WINTER 2010

WILDERNESS MEDICINE

COMBINING YOUR PROFESSION WITH YOUR PASSION™

Volume 27, Number 1

The Lost World of Glen Canyon

Western States 100 Mile Run

Multitasking

$12.50 US

0 94922 94319 4

EDITORIAL STAFF

Wilderness Medicine
A quarterly magazine published by the Wilderness Medical Society

WMS Editorial Office & Advertising Sales
Jonna Barry
1505 N Royer St
Colorado Springs, CO 80907
Tel: (719) 330-7523
Fax: (801) 705-1483
Email submissions to editor@wms.org

Design & layout:
CoPilot Creative
1301 W. Colorado Ave.
Colorado Springs, CO 80904
copilotcreative.com

Wilderness Medicine (ISSN 1073-502X) is published quarterly in January, April, July, and October by the Wilderness Medical Society, 2150 South 1300 East, Suite 500, Salt Lake City, Utah. Periodical postage paid Colorado Springs, Colorado. Annual subscription rate: $55. POSTMASTER: Send address changes to the Wilderness Medical Society, 2150 South 1300 East, Suite 500, Salt Lake City, Utah. Submit request to reprint *Wilderness Medicine* in whole or in part to copyright.com.

WINTER 2010 INSIDE

On the cover: Kayaking on Lake Powell beneath a natural bridge in Anasazi Canyon with water level of the reservoir 110 feet below its "normal" full-pool elevation due to a prolonged western drought. At this water level, the reservoir's water volume is 45 percent of its full-pool capacity. The reservoir's high-water mark, as indicated by the "bathtub ring," can be seen at the very top of the canyon wall at center left. Glen Canyon National Recreation Area, Utah, April 2006. ©James Kay, www.jameskay.com

NOTE: Claims for copies lost in the mail must be received within 90 days (180 days foreign) of the issue date to ensure replacement at no charge.

The goals of *Wilderness Medicine* magazine are to:

1. Provide timely information regarding WMS news and activities.
2. Provide a forum for exchange of ideas and knowledge regarding wilderness, environmental, and travel medicine.
3. Disseminate wilderness medicine information to the wilderness, outdoor, and travel community.

WMS™ WILDERNESS MEDICAL SOCIETY

WILDERNESS MATTERS Colin Grissom MD, FAWM, President WMS

The Wilderness Medical Society (WMS) recently finished a dive meeting in Cozumel, Mexico that was unfortunately marked by a tragic event. After surfacing from an open ocean dive, a WMS member lost consciousness and required cardio-pulmonary resuscitation on board the dive boat, and died later at the local hospital. On behalf of the WMS I extend our sincere condolences to the family. When an event like this occurs on a wilderness trip it reminds us how fragile life can be. The WMS is not naïve to the risks of wilderness adventure; however, this is the first death that I am aware of associated with a WMS conference.

Thanks to the program Co-Chairs, Eric Johnson and Paul Auerbach, and the WMS staff including Loren Greenway, Teri and (her husband) Skip Howell, and Jim and (his wife) Pauli Ingwersen, the conference went on and the educational sessions ran smoothly providing participants with the highest quality wilderness medicine education. Everyone at the conference also experienced the learning that can occur after an event like the death of a friend and colleague during a wilderness activity. The WMS leadership led by Loren Greenway and Eric Johnson pulled everyone together to take care of the required details, contact family, and debrief conference participants. The WMS also recognizes and thanks those WMS physicians directly involved in the resuscitation. This was a cooperative effort involving many details that required the WMS members present to act as a cooperative and cohesive group. The WMS staff was a tremendous help and we extend our thanks. This was a difficult event for all involved, but the meeting continued as did diving excursions.

As wilderness medicine health care providers we acknowledge that the focus of wilderness medicine involves prevention and treatment of illness or injury incurred during wilderness adventures. We all want to save lives impacted by illness or injury during wilderness adventures, but we also accept that death may occur. We obviously need to maintain our knowledge base and skills in emergency care and prevention of injury and illness, but we also need to anticipate how we will get appropriate medical care and how the ill or injured will be transported home. I am sure that those involved in the Cozumel conference learned a lot about all of these details. As we reflect on the loss of a fellow WMS member and give our regards to the family, we should also think about how each one of us can be better prepared in the future should an accident occur on one of our wilderness adventures.

LETTER TO THE EDITOR

I appreciate the "Great Gear" section in *Wilderness Medicine*. It is useful to have extra eyes scouting out new products. It is also important, though, that the eyes are critical. I have concerns over the promotion of the Green Dot Systems emOx system. We published a paper in *Wilderness and Environmental Medicine* evaluating an earlier version of similar technology.[1] Two items were notable at the time. First, the promised flow rate delivered by the system was a peak, not an average. Second, the total volume of oxygen delivered was extremely limited. While we have not tested the Green Dot system, my understanding is that even with the increased bulk, the total oxygen yield is limited. I think that it would have been helpful in the "Great Gear" review to comment on obvious limitations. In this case, that the limited supply volume may not be adequate to justify carrying the system and the additional water required for its operation.

Neal W. Pollock, PhD
Center for Hyperbaric Medicine and
Environmental Physiology
Duke University Medical Center
Durham, North Carolina

Reference
1. Pollock NW, Hobbs GW. Evaluation of the System O2, Inc. portable non-pressurized oxygen delivery system. Wilderness Environ Med. *2002;13(4):253-5.*

Not yet tested by Wilderness Medicine, the Green Dot emOx system has been assigned for testing. Ed.

The editors encourage letters, which may be edited for style, length, and content.

Email correspondence to
editor@wms.org

Visit wms.org
for the latest
conference details!

2010 WMS Wilderness Medicine Conference & Annual Meeting

Tony Islas MD, FAWM, WMS President-Elect and
Jay Lemery MD, FAWM, WMS Secretary

Your personal invitation to the best conference on wilderness medicine…

We invite all our friends – new, old, and friends we have yet to meet – to join us July 23 - 28, 2010 at the WMS Annual Summer Wilderness Medicine Conference in Snowmass, Colorado. Our annual conference and summer meeting is the quintessential wilderness medicine meeting, and *this* year we hope to raise the bar even higher. It is a great way to explore the breadth of wilderness medicine, gather with your friends and colleagues, and earn CME and FAWM credits, while taking in all that the Aspen/Snowmass area has to offer.

We have made a concerted effort to increase the opportunities for hands-on experiences and added many more skill sessions, plus we're bringing back the pre-conference Advance Wilderness Life Support course.

The 2010 Summer Meeting in Snowmass will provide an excellent opportunity to sharpen your skills, network with like-minded folks, and deepen your knowledge of wilderness medicine. Join us in the cool mountain air this July…come on out and take a hike with us.

2010 WMS Travel, Dive, and Marine Medicine

The second annual WMS Travel, Dive, and Marine Medicine, at the Westin Ka'anapali Resort and Spa, Maui, Hawaii, will be held October 30 – November 3, 2010. Our distinguished faculty includes marine medicine expert Michael Jacobs, MD; surfing medicine specialist Andrew Nathanson, MD; medical director of Kona Ironman Robert Laird, MD; Christopher Van Tilburg author of numerous books and "Ask Doc Wild" for *National Geographic,* editor of *Wilderness Medicine* magazine; and underwater navigation expert and cruise ship nurse Sheryl Olson, RN.

A myriad of topics will be offered, such as travel medicine, pediatric wilderness medicine, heat and solar injury, shark attacks, marine animal stings, seafood toxidromes, windsurfing and surfing injuries, cruise ship medicine, ocean survival, drowning/near-drowning, marine medical kits, telemedicine at sea, seasickness, hyponatremia in endurance athletes, open-water lifeguarding, and dive emergencies.

During the workshops roll up your sleeves and interact with faculty and other attendees while you learn about improvised splints and litters, compass navigation, GPS navigation, underwater navigation, and ocean survival and water rescue.

THE LOST WORLD OF GLEN CANYON

STORY AND PHOTOGRAPHY BY © JAMES KAY

In the first half of the 20th century, the Bureau of Reclamation embarked on a program of massive public works projects to begin harnessing the water resources of the American West. In 1928 Congress authorized the first mega-project of this new era in the construction of Boulder (Hoover) Dam on the lower Colorado River. This enormous concrete structure was the first installment on a vast scheme by the Bureau to convert virtually every mile of the Colorado River into a series of stair-step lakes from its headwaters in the Rockies to its delta in the Sea of Cortez.

With the successful construction of Hoover Dam under its belt, the Bureau's engineers soon turned their attention to other potential dam sites along the Colorado. Located 13 river miles upstream from the entrance to Grand Canyon's Marble Canyon, the sheer Navajo Sandstone walls of Glen Canyon were a dam-builder's dream. Bureau engineers set to work and Glen Canyon Dam began to rise from the drawing boards. Due to minimal public opposition and non-existent environmental-review laws, the plans were fast-tracked and construction began in 1956. By the time the last bucket of concrete poured into Glen Canyon Dam in 1963, a nascent Lake Powell was already beginning to pool at its base. It took another 17 years before the reservoir finally topped off in 1980, flooding 186 miles of the Colorado River and countless miles of side canyons beneath hundreds of feet of water.

Down canyon was an example of how we manage our world and here was an example of how the forces of nature manage things.

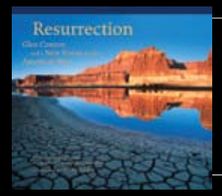
Beginning at Hite, Utah and ending just above Lee's Ferry on the Colorado River, Glen Canyon was named by the Powell Expedition of 1869 due to the many deep, sinuous side canyons which branched off the Colorado River every few miles. Adorned with their hanging gardens of Maidenhair Fern, the sound of croaking frogs and the descending trill of canyon wrens, these hidden grottos teemed with life. Beavers dammed willow and cattail-lined streams to provide habitat for multitudes of creatures. Along the Colorado, large numbers of Blue Herons roosted in extensive groves of cottonwood trees as deer and coyotes left their tracks in the wet sand. These narrow, life-supporting, river-edge riparian zones were the exception in this land of barren rock and windblown sand. The flooding of Glen Canyon extinguished all this life. Now, where the reservoir's fluctuating waterline meets the land, it is devoid of life, save for a few non-native Tamarisk shrubs clinging tenaciously to sun-blasted rocks.

