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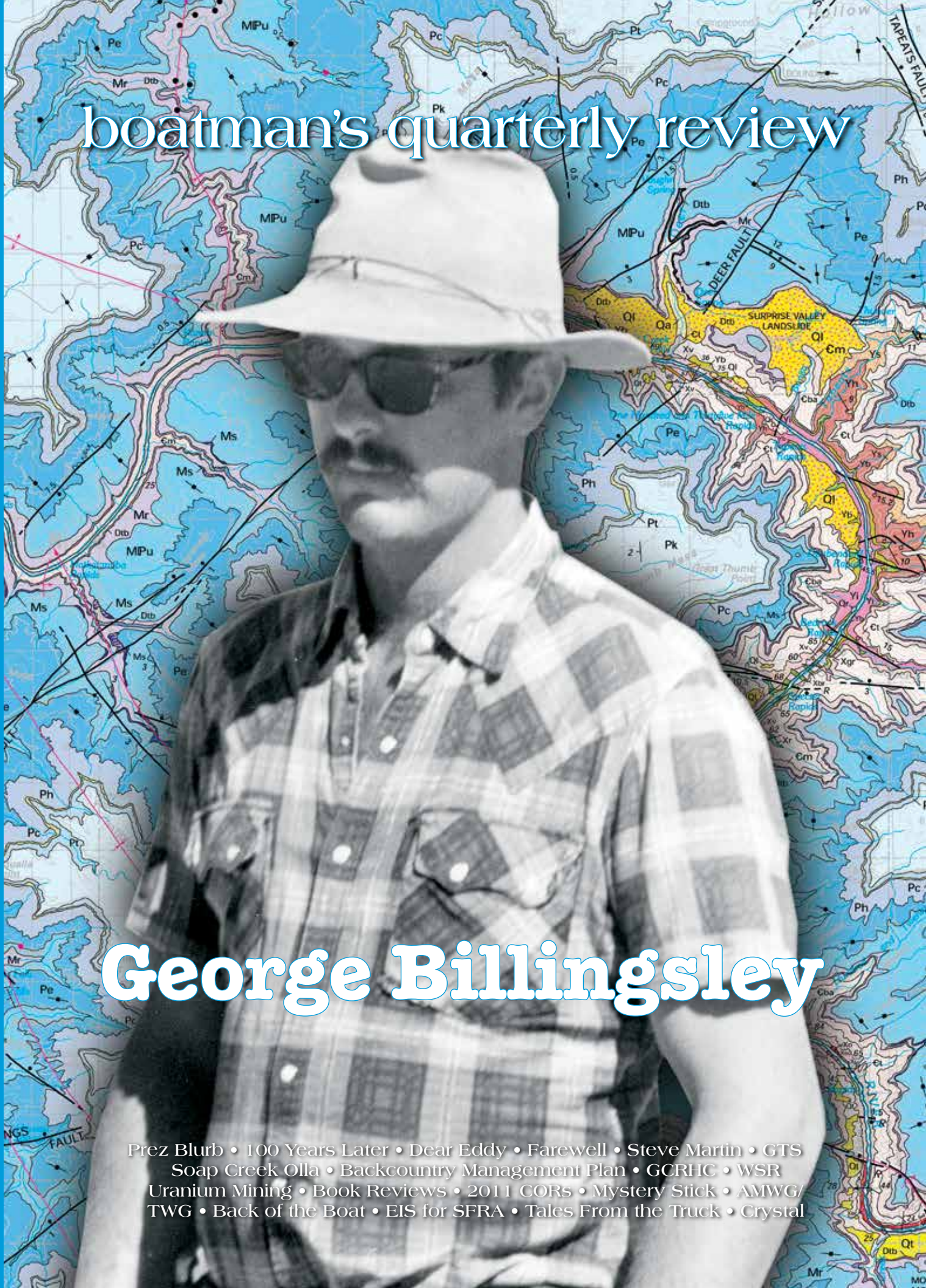
boatman's quarterly review



George Billingsley

boatman's quarterly review

…is published more or less quarterly
by and for Grand Canyon River Guides.

Grand Canyon River Guides
is a nonprofit organization dedicated to

Protecting Grand Canyon
Setting the highest standards for the river profession
Celebrating the unique spirit of the river community
Providing the best possible river experience

General Meetings are held each Spring and Fall. Our Board of Directors Meetings are generally held the first Wednesday of each month. All innocent bystanders are urged to attend. Call for details.

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Our editorial policy, such as it is: provide an open forum. We need articles, poetry, stories, drawings, photos, opinions, suggestions, gripes, comics, etc. Opinions expressed are not necessarily those of Grand Canyon River Guides, Inc.

Written submissions should be less than 1500 words and , if possible, be sent on a CD or emailed to GCRG. Microsoft Word files are best but we can translate most programs. Include postpaid return envelope if you want your disk or submission returned.

