less susceptible. On average, women have better ability to limit heat loss. They may generate less (and sometimes more) total heat than men depending on work load, fitness, body size, and other variables. Men, on average, usually lose more total heat from higher skin temperatures due to their lesser vasoconstrictor response (evidenced by often warmer hands), and from their larger total skin surface area, and for that reason, must counter with increased heat production from typically greater mass and metabolism. It takes more calories and metabolic work to keep up such heat production, making a very extreme survival situation more problematic for males - they may be more likely to starve and freeze. Evidence is strong that women protect their core temperature in the cold as well or more than men.

What about the warmer hands issue? That doesn't mean that men fare better in the cold. It indicates that women are losing less heat through their periphery. Men's warm hands pour heat out into the environment. Your skin temperature is not 98.6F (37C).

## Safety Corner Cont.

That familiar number is the average temperature of your core. Skin temperature is far cooler than core temperature. One of the ways your body resists heat loss through your periphery is by reducing warm blood flowing to your skin surface. In the cold, your skin temperature quickly drops to that of (or close to) the surrounding air or water. If skin surface temperature is close to surrounding temperature, the gradient is small, so heat loss is small. (Heat travels down gradients from high to low, just as with nitrogen load.) People with cooler skin in the cold have a smaller skin-to-environment gradient to lose heat. An analogy is if you stand outside your house in cold weather, touch the exterior wall and find it warm, you would notice the expensive loss of heat and know your home needed better insulation. You may even wonder who designed such an inefficient structure.

**BODY SIZE AND SHAPE.** A large person can produce and store more heat than a smaller person. Adaptations in body shape and size, hypothesized to aid survival as a species in cold climates, is summarized in Bergman's rule. Bergman's rule is a generalization that peoples originally native to cold climates are larger than those from warmer climates.

Now imagine a long, tall, slender person. With large body size, arm and leg length often increase. More heat is lost through these areas of high surface-to-mass ratio, and comparatively little fat insulation. Another generalization, called Allen's rule, takes limb length into account. The short arms and legs of large people from cooler regions, for example Eskimos, helps reduce heat loss.

Body size and shape contribute to susceptibility to cold, but, like any other individual factor, do not determine it.

*Dan Miller with a tank still stripped in*



### FACTORS IN SUSCEPTIBILITY TO COLD

- Water and air temperature
- Duration of exposure
- Skin temperature
- Body composition

- Very young and very old age
- Certain medications
- Protective garments
- Physical work load
- Body size
- State of acclimatization
- Fatigue
- Hydration
- Nutritional status

### WHAT IS ACCLIMATIZATION?

Cold acclimatization is a well-documented process of gradually increasing your resistance to cold injury through regular cold exposure. Following the recommendation of the International Union of

Physiological Sciences, the term acclimatization is distinguished from acclimation. Acclimatization means change from seasonal or geographical exposure; acclimation is change produced in a laboratory.

**WHO ACCLIMATIZES TO COLD?** Major examples of geographic acclimatization to cold are the indigenous people of the African Kalahari, the Australian desert, and Tierra del Fuego in Southern Chile. Many sleep outdoors nearly naked in freezing temperatures. Seasonal acclimatization occurs in people working outdoors year round and fishermen who dunk their hands in cold water all winter to tend their nets. Divers continuing to work late into the winter season, or year round in cold waters, gradually increase their cold tolerance. Extent varies among individuals and with exposure.

*Paul Johns here with an elevator to pull ore cars up*



### WHAT CHANGES OCCUR IN TRUE ACCLIMATIZATION?

True cold acclimatization involves at least three adaptations. Cold-acclimatized people begin shivering

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## Safety Corner Cont.

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at lower body temperatures, because they generate more heat without shivering. A big hallmark of cold-acclimatized people is improved ability to sleep in the cold. Cold acclimatization may involve either increased or decreased skin temperatures, depending on circumstances. In some cases, skin blood flow increases to keep extremities warm and to resist cold injury. In other cases it decreases to reduce heat loss. For example, skin temperatures of Australian Aborigines were lower while sleeping than those of the unacclimatized European investigators.

### ACCLIMATIZATION TO COLD

Shivering occurs at a lower body temperature Ability to sleep in the cold Changes in peripheral blood flow distribution.