My first impressions of Glen Canyon and Lake Powell were from the deck of a houseboat in 1984. At that point in time, I had little knowledge of what lay beneath the waves. Fast-forward to the 90s when I spent much of my time exploring the canyonlands all across Utah's vast Colorado Plateau Province. By then, my shelves were stacked deep with books eulogizing Glen Canyon as the most inspiring stretch of canyon country along the entire Colorado River. Compared with my first trip to Lake Powell, I now understood the magnitude of what had been lost with the flooding of Glen Canyon. So when the deep winter snowpack in the Rockies failed to materialize and recharge the waters of Lake Powell in the early years of this decade, I decided to embark on a project to explore and photograph these "lost" canyons as they began to emerge into the light of day. With the waters at historic lows, I wanted to see for myself and make a photographic record of the spectacular canyons for which Glen was so renowned.

As when prying open the cover of an ancient sarcophagus to reveal a desiccated, cobweb-covered occupant, I didn't necessarily expect the experience to be a pretty one. As I organized gear for my first trip into a dewatered section of Davis Gulch in early 2003, I imagined myself floundering through boot-sucking mud beneath dead cottonwood trees with skeletal branches pointing skyward and a canyon bottom filled wall-to-wall with impenetrable groves of tamarisk. Much to my surprise, as I descended into the canyon below the old high-water mark of the reservoir, I discovered stream banks lined with willow and cottonwood shoots and frogs with periscope eyes floating in small pools in the clear stream. Ravens and canyon wrens vied for ledges on the newly-revealed canyon walls and lizards darted over fresh deer prints pressed into the damp sand beneath my feet. A fuzzy carpet of green grass sprouted along the canyon floor a mere hundred feet upstream from the receding waters of the reservoir. While drought usually presents great challenges to life in the West, here along the alcoves and narrows beneath the canyon rims, a lost world was being reborn. Like a cork erupting from a well-shaken bottle of Champagne, life was exploding everywhere.

My forays into the canyons soon evolved into a five-year project culminating in a book titled, "The Resurrection of Glen Canyon – A New Vision for Living in the American West." When I first embarked on this project, I was primarily motivated by my desire to explore places I thought were forever out of my reach; to search for magic light in canyons few people had ever seen before. But as the project evolved, it took on additional meaning as I realized it was about more than beautiful, glowing sandstone chambers; it was about witnessing the transformation of these canyons as life reclaimed the barren ground.

Willow Gulch provided the most remarkable example of this transformation process. Located several miles north of Davis Gulch, Willow has carved a deep groove into the Navajo Sandstone on its short journey to the Escalante River. For my first trip into Willow back in 2005 to photograph its dewatered section, I dropped in near its headwaters and wound my way deeper and deeper into its labyrinth until I encountered the old high-water mark of the reservoir. I always feel as if I'm walking into a time machine as I descend into these formerly reservoir-flooded canyons. As I wandered down Willow, I was dismayed to discover a mile-long devastation zone of crumbling sediment banks, oozing mud, windblown tumbleweeds, and swirling clouds of dust. Not a pretty picture. Other than a few shots of the apocalyptic scene, I saved a lot of money on film that day.



Resurrection: *Glen Canyon and a New Vision for the American West* is available on amazon.com, signed copies are available at www.jameskay.com/glencanyon.

Exactly two years later, I returned to Willow and witnessed a phenomenal transformation. Where there had been nothing but devastation, life now flourished. Thick stands of willow and cattail crowded the sandy banks along the shallow stream. 15-foot tall cottonwood trees re-staked their claims. The windblown tumbleweeds were nowhere to be seen and the canyon echoed with the sounds of birds, frogs and gurgling water. A sculpted 10 foot-tall waterfall, which had been entirely buried beneath the reservoir sediment on my previous trip, was now fully exposed. Further down the canyon, as I rounded that last bend in the walls and saw the stagnant waters of the reservoir, the scene immediately changed back to one of devastation. In what I came to refer to as "The Dead Zone," that place where the reservoir meets the land, bubbles rose through the oozing muck at the reservoir's edge while dead cottonwood logs floated on the scum-covered water. All greenery had vanished and the canyon was dead silent except for the sound of an idling powerboat around the next bend. Anxious to return to the living world of the canyon above the reservoir, a profound feeling swept over me as soon as I retreated upstream around the first bend. As though a line had been drawn in the sand, I was immediately out of the Dead Zone and surrounded again by willows, cattails, cottonwoods, and the sounds of life. It was like flipping a switch. Down canyon was an example of how we manage our world and here was an example of how the forces of nature manage things.

The water level of Lake Powell dropped to an all-time low of 145 feet below its full-pool capacity in April 2005. Last winter's above-average snowpack raised the water level to its highest point since 2002. As I write this, it laps at the dam, 71 feet down the face. Much of what I saw has once again slipped beneath the waves. It's difficult to say where things are headed. As we continue to conduct a vast global experiment by dumping CO2 into the air, we will undoubtedly affect the precipitation patterns in the West. Scientists' suggest that our planet's wet places will get wetter and the dry places dryer. If this assumption is correct, we can look forward to more prolonged and severe droughts in the West with all their ramifications, including their effect on the lost canyons of Glen Canyon.

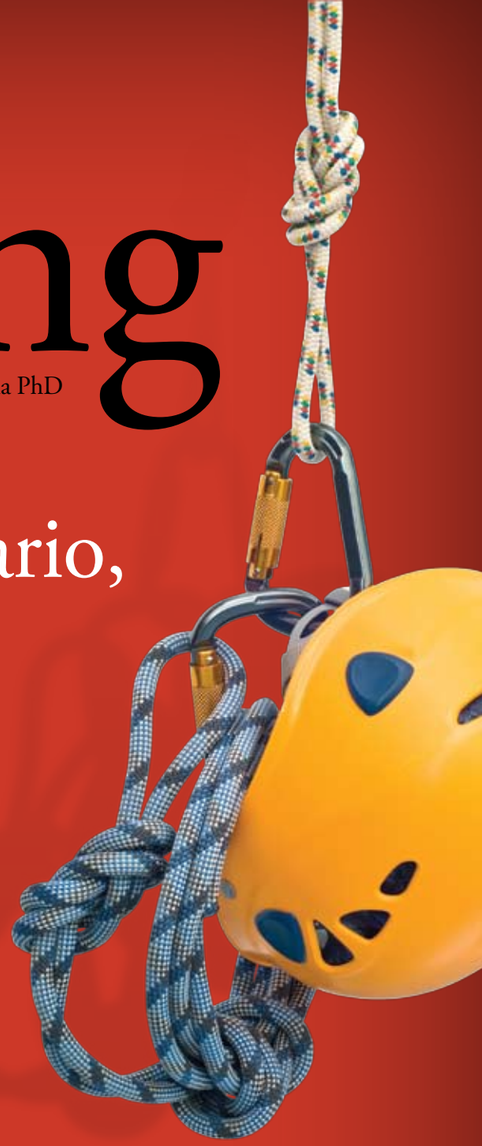
Specializing in fine-art landscape photography of Western North America, Jim currently serves as a professional advisor to Outdoor Photographer Magazine. His website features over 400 images available as fine-art framed prints at www.jameskay.com. He lives with his wife Susie in the Wasatch Mountains of northern Utah.

Multitasking

Kenneth Chiacchia PhD

It was an ugly scenario, I'll give you that.

Ken Chiacchia repelling with the late, great Mel. Photo by Bill Evans, AMRG



We got the call on a Thursday night in late September, 2005 — someone had left a note in a small West Virginia state park saying he'd murdered two women and stashed them there. Who knows how seriously the authorities would have taken that note, if it weren't for the fact that two local teens were unaccounted for.

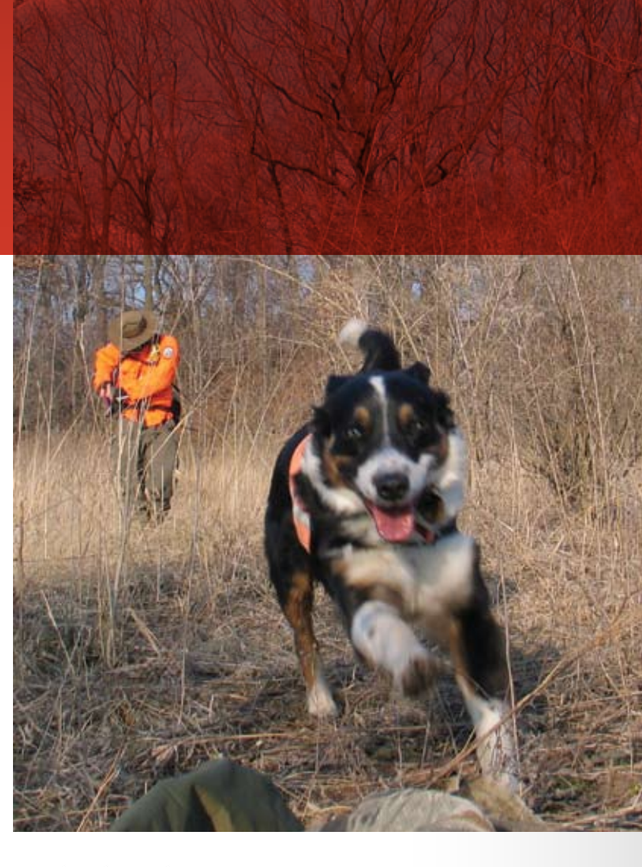
By Friday, though, the picture had muddied. The teens had shown up, safe and sound, and the authorities were beginning to believe the note was a hoax. But they had a tiger by the tail — they'd initiated a search, and didn't know how to stop it.

Fortunately, one of the services that volunteer SAR teams, with good incident-command training (like mine, Allegheny Mountain Rescue Group [AMRG]), can offer is a set of mechanisms for deciding when and how to wind a search down. In this case, we had a number of clues of uncertain significance we needed to follow up, and a few bald spots in the previous search efforts to cover, before we could suspend.

I responded to the search on Saturday morning. Before I left, I got a call from our dispatch: "Bring your caving gear."

At the time, AMRG wasn't a cave rescue resource. But a number of us were cavers, and had taken at least the introductory National Cave Rescue Commission rescue class. In this case, the incident commander, my teammate Don Scelza, had something very specific in mind. On Friday a dog team we hadn't worked with before had alerted near a maze of rocks — essentially, a little cave system that had lost its roof — and Don wanted me to explore the maze thoroughly to rule out any, well, dead people being in there.

