

PARADISE Dive Club

August 2006

Visit us at <http://kelp.chem.ucsb.edu>

Volume 12, Issue 8



President's Log

by Dan Lindsay

The next time you're diving, consider listening to the underwater world. The other evening I was out diving on a PDC Thursday night dive and found myself surrounded by croaking sounds. As you'll recall,

sounds carry a lot farther underwater than above, so these croaking sources could have come from a considerable distance. I held my breath for awhile, waited for the bubbles to float away, and then focused on the sounds—what an active world under the waves. I've heard the sounds lobsters make underwater but suspect this to be from fish this time. Has anyone else experienced this?

Dive physiology. After returning from nearly a month in Europe (on a very important mission!), I discovered how much the 9-hour time zone difference affected my condition for diving. I've always read about restrictions on diving and flying, and leaving a suitable amount of time in between to prevent problems, but never considered jet lag. How do you global travelers go to the South Pacific and then dive within a day or two? Maybe someone can provide us with a lecture on this topic.

This month we will be meeting for the first time at Petrini's Restaurant in Santa Barbara. Those of you who have been hoping for a more centralized meeting location—we've been

listening! Come on out to the meeting. Let us know how the food is, how the lighting is, as well if the acoustics are suitable.

One thing we have done on the PDC board recently is to redistribute the workload for the different positions. Over time we have found that the membership coordinator wound up doing many things other than simply tracking membership. We've gotten the assistance of Ovi Mora to handle the assembly and distribution of the monthly newsletters—and they have never arrived sooner than they do now. Later this year we'll be publishing the duties of the various positions so that when we start to look for help from you with handling the club, you'll have a better idea of what those position entail. Remember, the club is what you the members make of it, and we're always open to new ideas and suggestions.



Diving the Yukon. Photo by Steve Trainoff.

Join the club, get cool stuff

- ∞ Monthly meetings with entertainment
- ∞ Raffle prizes (who doesn't like prizes?)
- ∞ Great dive buddy pool
- ∞ Beach & boat dives, including weekly night dives
- ∞ Club BBQs & other activities
- ∞ Free airfills & gear discounts at local dive shops
- ∞ Right to proudly wear the official PDC T-shirt (because we do have the coolest logo)

Mark your calendars...

We meet on the last Tuesday of the month

NEW LOCATION Petrini's, Santa Barbara

14 W. Calle Laureles, off upper State near De la Vina

6:30 pm - social hour

7-8:30 pm - feeding frenzy, meeting,
raffle prizes, entertainment



Bulletin Board

- Let's get out and dive! We have two weekend beach dives planned for August: **Sunday, August 13** at **Tajiguas**, and **Saturday, August 26**, at **Hendry's**. Diving will be at noon, and there is no club BBQ associated with these events, though you are welcome to bring your own picnic lunch and hang out at the beach afterward.
- Annie Crawley and Jody Pesapane have chartered the *Vision* for a **limited-load video and photography trip** to San Clemente and Santa Barbara Islands from **September 5-9**. Photo and video equipment will be on board for people to try; Annie and Jody will offer tips and answer questions; and two editors will be on hand to demonstrate what to do with photos after capture. For more info, contact Annie at 805-453-1947 or annie@anniecrawley.com. Trip is \$850, but for Paradise Dive Club members it will be \$800.
- **Coastal Cleanup Day** is coming up in September, and we will be doing our usual Friday/Saturday **campout at Refugio**, along with a **beach and/or underwater cleanup** on **Saturday, September 16**. Stay tuned for more details at the next meeting and in the September newsletter.
- **DON'T FORGET: new location for July 25 meeting!** Join us this month at Petri's at 14 West Calle Laureles. Parking is available on the street or, more plentifully, in the adjacent Long's parking lot.

Get on Board! August Boat Trips

- Saturday, August 12, 7 a.m. departure on *Spectre* to Anacapa & Santa Cruz, \$85. Call Aquatics, 967-4456.
- August 21-23, 3-day free-diving trip (no tanks) to Cortes Banks and Santa Barbara Island on *Peace*, departs 9pm on Sunday, August 20, \$450. Call Blue Water Hunter, 564-6677.
- Sunday, August 27, 7 a.m. departure on *Peace* to Anacapa & Santa Cruz, \$110. Call Anacapa Dive Center, 963-8917.