### LOSING YOUR EDGE

When chronic exposure to cold environments ends, you gradually lose your cold adaptation. When acclimatized Korean divers switched from bathing suits to wet suits, their thermal advantage decreased. Loss of acclimatization was also documented in the Ama divers of Japan when they began wearing cotton suit insulation and wet suits.

### ACCLIMATIZATION IS NOT ALL THERE IS TO DIVING WARM IN THE COLD

To truly acclimate to cold weather, you need to expose yourself to cold conditions on a regular basis, and to exercise in the cold. You will reduce or eliminate your acclimatization potential if you keep yourself in a tropical micro-climate of warm clothing and indoor heating.

How practical is it to live a cold life in order to acclimatize to cold? Up to a point, it helps greatly. Below critical environmental temperatures, obviously, acclimatization is not all there is to diving warm in the cold. Cold affects many of your body systems as they make adjustments to increase heat production and decrease heat loss. Extreme cold exposures overwhelm your protective systems, with chilly effects.

One important way to conserve heat and tolerate cold water immersions is to wear good thermal protection. Various animals dive in Arctic waters using both wet suit and dry suit technology. The fur of seals and polar bears, for example, is an effective wet suit. It adds exterior insulation to their thick fat layer by trapping a two to ten millimeter water layer near their skin. The feather pelt of penguins, on the other hand, works like a

dry suit, maintaining an insulating layer of air. Humans who have no feathers or fur should wear exposure suits that include head coverings when they dive in cold water.

Some divers ask if pouring warm water in your wet suit, or warming up between dives in a heated car or boat cabin, will cause you to sweat and vasodilate your peripheral blood vessels, increasing heat loss, thereby making you colder than before. It's unlikely that you will overheat to such an extent. The additional heat you gain back is important for rewarming. You will be warmer than before and will build back a heat reserve. Rewarming is an important part of cold water diving.

### YOU CAN DO SEVERAL THINGS TO CONSERVE HEAT WHILE DIVING IN COOL AND COLD WATER:

- Wear good exposure garments, suitable for conditions
- Get the weather report and make site condition checks
- Allow wider diving safety margins with colder conditions
- Stay well nourished, rested, and hydrated
- Pre-wet your face and hands
- Get in slowly
- After diving, dry off, get changed, and get out of the cold
- Rewarm well between dives
- Keep in good muscular and aerobic shape to improve your heat-conserving and heat-producing systems
- If you are cold, do something about it

### DON'T JUST SIT THERE

Diving safely in the cold is a matter of not losing more heat than you produce. Divers rarely get clinical hypothermia from diving, but often get cold and uncomfortable, which can affect fun and safety.

If you are cold, do something about it. Safety in the cold requires action and thought by the diver before, during, and after diving. You can dive safely in cold water when you properly prepare. □

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## From The Secretary

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By George Fleischmann



### General Meeting Minutes

10/11/05

The 7:30pm regular meeting held on 9/13/05 was attended by 28 folks.

The treasurer's report was presented and distributed. Doug reviewed future trip plans. Details are available on the web site. A 25 min video was shown featuring diving the wrecks in the Chuuk Islands during the clubs February 2005 trip aboard the Odyssey

### EC Meeting

10/25/05

The 7:30pm meeting was attended by Mark, Dan, Kit, John, Carol, and Mike.

Mark called the meeting to order. The treasurer's report was presented and approved.

- (1) Dinner firmed up meeting head count, menu and program
- (2) Updated bylaws to be tabled until Nov. EC meeting
- (3) Reviewed 501(c) tax status for non-profit club organizations
- (4) Discussed KUES November tricycle race
- (5) Discussed January Florida Springs trip, plans being finalized by Lynn Walters
- (6) Reviewed Galapagos airfare, schedule and trip itinerary
- (7) Proposed a "Get into Dive Shape" initiative
- (8) Planned December 17<sup>th</sup> club Christmas part at the Kidd's residence
- (9) Delegated Rick Stephan's to bring new door prizes to the next club meeting
- (10) Outlined 2006 trip and events schedule, will firm up at Nov. EC meeting
- (11) Started planning for 2007 trips

The dive trip schedule for the next year was reviewed. The final schedule and details of the Galapagos trip were discussed. □

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## From The Treasurer

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By Kit Hudson



Filling in for Kit

2006 membership dues are now being accepted.