Heather, Ken and Mel go through rope training paces. Photo by Dan Sadler.



Ken and Pip bringing reinforcements! Photo by Heather Houlahan.

What I did not bring — and this is going to become poignantly relevant — was a dog. Our English shepherd Moe had suffered an untimely and still-frustrating medical discharge;[1] our German shepherd Sophia was a puppy at the time, about to ship to us from her breeder in California. As a result, we'd gotten caught with only one operational dog: Pip, Moe's mother. And my wife, Heather Houlahan, had taken Pip, along with our teammate Bill Evans, to Mississippi, as part of the Commonwealth of Pennsylvania's contribution to the post-Katrina response.

When I rolled up on the search scene, my first task was to set up a better communications net than we'd had available on Friday. The base radio proved a challenge. We had no electric power in the picnic shelter that served as our command post. I tried plugging the radio into my car-cigarette-lighter inverter, only to find that, between the power loss at the plug, the inverter itself, and the power supply, we didn't have enough juice to run the radio.

"You know, the radio runs on 12-volt DC," Don said, looking over my shoulder, and I felt a little dim. I pulled the power supply off the radio, hooked the damned radio up directly to my car battery, and voilà, we had a communications net. I wasn't absolutely sure I'd be going home without a jump; but at least I had cables.

So I put my helmet, kneepads, and gloves on over my uniform, slung my gas-mask-bag cave pack over one shoulder, and hiked up to the grotto.

Normally you don't do SAR tasks alone, and you never do cave tasks by yourself. But this wasn't exactly a cave, and a grid team was covering an area right next to me, within easy shouting distance. So I dove in, starting at a big opening and working my way around counter-clockwise, crawling into every crack, every opening I could find.

The task proved utterly uneventful until I was nearly back where I started, at the far side of that big opening. Standing there, I had to admit that something smelled dead.

I thought, "Think like a dog." Knowing the scent would likely rise in the daytime, I moved into the big opening and started climbing. From the top, I was able to move down into the smell, finding, eventually, the dead fox that was its source.

I was Joe SAR. I could do *anything* this incident required.

Can't tell you what a relief that was. But I felt I had a good explanation of what the dog had alerted on — and that somebody needed to go back and do some remedial training.

I drew two other tasks that day: one, the field team leader's nightmare, was to lead a team made up of park rangers, state troopers, and local firefighters in the day's last area-search task.

I said to myself, "These guys will turn on you the second you screw up." We did have a difficult moment, when a rose thicket broke our line like the 20th Maine broke the Alabamians on Little Round Top. But I guess I handled it well enough, because despite a little grumbling about how thoroughly I was making them perform a task that we all knew was pro forma, we had no major mutinies.

Earlier, though, while making my way out to the culvert leading from the park reservoir, on which another dog of unknown provenance had alerted, I reflected on how utterly, totally cool I was. I was Joe SAR. I could do anything this incident required.

Multitasking? Bring it on, thought I …

But as I was crawling up that culvert, green slime dripping on my back,[2] I had an epiphany. It struck me that I'd never had to crawl up a culvert like that before, and I realized immediately why — normally, I'd have sent my dog.

And that's when it hit me: I had no dog, but they'd given me all the dog tasks anyway. I really was just a dog's sidekick.

Humbled, and again relieved at finding nothing, I trudged back to base to report.

[1] *Happy ending: Moe is still with us, and has found fulfillment and gainful employment as director of homeland security for our 26-acre hobby farm.*
[2] *Ruined my @$%#^$ uniform shirt.*

Dog handler, field team leader, and wilderness EMT Ken Chiacchia is communications officer for Allegheny Mountain Rescue Group based in Pittsburgh. He's also a professional writer who's contributed nonfiction stories to publications such as Advanced Rescue Technology, *the* Pittsburgh Post-Gazette, *and the* Pittsburgh City Paper, *and genre fiction to Cicada, Paradox, and the* From the Trenches *anthology.*

WHAT'S IN YOUR PACK?

We invite you to send in five things you couldn't do without in your pack.

Dr. Seth Hawkins shares his can't-do-without-list.

photos courtesy of Seth Hawkins

1 **Smartphone/GPS cases.** Crushed units on bike tours have taught me to buy armor. I like OtterBox products – I use the 2600 Armor Case for wilderness applications, an Otterbox Defender for travel/healthcare, and the Armor Sport package with waterproof earphones for outdoor sports. The Defender has optional yellow accents, which are great for finding units dropped in the woods. Bring backup power too – I use a Richard Solo 1800 backup battery.

2 **SteriPen.** The need to treat water in the US is controversial (www.weainfo.org/en/art/26/), but I am still a believer. This is the best combination of weight, ease of use, and efficacy that I've found. Bring backup batteries too.

3 **Leatherman Wave**. The classic tool – I've used it for everything from advanced field healthcare procedures to opening cans. Great for clamping the umbilical cord during surprise field deliveries.

4 **Mountain Hardwear or Scala hat.** Protect your skin. For my tiny head, MH makes the best cap. For non-cotton or wider brim needs, I use a Scala Outback Classic 100% wool fedora from Dorfman Pacific Company. For further sun protection, Julbo's Tasman glasses are also great for smaller faces, and have nice extras like wire loops for retention during adventures and detachable temple guards for glacier use.

5 **Latex-free Bandages.** No joke. Nothing is more soothing than covering a wound for kids... and adults. The cheapest, easiest way to be the healthcare hero on a trip. For adult cool factor and merging of two great wilderness medicine tools, nothing beats 3M's Duct Tape bandages. For kids, choose the animated movie character de jour. Just make sure not to misinterpret the target age of the character — major kiddo faux pas!

SEND YOUR
5 FAV
GADGETS TO
EDITOR@WMS.ORG

Community Education

Debra Stoner MD, FAWM

"IF ONLY...."

"Hiker found, dies in Snyder County." Those were the local headlines last month on the front page of my town newspaper in central Pennsylvania. The victim was a 64-year-old avid hiker dressed for the 60 degree day but not prepared for the night out when the temperatures plummeted to 32 degrees Fahrenheit. He was found alive 16 hours after being reported missing and died during extrication. The coroner's cause of death was listed as hypothermia.

"If only...." How often has that thought passed through your mind when you heard or read similar stories in your area? "If only they knew…," "If only they had…," or "If only they hadn't…." Now is your opportunity to make a difference in your community. Gather up your knowledge and supplies. Get out into your community and give a lecture…or two…or three…on wilderness medicine. The following is a short recap of a lecture given at the 2009 WMS Annual Conference in Snowmass, Colorado on community education.

Yes, there are pitfalls to being known as the wilderness medicine expert in your area, such as time away from your family, gratis lectures, footing the bill for supplies and assuming some liability. But these are manageable and the benefits are substantial, such as saving a life or the less dramatic, such as community involvement, leadership development, stretching yourself professionally and some personal PR which raises the community's awareness of you and your affiliates.

First build a network by visiting local outdoor clubs, recreation stores, universities, schools, state and federal parks, libraries and your hospitals' Community Education Department. Let them know you are available and leave a list of wilderness medicine topics you think are important to the community along with contact information. Follow up with a phone call and list of dates you are available to speak.

People will start calling and asking for a lecture. Consider the location, ease of access, weather, target audience, and publicity when setting up the time and location. Usually the organization requesting a talk will handle the advertisements, but consider contacting your local newspaper and giving a short preamble on the topic before the lecture date. Or contact your local radio station and answer questions on the topic.

For the lecture your equipment can be as sophisticated as a PowerPoint presentation or as simple as standing up and talking (which works great for children). Other options include using your laptop for small groups, chalkboards, or easel pads. The most important piece of equipment is YOU, because you possess the knowledge and people appreciate your willingness to share.

Don't forget to bring along some low-tech visual aids relating to the talk. Setting out your first aid kit, books and equipment pertinent to the topic encourages hands-on learning and reinforces the experience.

Some tips for success: welcome participants as they arrive, encourage questions and personal stories, keep it simple, show lots of pictures, leave time for hands-on practice, and take it outside whenever possible. Finally, give out a single-page handout on the topic listing local resources, websites and literature.

Help change the "If only…" to "I'm glad to hear they were prepared for…." Remember, the knowledge you carry in your packs weighs nothing, but sharing that knowledge can lighten the load for all.

Dr. Deb Stoner, a WMS Fellow, is an Associate in Emergency Medicine at Geisinger Wyoming Valley Medical Center in Pennsylvania, the medical advisor for Himanchal Education Foundation in Nepal and a volunteer at St. Jude Hospital in St. Lucia. She can be reached at deb.stoner@gmail.com.

CALL FOR AUTHORS

The WMS is in the process of developing a Community Education Lecture Series similar to the professional Educational Lecture Series already available on the web site. This new series is designed for the wilderness medicine provider who wants to teach the general public. Many of your favorite topics are being developed in a format and content friendly for the lay person with no wilderness medicine knowledge.

If you are a WMS member with experience or interest in a wilderness medicine topic and interested in authoring a lecture for community education series contact:
Dr. Debra Stoner,
deb.stoner@gmail.com.

Western States 100 Mile Run

D. Cristopher Benner PA-C, FAWM

In the predawn hours on the last weekend of every June, a few hundred rugged souls look out at the seemingly endless display of ridges and valleys that lay ahead of them with a bit of apprehension and lot of excitement. This is the beginning of the Western States Endurance Run, a trail race that starts at California's Squaw Valley ski resort and terminates in the town of Auburn 100 miles later. In the first 4.5 miles the race climbs a heart-pounding 2550 feet, following the original trails used by the gold and silver miners of the 1850s. Runners subsequently climb another 15,540 feet and descend 22,970 feet before reaching the finish line. The winner ran the course in about 16 hours, while many others were simply hoping for the 24-hour mark.

I had volunteered to be Medical Captain at the mile 85 aid station. The race started at 5 a.m. and the lead runner was expected to run through the mile 85 checkpoint about 6 p.m. My EMT friend and search and rescue (SAR) colleague and I arrived at 4 p.m. in our SAR truck to get set-up. Fortunately, the race organizers provided the majority of medical supplies; however, I had supplemented their supplies with some tried-and-true favorites of my own. While the other members of the medical team got the cots, blankets, and tents set up, I reviewed the contents of the boxes that lay in front of me: oodles of athletic tape, gauze, moleskin, 0.9% intravenous (IV) saline bags, 3% IV saline bags, glucometer, thermometer, parenteral epinephrine, and diphenhydramine, nitroglycerin tabs, aspirin tabs, calcium carbonate tabs, and an assortment of other first aid basics.