Paradise Dive Club Officers

President - Dan Lindsay	964-5020
Vice President - Steve Trainoff	571-1622
Secretary - Catherine Almo	963-2121
Treasurer - Mark Silva	453-2001
Membership - Bruce King	284-3648
Newsletter - Stacey Janik	637-4487
Circulation - Ovidio Mora	683-4999
Sgt at Arms - Mike Macko	687-7176
Entertainment - Mark Bursek	564-1923
Raffle - Ralph Goldsen	681-0400
Webmaster - Ray Janik	637-4486
Historian - Cheryl Weakliem	967-2827

Sponsors:	
Anacapa Dive Center	963-8917
Aquatics	967-4456
Blue Water Hunter	564-6677
Truth Aquatics	962-1127

Visit our Web site at
<http://kelp.chem.ucsb.edu>

Send newsletter items to sjanik@gmail.com

Membership: \$25/year for individuals, \$40 for families. Membership runs May-April and includes monthly newsletter, free airfills, and other benefits. For details or to join, contact Bruce King at 284-3648 or kingbh@cox.net.

Tsunami 2004: The Day the Big Water Came — article by Tim Graham, who will present July meeting entertainment

It's the day after Christmas 2004, and you've just returned from a week of awesome diving around some lush tropical islands. You wake up refreshed and relaxed, when all of a sudden you feel your bed and walls shaking. You realize it's an earthquake, not a big surprise since you're from California where they happen all the time. So, you don't pay much attention to the tremors, but you notice the shaking seems to last an extraordinary long time. Then, the entire hotel suddenly feels like it's about to collapse because the walls are shuddering hard and the building is listing in one direction, scaring the daylights out of you. After 15 seconds, the swaying and shaking suddenly stops. Several minutes pass and you feel two or three smaller aftershocks. You don't feel any more shaking for 45 minutes, so you forgot the whole event. About an hour later, after you had felt the first tremors, you begin to hear people screaming and horns blowing from vehicles passing in the street in front of your hotel. You run towards the window to find out what the heck is going on. Motorcycles and cars are racing past and people's faces appear panicked. You notice 2-3 feet of water rising fast in the street. A near-hysterical Russian woman in one of the hotel rooms next to you yells "TSUNAMI!" as she hurriedly packs her belongings into a suitcase. What do you do? You come to the August 2006 Paradise Dive Club monthly meeting and find out. It could save your life! See cool underwater fishes and startling tsunami images taken just hours after the "big water" came to Patong Beach, Thailand. Tsunami images presented by Tim Graham, world-renowned U/W photographer.



Cardiovascular Effects of Scuba Diving

by Cesar C. Palerm, Ph.D.

<http://www.chemengr.ucsb.edu/~palerm/>

My research has always been focused on medical applications, so I regularly monitor the table of contents of a variety of medical journals. In one of these, I recently came across a paper that is related to scuba diving. Given its relevance to all of us who enjoy this activity, here is my synopsis of the results presented.

The paper in question is:

Boussuges, A, F. Blanc, and D. Carturan (2006). "Hemodynamic changes induced by recreational scuba diving." *Chest*, 129(5):1337-1343. [*Chest* is a publication of The American College of Chest Physicians.]

The authors were interested in looking at cardiovascular changes induced by scuba diving, for which they used Doppler echocardiography. Doppler echocardiography uses the same principles as the more well-known sonogram used to follow the progress of pregnancy. In this case the focus is the heart and the blood flow through it.

They had ten healthy, male, experienced recreational divers participating in the study. Their ages ranged from 33 to 54 years, with body weight of 58-96 kg (128-211 lbs) and body mass index of 19.8-31.7 kg/m². For eight of them, scuba diving was the only sport activity they practiced. This is a reasonable cross-section of the recreational diving population, with the exception that only males participated. This is particularly important, as it is well known that the risk for decompression sickness (DCS) depends on levels of fat, age, and fitness level, among other factors.

The subjects served as their own controls, given that the echocardiography study was done before and after a dive. The dive in question was in sea water, to a depth of 34.4±2.7 m (113±9 ft), and a duration of 25±4 min, which included descent time. Ascent was controlled to be at a rate of 9 m per minute (29.52 ft/min), and included a standard safety stop.

The authors used a grading scheme that quantifies detectable bubbles in the blood coming into the heart from the systemic circulation. A grade of 0 means no detectable bubbles, a grade of 1 means occasional bubbles, with the majority of the heart beats showing no bubbles; a 2 grade shows the flow of bubbles, but less than half of the heart beats contain them (either single or in groups); 3 indicates that the majority of heart beats contain bubbles (again, either single or in groups); and 4 indicates that bubbles fill the heart chambers, this is, all heart beats show groups of bubbles.