Student (active with student ID)....	\$10.00
Single or family with 1-diver.....	\$30.00
Family with multiple divers.....	\$40.00

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## Cumberland Lake Dive

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By Ralph and Sherry Covington



Sat. morn. Oct. 17 started out a little gloomy, with overcast skies and a slight peppering of rain. The eight "mud divers" boarded their deluxe pontoon at 10 am with enough food and gear for fifty. The optimistic adventurers set out for a day of diving, food and fellowship, while Katie and Charlie on board their Bayliner cuddy cabin scouted for ideal dive sites. It seemed that the usual pleasure boaters had anticipated our planned activities, and consequently the lake was ours. Captain Ralph headed to the ever popular "houseboat" wreck dive. After the first dive Katie and Charlie grilled brats for everyone. After eating we went for our second dive of the day. We were back at the dock at 6 o'clock to return the pontoon, after which we headed to Lure Lodge for dinner. This topped off a great day of diving, food and friends. □

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## Florida Manatee and Dive Trip

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By Lynn Walters



The second annual Florida Manatee snorkel and Dive trip will be Thursday, Jan. 19-Mon. Jan.23, 2006. The group will car pool and leave Lexington Thurs. At 4 pm, drive past Atlanta, and stay at the group's choice of hotels.

Friday afternoon the group will do the 2 tank dive at Paradise Springs, in the Ocala area, before continuing on to Homosassa. The accommodations will be at the Bella Oasis Inn (formerly Park Inn). Rooms range from \$68.90-\$80.00. The Inn has been remodeled, has a spa, restaraunt, continental breakfast, and golf.

We will do a weekend package with the American Pro Dive Center for \$88. Itinerary: Sat am- snorkel with the Manatees in the Crystal River sanctuary and dive King's Cavern; Sat. pm- snorkel or dive the spring fed drift dive of Rainbow River; Sun. Am- Premier Manatee snorkel trip on the Homosassa River with full breakfast. This package pleases both the divers and snorkelers.

Sunday pm the group has the option of doing the 2 tank dive at Manatee Springs (\$49.50) or the Blue Grotto and Devil's Den (49.50 each). If there are 8 divers, APD discount would make the dives \$39.50. We also have a member checking out the Forty Fathoms site this weekend and that could be an option, even though it's more tech inclined and not as clear. Tank rentals and air fills are extra, as usual.

The drive home has two options that the group can decide about. The Sun. Pm optional dives are 1 hr north of Homosassa.. The group can head home after the dives, stay at choice of hotels in northern FL, and finish the trip on Monday. Or they can return to Bella Oasis and do the full 12 hr return trip on Monday.

The total cost of the trip depends on the room choice, personal food expenses, optional

dives, and the price of gas. The estimated cost is \$500-600.

Check out the dive sites at [americanprodiving.com](http://americanprodiving.com) and Bella Oasis at [bellaoasis.com](http://bellaoasis.com).

Sign up asap on the BGDC website and/or at the meeting. A \$75 deposit is due by Dec. 1<sup>st</sup>. Final payment for the dives chosen is January 2, 2006.

Call or email Lynn Walters with any questions. 859-624-9906 (until 11/14) then cell 859-552-5845 and email [lywalt2@aol.com](mailto:lywalt2@aol.com).

## Bluegrass Dive Club 2005 Calendar

### November

8, Tuesday Dinner Meeting (Elections)  
29, Tuesday E.C. Meeting  
12/2, Friday Newsletter Deadline 11pm

### December

17, Saturday Club Christmas Party  
30, Friday Newsletter Deadline 11pm



Dan here with a steam powered wench

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## 2005 BGDC Officer's & Staff

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Mark Kidd, President	266-2276
Carol Call, Co-Vice President	253-3992
Dan Miller, Co-Vice President	948-5133
George Fleischmann, Secretary	873-9539
Kit Hudson, Treasurer	873-4974
Doug Geddes, Divemaster	224-3197
Rick Stephan, Safety Office	223-3719
Mike McCann, Webmaster	255-3937
John Geddes, Undercurrents Editor	223-7926