Did I mention how hot it was? At 5 p.m. the sun continued to beat on me with 100+ degree temperatures. I couldn't imagine what the runners must have been feeling.

By 6 p.m. the medical station was ready and open for business. At 6:45 nobody had come through yet, and I was starting to get a little concerned about the heat and its effects on the runners.

At 7 p.m. the lead runner came through. The first step was to weigh the runners and compare their current weight to their weight at the start of the race, written on their wristband. The lead runner's weight was on par with his starting weight; he answered questions appropriately, and amazingly, had a big grin on his face. After leaving the medical tent he strolled over and grabbed a drink, ate some salty snacks, and kept running down the trail with ease. I couldn't believe how good this guy looked – truly a world class athlete, especially considering that the second place runner was 45 minutes behind him!

From about 7 p.m. to 10 p.m. the elite athletes kept coming through, all with few or no complaints. These men and women were in the race to win and did not want to be slowed down. All of them had body weights well within the acceptable range, and more importantly, they looked well.

At Western States and other ultra endurance events, a lot of time is spent thinking about and tracking body weight. Ideally, a runner's weight during the race should be right around their starting weight. If they're too light they probably haven't been drinking enough. If they're too heavy they've probably been drinking too much, and concerns of exercise-induced hyponatremia emerge. Over 100 miles in 100 degree temperatures, however, some weight loss is expected and acceptable. In general, 2% weight loss is considered acceptable. Most importantly, however, the medical team evaluated not only each runner's weight, but his or her vital signs, physical exam, and mental state.

> I had him perform a "spit test" and it took him several seconds to produce a scant amount of saliva.

At 10 p.m. an elite 33-year-old male runner arrived at the checkpoint. His weight was down 7%, but he was answering questions appropriately and had a stable, steady gait. I brought him over to a chair to examine him. He told me that he had been experiencing quite a bit of nausea for the past 3 hours and subsequently had not been drinking very much. His last urine output was 2 hours ago and was quite concentrated. I had him perform a "spit test" and it took him several seconds to produce a scant amount of saliva. On exam, his eyes were sunken, mucous membrane surfaces were dry, pulse rate of 62, and blood pressure of 110/76. My plan was to observe him, let him rest and orally rehydrate. He really wanted to be able to continue the race and realized that if any extraordinary treatments were given, such as IV fluids, he was immediately removed from the race. While he rested other runners kept coming in.

The next few runners overall appeared very well with soft tissue complaints occupying the majority of the medical team's time. Some runners preferred to tape their own feet while others preferred to have the medical team do it. Although I had practiced taping feet for the past few weeks on my very-understanding wife, that night I had encountered blisters the size and location of which I didn't think was possible. Many runners admitted that their blisters were debilitating, but feared that once they removed their shoes it would be too difficult, both physically and emotionally to put them on again. Most agreed that since only 15 miles remained they would tough it out and leave their blisters and painful feet untreated.

An hour had passed since my 33-year-old dehydrated runner arrived at the medical tent. He had had minimal oral intake, was still complaining of a "sour stomach," and had no urinary output. I bluntly acknowledged to him that his race was over, and we needed to take more aggressive actions. He happily agreed. Two liters of IV fluid were administered, after which he appeared significantly better and had positive urine output. He was subsequently transported to the closest town via pickup truck as emergency medical services could not access the area we were in.

As the 7 a.m. cutoff time approached I started to break-down the medical tent. At 8 a.m., with all of my medical equipment packed up, and with one foot in my pickup truck ready to leave, a lone runner yelled out to me, "There's a woman down on the trail about a mile in!" I tossed my med kit on my back and started jogging down the trail. Eventually, I came upon a 35-year-old woman with an antalgic gait. I sat her down and she informed me that her weight had been down several pounds and because of nausea had not been drinking for the past few hours. She knew she couldn't continue and requested my help. She was lucid and coherent, but physical exam revealed dry mucous membrane surfaces, slight hypotension, and tachycardia. I started IV fluids trailside, walked her back to the former medical tent site and had her transported back to town in a pickup truck. Sitting in the back of the truck she grabbed my hand and declared, "Thank goodness you all were still around, thank you so much."

Cristopher Benner is an emergency medicine physician assistant in the San Francisco bay area. He is at his happiest when drinking ultra high octane coffee and searching for a missing person at 3 a.m. in the rain and mud.

HOW TO VOLUNTEER FOR WESTERN STATES OR OTHER 100 MILE RUNS

An ultra marathon is defined as any running event longer than the traditional 26.2 miles. Some cover a specified distance, while others take place during a specified time. Almost all events regularly seek medical and other logistical volunteers. Some races provide medical supplies and have medical protocols, while some do not.

Western States 100 volunteering, go to www.ws100.com/volunteerform.htm
To find a list of 100 mile races in the U.S., go to: www.run100s.com

SPRING BREAK HEALTH

Sam Schimelpfenig MD

The end of another winter is rapidly approaching and what better way to welcome the spring thaw than by heading off to a warm and exotic destination for some fun in the sun. Spring break! And what better way to ruin that much-anticipated vacation than by acquiring traveler's diarrhea or a nasty sunburn. Here are a few things to keep in mind when planning this year's spring break adventure.

Traveler's diarrhea is a common affliction and is typically caused by pathogens acquired from improperly prepared food or untreated water. This is not always possible to entirely avoid, but by only drinking bottled water or carbonated beverages, or liquids that have been boiled, one can sometimes avoid this troublesome issue. Consider bringing along water purification tablets if access to clean water will be a problem. Also, make sure foods are cooked completely – especially meats – and avoiding eating any local produce without properly washing it first or peeling it yourself. Bringing along a small container of hand sanitizer can also help keep you from getting sick, and is especially helpful for children's hands.

And don't forget that other sources of water can also be a source of infection – in particular, the kind you swim in! Avoid dirty looking beaches and swimming pools, and make sure you wear protective footwear when wading in the water to avoid cuts from hidden debris or stings from the local aquatic wildlife.

If you do get sick or injured and need to be seen by a physician while you're out of the country, a call to your embassy can help direct you to a health care facility; occasionally, resort destinations will have a local physician or health care provider on-site to help in these situations.

Travelers also need to be aware of other local infectious diseases that may be of concern such as malaria, yellow fever, and typhoid fever, that can often be found in tropical areas of the world. The Centers for Disease Control (CDC) has a website with a link for travelers that will identify any local diseases that are of concern in a particular area. Included is a list of vaccines that you may have to get prior to traveling.

Keep in mind that most clinics do not typically carry these immunizations, so you may have to seek out a clinic specializing in travel medicine, or your local health department, and that sometimes the vaccine needs to be given well in advance of travel to be effective in preventing the disease. In addition, some of these vaccines are not approved for children, so be sure to check with your pediatrician before they receive any of them. It is also a good idea to make sure you are current with the routine immunizations such as tetanus and Hepatitis A before traveling. If traveling to a part of the world where malaria is present, you will also need to take medication during your trip to prevent contracting this illness – be sure to discuss this with your physician prior to traveling.

If you have any underlying medical conditions and need to take medications with you, make sure you carry your medication in your carry-on luggage and have a copy of your prescription or a doctor's note when going through customs.

A few other things to consider – if you are traveling somewhere sunny, make sure you bring along plenty of sunscreen, and use it frequently! It may seem obvious, but many a vacation has been ruined by severe sunburn acquired that first day out on the beach. Heat illness is another thing to avoid – drink plenty of (clean) water while basking in the sun. If you are vacationing with children, make sure there is some shade available so they can cool off from time to time and have plenty of water and snacks available.

When traveling with young children, bring along a variety of things to keep them occupied on the trip and try to give yourself plenty of time at the airport if a connecting flight is needed. Infants will benefit from having a bottle or pacifier to suck on as the plane ascends and descends to equalize pressure in their ears, although a good cry will usually accomplish this as well. Toddler harness devices can be useful when waiting to pick up luggage or when going through customs.

Travel safe and have fun!

Sam Schimelpfenig, MD, FAAP is a board-certified pediatrician practicing in Denver, CO. Dr. Schimelpfenig is an enthusiastic outdoorsman who enjoys Colorado's mountain and trails.

Take Your Apple Skiing!

(And Other Clever Nutrition Strategies)

Yvonne Lanelli

The snow's perfect and you've hit your favorite slopes. But you're missing turns and your head's starting to ache.

What's wrong?

"You may be low on fuel and water," advises Carolyn Felder, ski instructor and Registered, Licensed Dietitian (nutritionist).

Resist that temptation to grab a soft drink and candy bar, however. Instead, try Carolyn's easy tips for revving up your snow sports energy.

BURN, CALORIES, BURN

Carolyn recommends *Sports Nutrition Guidebook* by Nancy Clark. Clark classifies cross-country skiing as "Unduly heavy exercise," the highest energy-burning activity, burning >12.5 calories per minute for men and >9.5 calories per minute for women.[1]

"Alpine skiing and snowboarding fall under the Moderate category [burning 5-7.5 cal/min for men; 3.5-5.5 cal/min for women]," says Carolyn, an Alpine instructor. "Skiing moguls most likely bumps the rate up to Very Heavy!" [burning 10-12.5 cal/min for men and 7.5-9.5 cal/min for women]

"But," she adds with a laugh, "if you're a beginning skier, until your instructor has you centered, balanced and walking on skis, you're burning calories at the highest rate!"

So, how do we fuel our muscles?

"Most important: hydrate. Then consume enough calories and protein to maintain muscle mass. Excess calories from carbohydrates, protein, fat or alcohol are stored by your body as fat."

THE BIG THREE—NUTRITION 101

Your body requires three forms of macro-nutrients: proteins, carbohydrates, and fats.

"Proteins build cells including structural cells and immunoglobulins that protect you against infection. Carbohydrates are fuel, or energy, and fats are concentrated energy containing essential fatty acids.

HOW MUCH OF EACH AND WHAT KINDS?

"Your protein intake should be grams equivalent to your weight in kilograms (pounds divided by 2.2) multiplied by 0.8 -1.0." In other words, a 110-lb or 50 kg skier/boarder should consume 40 - 50 grams of protein per day. (50 x 0.8 = 40; 50 x 1.0 = 50.) Older adults may need 1.2 (or more) grams of protein per kg body weight each day.