After performing the dive, the subjects were taken to the medical facility for the post-dive echocardiogram study; in the interim they minimized their physical exertion. The actual study was done one hour after the end of the dive. Of the ten divers, seven showed a bubble grade of 3, one had a grade

of 2, and two had a grade of 1. All of these were in the right cavity of the heart, and after the blood passed through the lungs, there were no bubbles remaining, and none were detected in the left chamber of the heart.

The main change that the authors found was a decreased stroke volume and an increased resting heart

rate. The stroke volume is simply the amount of blood the heart pushes out in one heart beat; thus, the stroke volume multiplied by the heart rate is the total amount of blood flowing over one minute (this is called the cardiac output). In all cases the cardiac output remained unchanged.

They looked at different possible explanations for this change, and determined that the most likely explanation was a reduction in the amount of circulating blood. They cited previous studies that have shown this reduction in subjects after a single dive, repeated dives, or periods of daily diving. This loss of blood volume can be explained by the effects of immersion in water. Immersion, particularly in cold water, shunts blood from the extremities to the core of the body in order to preserve body heat. This increase in the central blood volume then triggers a diuretic response in order to restore normal blood volumes. Increased exercise, as well as breathing dry air, further dehydrates the diver.

The other possible explanation that could not be discarded from the collected data was venous gas embolism induced by nitrogen desaturation. As we well know from our training, a gas embolism is something that we do not want to experience. The authors also noted that the lower amount of circulating blood after a dive was related to mechanisms observed in experimental decompression sickness. The authors went on to state that reduced circulating blood volume combined with biological changes due to circulating bubbles could induce decompression sickness.

They thus concluded that "the restoration of the water balance of the body is an important part of the recovery process after diving. Oral hydration should be particularly important in case of repeated dives or during periods of daily diving." Given how simple it is to drink some water after every dive, and how important this could be in preventing decompression sickness, it makes sense to drink up. As a side note, this could be a possible explanation of why alcohol consumption has been linked to an increased risk of DCS, given its diuretic effect and the further dehydration it induces.

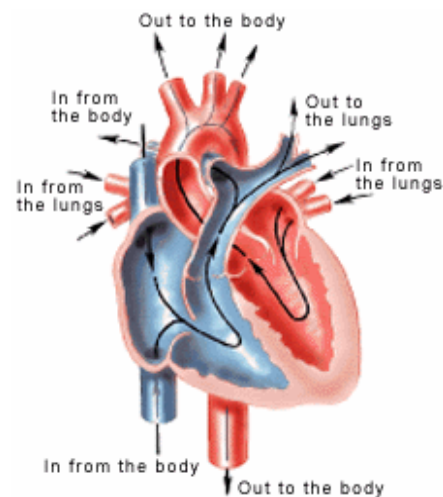



Image showing normal blood flow through the heart (from Cleveland Clinic Web site).

August 2006

Don't forget...
MONTHLY MEETINGS
July 25 and August 29
 Petrini's in Santa Barbara

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13 Beach dive @ Tajiguas	14	15	16	17	18	19
20	21	22	23	24	25	26 Beach dive @ Hendry's
27	28		30	31		

Night Dives

Upcoming Events

- Sunday, 8/13: Beach dive at Tajiguas, noon (no club BBQ)
- Saturday, 8/26: Beach dive at Hendry's (no club BBQ)
- Saturday, 9/16: Coastal Cleanup Day—annual campout at Refugio, beach & u/w cleanup

Welcome to our new members!

Ed Hammond
 Stephanie Hampton

Thursday night dives: To find out where the group is diving or to be added to the night dive e-mail list, sign up at http://groups.yahoo.com/group/PDC_midweek_dive or send e-mail to PDC_midweek_dive-subscribe@yahogroups.com.



P.O. Box 21311
 Santa Barbara, CA 93121



22 Anacapa Street
 Santa Barbara, CA 93101
 805-963-8917
<http://www.anacapadivecenter.com>



5822 Hollister Avenue
 Goleta, CA 93117
 805-967-4456
<http://www.sbaquatics.com>



117-D Harbor Way
 Santa Barbara, CA 93109
 805-564-6677
<http://www.blueh20.com>



301 West Cabrillo Boulevard
 Santa Barbara, CA 93101
 805-962-1127
<http://www.truthaquatics.com>

Special thanks to our sponsors for their support, including airfill donations and gear discounts!