Deadlines for submissions are the 1st of February, May, August and November. Thanks!
Our office location: 515 West Birch, Flagstaff, AZ 86001
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Patience Please

Just a quick note to tell you that all of the "adoptions" have been fully funded through our Adopt-a-Boatman program, the public funding mechanism for GCRG's Colorado River Runners' Oral History Project. We are not accepting any more "adoptions" from our members at this time. But we are *so* appreciative of the outpouring of support for this program!

Most importantly, I wanted to take this opportunity to reiterate something that we made clear at the beginning of the program but bears repeating—*we cannot promise prompt publication.* We are so proud to say that the Adopt-a-Boatman program currently encompasses approximately 34 interviewees. However, since the BQR is published only four times per year, do some quick math and you'll quickly realize that it will take us at least eight and a half years to work through them all! And of course, occasionally you'll find an oral history interview in a given issue that pre-dates the Adopt-a-Boatman program. We highly recommend that you take the time to review the lengthy oral history list on our website, www.gcrg.org so you can get an idea of the breadth of our outstanding program—over a hundred and twenty oral histories and counting. It's also a great way to see which interviews have been published over the years.

Publication order does *not* necessarily follow the order in which adoptions happened. There are other factors such as age, health, and other issues that are carefully considered. And well, sometimes it comes down to "just because…"

So, we hope you'll be patient with us while we work through all the interviews that your generous support has made possible. Each story is truly a little gem of history in and of itself. Our sincerest thanks to Lew, to Richard Quartaroli, to our partner—Cline Library at Northern Arizona University, to all of the generous Adopt-a-Boatman sponsors, all of the interviewees, and finally to all of you who enjoy the heck out of each and every issue and keep asking for more.

Lynn Hamilton

Prez Blurb

Happy winter!! Where's the snow? After last years deluge this lack seems downright unfair. On the bright side, hiking in the inner canyon is stellar and I encourage all of you to spend some time on the trails in the next couple of months!

In opening, a big thank you to Superintendent Steve Martin for his service to Grand Canyon the past few years!! We appreciate all he has done and everything that has been set in motion. May our next "Super" carry with them the same passion for this place. Steve, good luck out there and do come back to visit!

Please continue to keep Kirstin Heins in your thoughts as she makes her recovery. There has been a benefit fund set up for her. Contact GCRG if you would like more information.

Some things to take note of in the coming months:

- Take some time to read though GCRG's comments on the uranium mining issue (published for your convenience in this BQR).
- The Draft EIS for overflights is now available for public comment. Be on the lookout for email alerts from Lynn with a heads up on the comment period. If you are not currently on the email lists and would like to be, email Lynn at gcrg@infomagic.net and ask to be added. As you all know, this Draft has been long in the making and our comments are important. A few minutes of your time could preserve the canyon's natural quiet for decades to come.
- As I write this, the board is planning to meet with GCRG's representatives for the Glen Canyon Dam Adaptive Management Program (Sam Jansen and Jerry Cox) to finalize our position on the High Flow Protocol Environmental Assessment and to refine our strategies for 2011. Stay tuned for updates!
- GTS! Spring is fast approaching and with it the GTS, another awesome learning opportunity providing guides with an excuse to gather, mingle, and perhaps consume a couple of beers. Just one or two…

I hope to see you all at the GTS in March! Until then, happy trails.

Erika Andersson

Kolb Expedition 100 Years Later

One hundred years ago Ellsworth and Emery Kolb were busily assembling gear and boats for their 1911 assault on the Green and Colorado Rivers—a voyage they would parley into the world's longest-running film and a book that went through 27 printings during Emery's life and is back in print today. Now, one hundred years later, Fretwater Boatworks is building a replica of Emery's boat, the *Edith*, using, as much as possible, the same materials and techniques. With luck the new *Edith* will be done for this spring's GTS and run Cataract and Grand Canyon shortly thereafter. You can follow the construction of the new *Edith* on the blog: fretwaterlines.blogspot.com, or swing by the shop in Flagstaff and lend a hand or support (moral or immoral) to Brad Dimock, Dan Dierker and a revolving cast of oddballs and fanatics.

Brad Dimock

Above: Ellsworth Kolb with the original Edith.
Photo courtesy NAU Cline Library, Special Collections, Kolb Collection NAU. PH.568.808

Below: Brad Dimock with the new Edith.