What kinds of protein?

Egg white, lean meats, beans, tofu, fish, non- or low-fat yogurt and milk are yummy choices, as long as they are not fried or covered with greasy, creamy sauces. Meat portions should be "no bigger than a deck of cards."

Be wary of so-called high protein diets, warns Carolyn. "Excess protein breaks down to urea which puts a load on the kidneys."

Although certain fad diets give carbohydrates a bad rap, "athletes wishing to maximize their performance should strive for five to seven servings of fruits and vegetables every day." Richly colored Fs & Vs--carrots, yams, tomatoes, red cabbage, etc-- provide more nutrition than their paler counterparts. "Think romaine lettuce over iceberg." (See Sidebar: RC F +V = RSHL.)

An exception to the "no-pale" premise is the ordinary potato. "A baked potato topped with salsa, spicy mustard or a scant teaspoon of butter is a healthy choice."

Your daily fat intake should be "twenty to thirty percent or less of your total calorie intake." Nuts, avocados, olive, canola, safflower and sunflower oils are better choices than lard, large amounts of butter and greasy meats.

DRINK UP, BUT DRINK RIGHT

"Calories without hydration is like gas in your tank but no spark plug in your engine," said Carolyn, pulling an 8-oz (240 ml) water bottle from her jacket pocket.

"Dehydration impairs metabolism, so hydrate – but not with diuretics." In other words, several caffeine-laden cappuccinos, carbonated soft drinks or beers will not replace fluid losses.

Water is your best choice, but herbal teas or water diluted with fruit juice work well, too.

How much liquid should one consume?

"Look at your pee. The darker your pee, the more water you need. Strive for pale pee."

Carolyn is not a fan of sports drinks or "diet" soft drinks. "Most sports drinks are too expensive for what you get. And we don't yet know the long-term effect of large quantities of artificial sweeteners. Consuming one or two sports or diet drinks per day probably will not increase health risks. Some people get headaches when they consume aspartame (an artificial sweetener marketed as NutraSweet or Natra Taste). If you're having headaches, listen to your body. Cut back."

THE "HYDRATE" IN CARBOHYDRATE

"Fruits and vegetables are not only low in calories, they're also high in water," Carolyn says, pulling an apple from another pocket. "This is one lift ride pick-me-up. Here's another." A peanut butter granola bar and a tiny tin containing 23 almonds emerge from another pocket.

"These are high in fat, but it's 'good' fat, providing energy without 'bottoming out.' In addition, the almonds provide as much protein as the white of one egg. And read the label on the granola bar – four ingredients. Look for the fewest ingredients in prepared foods – or prepare them yourself."

"There's no such thing as 'forbidden foods,' either, only excessive portions," she hastens to add. "I enjoy a cheeseburger every now and then, but I skip the fries and malt."

GOOD EATING FOR MORE FUN

Carolyn's advice is simple and requires no purchase of special foods or supplements. My breakfast will be fresh fruit, whole wheat toast, and either oatmeal or an egg, accompanied by 1% or skim milk. I'm packing my lunch with carrots, celery or cucumbers (instead of fried chips) to crunch with my lettuce and tomato-laden turkey or tuna (light on the mayo) sandwich—made with whole grain bread, of course – and water with lemon squeezed in, a juicy orange for dessert, plus a small water bottle, apple and almonds for chairlift snacks.

In addition to maintaining my protein, Fs & Vs intake plus hydration, I save money and time –for more mogul runs!

Yvonne Lanelli of Alto, NM is a former National Ski Patroller. Carolyn Felder, MS, RD, LD of Ruidoso, NM and Oklahoma City, OK is a registered, licensed dietitian as well as PSIA-certified Level One Alpine ski instructor, "nearly at Level Two!" Catch them—if you can—on moguls and powder trails at Ski Apache, NM.

[1]Sports Nutrition Guidebook, *Nancy Clark, MS, RD; Leisure Press, Champaign, Illinois; 1990.*

RC F +V = RSHL

The metabolic benefit of eating Richly-Colored Fs & Vs?

Reduced serum homocysteine levels (RSHL).

"High blood levels of homocysteine, a protein metabolic by-product, are associated with damage to the lining of the arteries. (Serum homocysteine levels are lower in people who eat five or more servings of richly colored Fs & Vs per day.) Overloading the blood with refined carbohydrates can cause similar damage to the lining of the arteries when your insulin production is compromised. Endothelial cells lining the arteries get 'pounded' and become hardened, losing their elasticity."

GREAT GEAR

FOR WORK AND PLAY

ALPINE TOURING THE WHITE WINTER WILDERNESS

Christopher Van Tilburg MD, FAWM

In the last years, I've watched an explosion of backcountry related products hit the market. Upgraded versions of time tested safety gear are juxtaposed with newfangled electronics. One trend, skis and snowboards are constructed with rocker (aka reverse camber) like a surfboard. Try before you buy; these guns are specifically designed for deep powder. Another trend is the sudden increase of skiers and riders venturing into—and marketing campaigns designed for—the "sidecountry." This is the area adjacent to, but outside the boundaries of a mountain resort, accessed by riding a lift then zipping out of bounds. You can buy a "sidecountry" stick, but that doesn't really make you safe or skilled for the backcountry.

Alpine touring—AT for short, or *randonee*, French for "tour"—is my device of choice. Boots and bindings are designed for free-heel skiing uphill, with climbing skins affixed to the ski to provide traction. When you reach the top of the slope, lock down the boots and bindings, peel off the skins, and presto, track up the pow as if on downhill gear.

For skis, I like the Ski Trab Stelvio Freeride, which are about as light as they come, clocking in at 7 pounds per pair. You will be hard pressed to find lighter planks and still retain the solid feel and durability of a wood core. For an alternative, check out the Dynafit Manaslu superlight.

For binders, I've used many models of Dynafit bindings, including the latest TLT Vertical ST, reliably for 10 years. They are light, burly and time tested, practically unchanged for nearly two decades. They suffice for backcountry touring in the Wallowa Mountains, tooling around with family in the lift-served Chilean Andes, and "hill bagging" my neighborhood on a four-foot dump last year. For an alternative, check out the new G3 Onyx.

Keep in mind, if you use "tech" bindings, the designation for the Dynafit or G3 Onyx bindings, you need AT boots with special "tech" fittings only from Scarpa, Dynafit, Black Diamond, Dalbello, or Garmont. The Garmont Radium is a burly four buckle boot that functions double duty for in-area laps or first ascents of big peaks. For family trips and long multiday tours, I prefer the comfort of lightweight, three-buckle Garmont Helium.

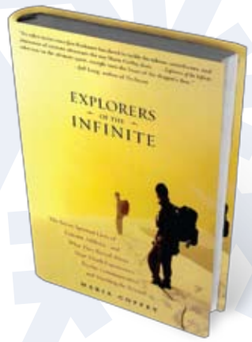
My best advice for avalanche safety devices: they are nearly useless without training, practice and experience. You can't see one, do one, teach one in this arena. High tech digital, triple-antenna beacons have saturated the market: Pieps DSP, Backcountry Access Tracker2, Ortovox S1 2.0, and the Barryvox Pulse. For a substantial savings, the Pieps Freeride is an old school single-antenna analog beacon. Remember the proficiency of your partner is paramount: he or she may be digging you out.

For poles, yes, anything will do. But when I toured in the Life Link Carbon Pro, the lightness was deluxe. They double as an avalanche probe; but I prefer a real 2- or 3-meter collapsible probe – and an aluminum shovel, not a plastic one. I like the compact, integrated combination in the Tour Shovel System from Backcountry Access.

You can use almost anything to haul your gear. Specialty avalanche safety backpack will improve your margin. Black Diamond makes several models of Avalung backpacks, which offer the integrated under snow breathing tube. The "artificial airpocket" shunts expired carbon dioxide laden air to the back of the backpack, but allows a user to inhale oxygen rich air from the front, thus lessening the chance of asphyxia. Alternatively, avalanche airbag backpacks by Snowpulse and ABS Airbag Backpack Systems use compressed air cartridges to inflate large bladders. The buoyancy keeps an avalanche victim near the surface. Backcountry Access has plans to release a similar product soon as well. These are spendy, unfortunately, and you can't buy a pack with both airbags and the Avalung. Not yet.

Don't forget essentials like food, water, clothing, navigation tools, and the basic winter emergency kit. Have fun, but be safe.

WHAT GREAT GEAR DO YOU STASH IN YOUR PACK?
Submit your five favorite items with pictures to editor@wms.org



Death, Daring, & Disaster: Search and Rescue in the National Parks

Revised Edition
Charles R. "Butch" Farabee, Jr.
New York: Taylor Trade Publishing; 2005
Softcover, 576 pages, US $23.95

I picked up this muscular tome (it weighs in at a hefty 2.3 pounds and 1½-inch girth) at one of the beautiful National Park shops on a recent trip and voraciously devoured it by tent domelight at night and on the many miles of roads in-between camps. In Ken Burns' recent "The National Parks: America's Best Idea" series, Burns extols the beauties of the parks with loving and reverent detail. Butch Farabee uses the same loving detail but exposes the perils of these exquisite but often deadly gems and reveals why we must revere and respect them. From innocent mistakes, to vagaries of weather, desperate acts of unrequited love, heroic valor gone terribly awry, or sheer stupidity and hubris, over 400 stories are told of those who got into trouble and those who tried to get them out of it, the victims alive and grateful, returned in a body bag, or never to be found.

Published over a decade ago and updated (1998, 2005), the book encyclopedically chronicles the inception and growth of the National Park Service (created 1916, currently ~400 areas); the first organized mountain rescue group and number of SAR rescues since the earliest ones in Yellowstone National Park (Mt. Hood Crag Rats, >130,000); the highest and lowest rescues not counting underwater ones (Mt. McKinley, Death Valley); some of the greatest contributions to rescue and care of the injured (helicopters, nylon rope, 2-way radios; emergency medicine).

DD&D should be required reading for WMS members and those who want to live vicariously through the retelling of valorous acts or to be inspired towards vicarious and selfless acts of their own. However, because of its mass, I wouldn't recommend it for a backpacking library!

Nancy Pietroski, PharmD
Telford, Pennsylvania

Explorers of the Infinite

Maria Coffey
Tarcher/Penguin; 2008
Hardcover; 308 pages. US $26.95

Explorers of the Infinite leaps off the earthly cliff where *Deep Survival* fears to travel. It is a book that explores the first person accounts of the paranormal, mystical, and spiritual experiences of extreme athletes, trekkers and climbers.

As a neuroscientist, I first dismissed the accounts of climbers as the effect of hypoxia. Then I conjectured about how open one's primary senses become when placed in situations of extreme natural beauty and danger. How this *wideopenness* may protect us from a fall or broken belay that would lead to a finite end?

But no, *Explorers* extends beyond that level of analysis, leaving all scientific explanations in the scree. It asks us to consider if telepathy is possible for a deceased climber, frozen in an ice cave, letting rescuers know where to find her body? And what about the ghostly helpers who emerge in high altitude to guide lost climbers in whiteouts safely down a mountain? Coffey posits a morphic network of knowledge that goes beyond any physical transmission of information, to help guide extreme explorers out of danger. Coffey seeks explanations in science and neuroscience to account for these phenomena – searching for chemical, electrical, magnetic and/or waveforms which lie at the basis of mystical experience. Unfortunately, this comes off as an example of the inadequacy of Cartesian reductionism. If these experiences are truly mystical, let them stay that way, beyond the measure of even our most sensitive instruments.

Another theme of *Explorers* is how our experience with the wilderness becomes a means not only for personal, but for spiritual growth. One attains this spiritual growth not through prayer or meditation, but through intense physical action in awesome surroundings.

Regardless of your scientific perspective, *Explorers* is a fascinating book and well worth the read.

Robert Conder, PSYC
Raleigh, North Carolina

REVIEWS ★★★

EARTHLY PERMACULTURE

Lynn Yonge, MD, FAWM
Chair, Environmental Council

Have you ever wondered why so many barns along country roads are slowly collapsing because of neglect? I'm sure there is often a sad story of generations passing, children moving away and lack of money to keep up the property. Certainly in many places we've moved from an agrarian society to an urban one, but there is always need for a good barn.

With these observations in mind, I recently started the process of restoring a small barn located on property I own in rural Alabama. I bought the land from a woman whose family homesteaded it in the 1800s. The land features rolling hills, longleaf pine forests, and endangered pitcher plant bogs. There is an artesian spring with old iron rings nailed into nearby trees to tie your horses. The barn has a cement floor and was once used in the turpentine business. The roof continues to shed water, but the sides are riddled with bullet holes from some hunter's distant target practice. I like the holes in the tin because they look like a constellation when viewed from the inside. It is a local tradition to name places on your land, so I've decided to call it the Pine Tar Tavern.

My father and I have added a front porch and an outdoor sleeping porch. Our future tenants are Outward Bound instructors who want a place to unwind or camp when their crews are on solo.

When we decided to add the porches, I first planned to buy new tin and support posts. We examined another barn on the property that was in ruins. We found solid wall posts that could be used. Close inspection of them showed hand hewn marks where the beams previously supported floor joists. Counting their first life as a tree, our usage of these posts has now become their fourth life. My dad is an old school salvager and he convinced me to recycle tin from the old barn. It took a little more time and work to do this, but we started feeling good about the fact the materials would not be wasted. We've salvaged a variety of other materials from different places and incorporated them into the Tavern: a kerosene lantern, a window, bed posts, a trio of mailboxes for cabinets, etc. As we worked, we've added layers of character. The restoration has been akin to making a work of art and in the process we have been practicing "permaculture."

Permaculture is a philosophy that asks a person to look at each endeavor or action with an eye toward sustainability. In the case of the barn, instead of buying new tin, we made the old stuff last longer. We saved our atmosphere from the heavy carbon emissions of making steel. We used old heart pine and cedar posts instead of buying new posts that would have cost a tree. A *living* tree reduces atmospheric CO2 by sequestering carbon. We have exercised "the three ethics" of permaculture: 1) Care of the Earth by recycling, 2) Care of People by allowing a non profit organization access to the land, 3) Fair Share by limiting our consumption of new building materials, making them available for others. Permaculture thinking is part of a movement to make humans understand we have just one planet Earth and we have the power to change our use of it.

The movement to limit the amount of CO2 in the atmosphere is a similar effort to make humans understand we are damaging the earth we live on. The website 350.org is a clever way to disseminate the message that the increasing concentrations of atmospheric CO2 are contributing to global warming. The website features Assessment Report Four (AR4) written by the Intergovernmental Panel on Climate Change (IPCC). The IPCC shared a Nobel Peace Prize in 2007 for their work on global warming. The AR4 document had 500 lead authors and 2000 expert reviewers. To get that many scientists to agree to anything is a testament to its validity. This document confirms climate change is occurring and *mostly* as a result of human activity. There is much skepticism in the United States about global warming, but the photos of the shrinking polar ice caps indicate *something* is going on.

Sometimes I don't know what to believe in the global warming debate, but do I know that I can be ecologically minded because it is simply the right thing to do. It's thrifty to reuse old things and it adds patina to your work. It embraces the values of my father's depression era life where the saying was: "use it up, wear it out, and make it do or do without." All we need to do to make our planet healthier is live simply, like our ancestors of the Depression did.

News & Announcements

Board of Directors—Call for Candidates

The Wilderness Medical Society is taking applications for the Board of Directors. If you are interested in becoming a WMS Board member, please submit a letter to the Board describing why you would like to be considered, along with an electronic CV to loren@wms.org. **All applications should be submitted by April 1, 2010.** The Nominations Committee will announce Board finalists by June 1, 2010.

Member Get-A-Member Award

The Awards Committee is announcing a new award to be given at the Annual Meeting in Snowmass. This award challenges members to bring new members into the WMS—and it has some great benefits. One regular member and one student member who recruit the most new members (regular members/associates/students) will receive **free registration** to at the Annual Meeting and a copy of Paul S. Auerbach's seminal book *Wilderness Medicine.*

Welcome to emOx Emergency Oxygen – Corporate Sponsor

Ivor Duncan was confronted with a horrific accident in South Africa, one that nearly claimed the life of his son in 1989. This near tragedy sent Duncan on a mission to invent a system that would make sure lifesaving oxygen would be available to everyone faced with living in austere conditions, in remote areas. After several painstaking attempts, he developed a lightweight portable reusable oxygen generator, capable of delivering lifesaving oxygen by mixing naturally occurring powders with water. Green Dot Systems, Inc., based in Miami, Florida, is the exclusive distributor of the emOx Oxygen System, for all of the Americas and the Caribbean Basin. For more information: Greendotsystemsinc.com.

Photos by Luanne Freer

Into the Wild: Yellowstone Pack Trip

Luanne Freer MD, FAWM

On a beautiful Indian summer September weekend in Yellowstone, seven lucky folks headed out on horseback to earn 12 CME credits in wilderness medicine. Some on horseback for their first time, the group ventured deep into the backcountry of the world's first national park, spending four days and three nights camping, riding, and learning. Gary Matthews, who lectured on psychological aspects of wilderness travel, and I made up the WMS faculty.

The group agreed that their learning was enhanced by the howls of distant wolves punctuating our lecture on wild animal attacks! Outfitters Mike and Erin Thompson of Yellowstone Pack Trips rounded out the experience with terrific service, great horses and mules, and tasty cooking, and their incredible knowledge of the geography, terrain, history, and flora and fauna of Yellowstone.

Dust off your chaps and come along with us next year: September 3-6 2010! For more details, visit: www.yellowstonepacktrips.com/cme.html.

Members in the News

Scott Parazynski MD, Former Astronaut and WMS Life Member, Named Chair-Elect of Challenger Center's Board of Directors

Challenger Center for Space Science Education announced that former astronaut Scott Parazynski, MD has been named Chair-Elect of its Board of Directors. He will assume the role of the Chair of the Board in November 2010, succeeding Former Astronaut William F. Readdy.

"I want to express my gratitude to the Challenger Center Board of Directors…for placing their confidence in me to take on this leadership role. I am looking forward to supporting Challenger Center and its network of 47 Challenger Learning Centers in their educational mission to inspire students to study science and engineering. I am excited about Challenger Center's new initiatives to engage its millions of alumni and the general public in space and science programs," said Parazynski.

Parazynski is a physician and physiologist with expertise in human adaptation to stressful environments. He was selected to NASA's astronaut corps in 1992, and flew five Space Shuttle Missions and conducted seven spacewalks. He has spent more than eight weeks in space, and 47+ hours outside the vehicle on spacewalks. He has traveled more than 23 million miles in orbit. He is also an accomplished mountaineer, scuba diver, and pilot, and a lifetime member of the Wilderness Medical Society. Earlier this year he became the first astronaut to climb to the summit of Mt. Everest. He is currently Director of Business Development for Wyle's Integrated Science and Engineering Group based in Houston, Texas.

Parazynski received a Bachelor of Science degree in biology from Stanford University, graduating with honors from Stanford Medical School. He served his medical internship at the Brigham and Women's Hospital of Harvard Medical School and had completed 22 months of a residency program in emergency medicine in Denver, Colorado when he was selected to the astronaut corps.

Who's Who

Sam Schimelpfenig MD

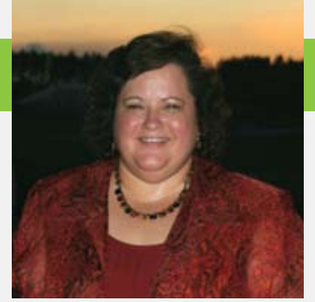
Dr. Marion McDermott is a wilderness medicine fellow at the University of Utah. She attended medical school in Kansas City and completed her emergency medicine residency at Michigan State University in 2006. In addition to earning her Fellowship in Wilderness Medicine (FAWM) through the WMS, she also helps with research projects for this magazine. One thing she particularly enjoys about her fellowship at the University of Utah is the opportunity it provides to teach and practice medicine in unusual environments. She has taught trauma medicine to doctors in Peru and has worked with local leaders in Africa to identify and treat various parasitic infections. Her experiences also include search and rescue activities in Yosemite National Park and reaching the summit of Mt. Kilimanjaro in Africa this past summer.

Dr. Matt Hamonko is also a completing his wilderness medicine fellowship at the University of Utah and earned his FAWM this year. Along with Dr. McDermott, Matt assists us with research projects for the *Wilderness Medicine* magazine, and has been involved in the Wilderness Medical Society since his first year in medical school. He enjoys a variety of outdoor activities, and his hope of combining emergency and wilderness medicine into a career was solidified after reading the book, *Doctor on Everest* by Dr. Kenneth Kamler. Dr. Hamonko feels truly privileged to say that he enjoys his job providing medical care in the great outdoors. After completing his fellowship, he hopes to continue to work as an emergency physician, as well as continuing to provide emergency care in the wilderness through his activities as a professional ski patroller and local search and rescue organizations.

Dr. Cynthia Stevens is board certified in both psychiatry and psychoanalysis. She has a long standing love of outdoor activities and has hiked, backpacked, and climbed throughout the Wind River Mountains of Wyoming and in many of the major mountain ranges of the world. Medical training led to clinical practice and an academic affiliation in Washington, DC; but it was not until 2008 that she and her husband returned to Wyoming to make Lander their home. Dr. Stevens was recently invited by the National Outdoor Leadership School to present a workshop, "Identifying and Redirecting the Problem Student," at their spring supervisors' meeting and recently became a certified Wilderness First Responder. She is currently working on her fellowship status with the WMS and hopes to be able to bring her understanding of human psychological development, her passion for teaching, and her passion for the outdoors together in presentations at future WMS conferences.

Dr. James Shuler was raised in Colorado, which fostered a lifelong interest in the outdoors. He studied Botany and Zoology at Colorado State University, and later went on to become an emergency room physician. He fell in love with the WMS at a meeting in the 90s, and when he heard Paul Auerbach say "just get involved" during an informal introductory meeting for new members, he "got involved" and wrote the first Botanical Encounters chapter for the WMS *Practice Guidelines*. Since then he has been a frequent lecturer for various medical societies on wilderness medicine topics and is active with the Medical Reserve Corps in northern Colorado. A passion of Dr. Shuler's is providing medical support for multi-day charity events, such as the Avon Breast Cancer 2- and 3-day walks and the Multiple Sclerosis Society's 3-day hike. He provides trek and travel medical counseling and sits on the CME and Education Committees for the WMS.

Dr. Elisabeth Edelstein is an emergency physician and member of the faculty at Jefferson Medical College in Philadelphia, PA. She attended medical school at Jefferson Medical College and completed her residency in 2007 at the New York Presbyterian Hospitals at Cornell and Columbia. She became interested in wilderness medicine during her final year of residency while helping teach the inaugural Cornell Wilderness Medicine course for medical students. She continues to serve as a faculty sponsor for the student Wilderness Medicine/Disaster Medicine Interest Group for medical students at Jefferson Medical College. She is also co-director of the WMS student elective course and serves on the WMS education committee. Dr. Edelstein particularly enjoys being able to teach medicine to students and residents – especially while being outside!



Remembering Nelly Marcano

Jim Ingwersen

The morning skies were overcast with some passing showers, but warm tropical rains are refreshing. Early in November, I bounded out of the comfort of my room at the El Presidente in Cozumel, anxious to experience a third day of renowned local diving.

Rounding a corner of the path, I was joined by Nelly Marcano, also bound for the dive shack. "Good morning Nelly," I said. "Ready for another day of adventure?" She smiled and, with that unique Nelly laugh, relayed her nervous enthusiasm. In that moment, how could we have known one of us would leave this world before noon?

After an otherwise rewarding dive above the San Francisco Wall a few hours later, Nelly experienced some distress at the surface and lost consciousness when she reached the boat. Despite valiant efforts by many experienced dive masters, boat hands, ER physicians, and local medical personnel, Nelly was never able to breathe on her own again.

Dr. Nelly Ann Marcano was a regular attendee of WMS conferences and her smiles are remembered by us all. We will miss her. She was born and raised in Puerto Rico. Her sister, Lourdes Marcano-Sneed, relays that Nelly Ann always wanted to be a doctor and was a very caring person who liked to help everyone. Nelly completed her undergraduate studies at Washington University in St. Louis, Missouri and attended medical school at The University of Puerto Rico School of Medicine. Following graduation, she accepted a position in Richmond, Virginia, and then moved to Tampa, where she worked at the Children's Hospital. Shortly after receiving her medical degree, she began going to Haiti once a year to provide free medical services. Nelly specialized in pediatrics with a sub-specialization in pediatric emergencies. She later became a partner at Tampa Community Hospital.

According to her sister, Nelly had three passions – family, travel, and photography. Nelly was married to Josue Arroyo for almost 12 years with whom she enjoyed raising two beautiful sons, Jorge Andres (age 7) and Oscar Josue (age 6). She was a loving wife, mother, daughter and sister, who always coordinated family events, making sure that family connections were solid. In addition to her husband and sons, Nelly is survived by her mother and father, Nelly and Pablo Marcano; her brother Jorge Marcano and her sister Lourdes Marcano-Sneed. Nelly traveled extensively to Italy, Spain, India, Canada, France, Dominican Republic, and throughout the United States, capturing memories of her travels and family through her photography.

Lourdes writes "Nelly Ann wrote a note to her sons and husband each time she traveled. Before she left to go to Cozumel in November, she left her husband a note telling him how excited she was to be able to learn something new at the age of 44. She was very excited about the work she was doing for her Fellowship in the Academy of Wilderness Medicine. She always loved the outdoors, from the camping trips when we were little, to the hiking trips in Colorado, to the SCUBA diving adventures in Cozumel. The night before the accident she sent me a text to let me know how much she loved it there."

"I want [everyone to know] how vibrant she was and how passionate she felt about medicine," says Josue about his wife. "That's what defined her in life. Her desire to seek the education she needed in order to aid as many people as she could; her caring nature that prompted her to give her very best to heal, to help, to comfort, and to console. My wife was a unique human being. I have received phone calls from as far as Argentina and Spain from friends that treasured her friendship. Doctors from Kansas City, Virginia, and Puerto Rico have sent cards expressing their profound sorrow at the loss of such a gifted pediatrician. My wife was always looking for ways to improve the lives of people everywhere. She [gave] speeches at my son's school. She came to the aid of anyone who called on her whether it was her brother in India, or her sister in Tennessee, or the stranger walking through her ER ward."

As a reflection of Nelly Ann's compassion, more than 200 people attended services in Puerto Rico and about 500 people celebrated her life at a Tampa memorial mass.

Nelly met all the requirements to become a Fellow in the Academy of Wilderness Medicine and will be awarded her medal and certificate posthumously at the next annual convocation in Snowmass. Her family is planning to attend.

Before returning to port the following day, the Isabel's engines were silenced, allowing it to drift slowly above the San Francisco Wall. After a thoughtful period of reflection and in a tearful procession, we each placed a flower from a bouquet onto the ocean surface. As we drifted away, a circle of flowers swirled peacefully on the tranquil sea into the distance, and each of us said goodbye to Nelly in our own way.

As you live your life, be certain to celebrate each day as if it were your last. Nelly died bravely, experiencing an adventure that excited and scared her all at once. She lived her passion.

Photos and biographical information courtesy of Lourdes Marcano-Sneed.

Education Committee Update

Michael Caudell MD

One of the major attributes of the WMS is our commitment to education. In keeping with this, the Education Committee has several exciting projects in the works, some near completion and others in the fledgling stages in need of an individual to take charge. I would like to update you on a few of them.

Thanks to the contributions of many authors, the ***Scenario Library*** is nearing completion, and should be available on the website in January 2010. This series is intended to provide all the necessary information for case-based wilderness medicine instruction, including necessary materials, coordinator and victim instructions, key actions to be performed by participating students, and didactic information for discussion, with an accompanying PowerPoint presentation. Currently we have 26 scenarios in the final stages of editing, with a broad range of wilderness medicine subjects.

Deb Stoner is directing and coordinating the creation of a ***Community Lecture Series.*** Whereas our existing Educational Lecture Series is directed more toward medical professionals, the Community Lecture Series is a PowerPoint slide series being created for use by non-medical personnel in educating others in wilderness medicine topics.

These projects rekindled interest in creating an ***On-Line Photo Library*** for use by WMS members in our educational endeavors, and Jim Ingwersen has agreed to create a subsite on wms.org for members to share photos.

As more and more people become interested in outdoor activities and education, the interest from outside groups having individuals from the WMS available as experts also continues to increase. This led to the idea for developing a ***Speakers Bureau.*** While the mission and scope of this bureau is still under discussion, Chris McStay is evaluating feedback from the conference speakers, with recommendations forthcoming.

Of course, student involvement and education are extremely important to the WMS. One area of current interest is the remarkably successful ***WMS Medical Student Elective,*** held each year in February in Tennessee under the leadership of Tom Kessler. Chris Sloane and Liz Edelstein are currently reviewing the syllabus for any necessary updates and revisions, and to this end have formed a steering committee that could also review and possibly formulate an improved marketing strategy as well.

Interest Groups are paramount for spawning and nurturing interest in wilderness medicine. Fred Trayers and Cathy Chamberlin have been working diligently to revise our current interest group structure in order to promote membership and attain more continuity.

The scope and interest of the Education Committee continues to grow, and we would be pleased to have that growth continue. If you are interested in becoming involved in any project listed here, or have any new projects that would fall under the purview of this committee, please contact me at mcaudell@mcg.edu.

International Medicine Committee Update

Tracy A. Cushing MD, MPH, FAWM

The Wilderness Medical Society has many committees dedicated to specific interests within our broader membership community. The International Medicine Committee (IMC) was created in 2008.

Goals for the first year were modest: to recruit committee members, to establish the IMC mission statement and goals for the near future, and to develop resources for WMS members interested in international medical work. We are also interested in bringing international members to WMS, and in establishing relationships with international wilderness medicine organizations.

The first committee meeting took place in July 2009 at the Annual WMS Conference. We had a lively discussion about the scope of "international medicine" within the WMS, and whether travel medicine is included in our committee's purview (the consensus is that it is). We heard from members about their international experiences, with many members involved in volunteer, missionary, and military expeditions around the world. It is our hope to bring the experience and knowledge of these opportunities to the greater WMS community.

During that meeting, the committee developed a list of ideas and projects to work on going forward:

- Develop educational resources: including compiling a list of supplies and medications for different types of expeditions or locations, and expand this information in an educational presentation
- How to stay safe while traveling: provide resources for members to ensure they can travel safely in remote or dangerous locations.
- Supplies and fundraising: many WMS members have extensive experience gathering supplies and fundraising for various types of expeditions (research, supporting local communities, and volunteer work). We would like to bring this valuable resource to other WMS members who might be interested in pursuing their own international projects.
- WMS gear exchange: a place for WMS members to recycle old gear, to be donated to organizations or expeditions who will provide them to international populations in need.
- Sustainable practices: helping members develop projects that are sustainable to communities over time and ultimately become self-supported. This includes teaching and educating local providers, bridging cultural gaps between native and foreign medical providers and patients, and creating long-term changes that create permanent programs.

Our members have extensive experience in international mission work, volunteer work, educating local providers, fund-raising and supply-raising, and in establishing long-standing programs around the world. We hope to bring this vast experience to the rest of the WMS community and welcome members who would like to participate in this committee. Our next meeting will be at the WMS Annual Meeting in Snowmass in July 2010.

Photo by Tracy Cushing

Student Elective 2010 Update

Tom Kessler MD, Chris Sloane MD, and Liz Edelstein MD

After a gorgeous and wet autumn, the leaves have mainly fallen in the Great Smoky Mountains. The subdued hues of winter are replacing the brilliant colors of fall. And preparations continue for the Wilderness Medical Society's eighth Student Elective for clinical students, February 1 – 25, 2010.

We are fortunate to have 21 fascinating folks registered so far, twenty from the states and one from the UK. The volunteer faculty continues to make this a unique experience with depth and variety. Heritage Planetarium has us scheduled for our unique program of the night sky as a wilderness resource. Divers' Alert Network will be directly involved for the first time, and SAM Medical Products will provide a session on their many items.

We still have room for seven more students, so any last minute applicants are encouraged to apply. Check out: WMSelective.org.

During the elective, we will have daily postings of what we are up to. Family members are also encouraged to view the site. Later this month we will be adding the elective schedule of events as well as summaries of student participants.

Also, starting in 2010, Liz Edelstein, MD will be assuming the role of administrative course director. Dr. Tom Kessler will remain in his role as onsite course director. In addition, we are currently seeking WMS members to join a Syllabus and Curriculum Focus Group for the elective. Please contact us if interested.

Yours in adventure-
Tom, Chris, and Liz

To contact the elective directors, please go to WMSelective.org, or email Chris Sloane, MD - csloane@ucsd.edu

Cliff Notes

Catherine Chamberlin MS4

Have you been there?

Dreaming that quintessential dream of a first year medical student – being a doctor at Everest basecamp, or in a remote tropical jungle, or being a ski bum for the rest of your life while practicing a little medicine on the side?

Wondering how to get started?

#1 tip for getting involved in wilderness medicine: Go to a WMS conference!

If there's only one thing you could do to get involved in wilderness medicine, there's no better bang for your buck than attending one of the three 2010 WMS conferences – Park City, Utah (Feb), Snowmass, Colorado (July), or Hawaii (Nov).

"Work hard, play hard" – that's the essence of these conferences. Imagine learning dive medicine while scuba diving in the emerald blue water around the island of Maui, or studying mountain medicine as you carve turns in the deep powder of Utah.

The conference schedule includes a half-day of fascinating lectures presented by world-renowned experts and the other half-day filled with experiential learning (avalanche training, improvised litter building, survival training) or sweet adventuring (scuba diving, skiing, mountain biking, climbing, hiking). And all of this while surrounded by like-minded individuals who navigate their life by following the slogan of WMS – Combining Your Profession With Your Passion.™

Here's what other students have to say about the WMS conferences:

> "The conference this summer was so great and I learned a lot. There is nothing better than integrating what you love into your career and doing so in the beauty of the mountains of Snowmass, Colorado. I had an amazing time and it really opened my eyes to opportunities specifically in future research of wilderness medicine."
>
> – Amber Mackey

> "It was great meeting so many interesting people offering encouraging words and advice."
>
> – Britt Cross

> "The Wilderness Medical Society has provided experiences that will help me grow and mature as a medical student, resident physician and beyond. I am grateful for the opportunity to combine my interest of medicine with my love for the outdoors. With great dedication and commitment to the WMS I encourage those interested in Wilderness Medicine to become involved today."
>
> – Jeremy Brudevold

THE ULTIMATE EVEREST TREK

From the Eastern Hills to the Himalayan Track

Wilderness Travel (www.wildernesstravel.com) is leading the Ultimate Everest Trek (March 24 - April 17, 2010) that will follow the pioneering explorers' route of Tilman and Shipman from the lowlands of the Arun River Valley to the Base Camp of Everest. Buddha Basnyat, MD will be leading the trek. Dr. Basnyat will hold informal discussions on this trek about altitude sickness and febrile illness in the tropics with interested group members. For further info, contact: Catherine Chin, Wilderness Travel, catrose@wildernesstravel.com.

Explore the opportunities of a WMS conference – meet the director of a wilderness medicine project who's looking for a medical student to help with research, the residency director at your top choice program (who just received your application), or the physician who offers a surgery rotation along with class 5 paddling on the weekends.

Keep your eyes on the WMS student interest group Facebook page announcing opportunities to volunteer at the conferences, rideshare information or shared student lodging at conferences.

Medical students Jeremy Brudevold, Amber Mackey and Britt Cross on a day bike during the Snowmass conference. Photo by Britt Cross.

WHEN	WHAT	WHERE
Jan 16 - 23, 2010	Conference on Marine Medicine (MedSail)	Virgin Gorda, British Virgin Islands
Jan 25 - Mar 3, 2010	WFR/WEMT (WMO)	Boulder, CO
Jan 25-29, 2010	Wilderness Upgrade for the Medical Professional (WMI/NOLS)	Landmark Learning, Balsam, NJ
Jan 31 - Feb 6, 2010	Polar Medicine Training Course (Expedition Medicine UK)	Norway
Feb 7 - 13, 2010	Polar Medicine Training Course (Expedition Medicine UK)	Norway
Feb 19-24, 2010	**WMS Winter Meeting - Wilderness and Mountain Medicine (WMS)**	**Park City, UT**
Feb 20-Mar 3, 2010	ExpedMed Anarctica (ExpedMed)	Antarctica
Feb 21-25, 2010	Wilderness Upgrade for the Medical Professional (WMI/NOLS)	West Virginia Office of EMS, Hinton, WV
Feb 25-29, 2010	Wilderness Upgrade for the Medical Professional (WMI/NOLS)	Paonia, CO
Mar 3-7, 2010	Wilderness Upgrade for the Medical Professional (WMI/NOLS)	Flagstaff Field Institute, Flagstaff, AZ
Mar 9 - Apr 7, 2010	WFR/WEMT (WMO)	Golden, CO
Mar 22-25, 2010	Expedition Medicine and Wilderness Medicine Course (Expedition Medicine UK)	Keswick, UK
Mar 22-26, 2010	Wilderness Medical Updates for the Backcountry CME (TTA)	Terrace BC, Canada
Mar 24-28, 2010	WALS (WMO)	Denver, CO
Apr 5-29, 2010	Medicine in the Wild-Medical Student Elective (WMI/NOLS)	Lander, WY
April 5-9, 2010	Wilderness Upgrade for the Medical Professional (WMI/NOLS)	WMI of NOLS, Tucson, AZ
April 5-9, 2010	Wilderness Upgrade for the Medical Professional (WMI/NOLS)	NOLS Pacific Northwest, Conway, WA
Apr 10-11, 2010	2010 Mid-Atlantic Student Wilderness Medicine Conference	Philadelphia, PA
Apr 18 - 24, 2010	Desert Medicine Training Course (ExpedMedUK)	Namibia
May 8-15, 2010	Sailing in British Columbia Expedition for Medical Professionals (WMI/NOLS)	Conway, WA
May 9-13, 2010	Wilderness Upgrade for the Medical Professional (WMI/NOLS)	Kyle B. Brown, Ames, LA
June 5-13, 2010	WFR/WEMT (WMO)	Elizabeth, CO
July 3-11, 2010	WFR/WEMT (WMO)	Elizabeth, CO
July 9-17, 2010	Rafting the Main Salmon Expedition for Medical Professionals (WMI/NOLS)	Driggs, ID
July 10-17, 2010	Sea Kayaking in Prince William Sound Expedition for Medical Professionals (WMI/NOLS)	Palmer, AK
Jul 23-28, 2010	**WMS Annual Meeting and CME Conference (WMS)**	**Snowmass, CO**
Aug 7-15, 2010	WFR/WEMT (WMO)	Elizabeth, CO
Aug 8-12, 2010	8th World Congress on High Altitude Medicine and Physiology	Arequipa - Peru
Aug 29 - Sept 5, 2010	Backpacking in the Wind River Range Expedition for Medical Professionals (WMI/NOLS)	Lander, WY
Sept 3-6, 2010	Yellowstone Pack Trips	Yellowstone National Park, WY
Oct 2010	Diving and Marine Medicine Training Course (Expedition Medicine UK)	Bandar Khairan, Oman
Oct 16-23, 2010	Backpacking in the Galiuros Expedition for Medical Professionals (WMI/NOLS)	Tucson, AZ
Oct 30-Nov 3, 2010	**Travel, Dive & Marine Medicine**	**Maui, HI**

For the most recent updates, registration, and links be sure to check the Wilderness Medical Society website www.wms.org. *Organizations that affiliate with the WMS are granted permission to advertise as offering course content that is accepted for credit by the WMS Academy's Registry of Wilderness Medicine Practitioners and Fellowship Program (FAWM) and agree to allow their names to be listed on the WMS website as an affiliated organization. For more information regarding the FAWM program visit WMS.ORG.

AMG = Andes Mountain Guides
AWLS = Advanced Wilderness Life Support
TTA = Track & Trail Adventures
WMS = Wilderness Medical Associates
WMI/NOLS = Wilderness Medicine Institute/National Outdoor Leadership School
WMO = Wilderness Medicine Outfitters

WILDERNESS
MEDICINE

Vol. 27, No. 1
WINTER 2010

Wilderness Medical Society
2150 South 1300 East, Suite 500
Salt Lake City, UT 84106
wms.org

Periodicals
Postage

WILDERNESS & MOUNTAIN MEDICINE

CANYONS RESORT - Park City, Utah
FEBRUARY 18-24, 2010

REGISTER ONLINE
WMS.ORG/conferences
or call **801.990.2988**
for up-to-date info

"I know that our bodies were made to thrive only in pure air, and the scenes in which pure air is found."

- John Muir (1838-1914)

18TH ANNUAL
WILDERNESS MEDICAL SOCIETY WINTER MEETING

COMBINING YOUR PROFESSION WITH YOUR PASSION™

Photo by Andrew McLean