Dear Eddy

In Reference to the "John Daggett Farewell" in BQR volume 23, number 4, winter 2010-2011

Having just read the memorial to John Daggett written so eloquently by Tom Myers, I am inspired to write about the impact John Daggett and Bill Beer had on me. It was in the fall of 1957, I was in the 7th grade and an assembly was announced for 4th period. This was a beautiful thing as we were freed from an hour of classroom study and were marched in "double file" to the auditorium of Van Nuys Junior High School to spend a "special hour" as it were. I must digress a bit. In 1954, my father first took our family to Lake Mead for Easter break. We explored and fished in our brand new 16-foot "Fleetliner" runabout and I became enthralled with the Colorado River. By the fall of '57 I knew Lake Mead and the lower Colorado well enough to wonder what was above there—in the Grand Canyon? And on that fall day, without warning, I was emancipated from the study of English to view a film of one of the greatest adventures on the Colorado River. Here were Bill Beer and John Daggett narrating their story on film. I would not have believed it had I not seen it. I couldn't have imagined that anyone could be so daring. The scenery, the rapids, this powerful river! It was a poignant moment for I decided then and there that I would have to see the place in person as they did. Well, that is to say, on the river in a boat. It took 17 years and finally in 1974, after kicking around the upper and lower sections of the Colorado, I got down the "Grand." And I haven't left. God bless you Bill and John for your inspiration.

Doc Nicholson

From an email to GCRG

I have been concerned for several years that the BQR is not really telling the whole story. Specifically, that it is not fully representing that outside-thelines spirit that has always characterized our profession and lives.

If I had not spent a significant portion of my life running the Canyon and only read about guides in the BQR, I'd swear they were all somber, serious folks studying for their PhDs in hydro geological native beach grasses and the effects of sand on fish. Now, science and activism are an important part of what we do and aspire to, but it ain't the entire story. I vividly remember a whole lotta fun, a bit of mischief and a cast of the most unique characters I've had the pleasure to meet. Some of that fun may have been less than legal, but never malicious.

Maybe I'm just old and it's different now. After all, the Park Service succeeded in taking away our golf clubs, fire crackers and grease bomb fires a long time ago. But I can't help believe that the people running now are not so completely devoid of character as depicted herein.

In our rush to present guiding as a profession we have chosen to overlook some of the rebellious, don't quite fit the normal lifestyle, essence of our profession and heritage. Try telling a Whale, Jimmy Hendrick, or Vladimir Kovalik story without shining a light on that gentleman rogue portion of their being. Can't do it. Even if that rogue essence is today more sublime, I am certain it's still there in our contemporary colleagues. Most definitely it's there in our history, I was there, I saw you. Let's not suppress it to artificially legitimize an image. That's revisionist history. It should be celebrated as part of what defines us.

In my other career, I have been an architect and continuing student of architecture for a long time. I have seen this image polishing before in that profession. In the mid twentieth century the American Institute of Architects (AIA) was determined to elevate the professional image of architects on par with doctors and lawyers. They set about to write rules for practice, education, internship, codes and all sorts of regulations. All good and necessary things in their place.

About the same time the AIA was polishing up and presenting this professional image an irreverent designer who bristled at all things regulatory as impinging on his creativity was finishing up his 200th built work. His name was Frank Lloyd Wright and he was fond of referring to the AIA as those "Assholes In Action." He used to say that certain architects on the image polishing side of the profession would build one building and then write three books about it. Then he'd go off and draw up the design for Falling Water. It didn't quite fit within the lines.

Seems Mr. Wright didn't need regulation and image promoting to be the finest architect on earth. It also seems that he had been complying with regulation and code in his designs for fifty years before codes existed. I guess he didn't actually need the rules and image to be professional, he already had it in 'em.

I'm not saying that the scholarly articles that appear in the BQR aren't important, they are. I'm guilty of writing a few scholarly tomes myself (boring). I am saying the BQR is not presenting the outside-the-lines part of us that is so much of who we are. All for the sake of presenting an image.

John Markey

Farewell

Vaugh Short

Vaughn Short, poet laureate of the Colorado River, left us this January. Vaughn spent decades as a fixture around the Colorado Plateau, hiking, mule packing, rafting, and most memorably, standing around the campfire, reciting his poems and telling tales.

Vaughn was born to a poor mining family in Southern Arizona, and began working in the mines at an illegally young age. "Born to dig," he often said of himself. Hearing folklore from other miners of mythic laborers, Vaughn set out to beat the unobtainable records. And did.

Vaughn served in the Army through World War Two, rising inadvertently to medic.

Back in the states, he began working in a cement plant near Tucson. His world took a mighty shift when he signed on to a pack and mule trip with Ken Sleight. Before the trip had really begun, Vaughn had become Ken's right-hand man—a post he would keep for decades. There aren't many canyons, mesas or rivers those two did not pack, hike or float.

All the while he was playing with words and stories and poetry, which he finally compiled in his first book, *Raging River, Lonely Trail*—still a companion volume on most river trips today.

After Ken retired from most of his wanderings, Vaughn shifted over to Moki Mac, where he was crew and entertainer for many more years. Vaughn was on the trip when boatman Michael Jacobs died from a fall and dedicated his second book, *Two Worlds*, and many of its poems to Michael.

For those who never had the chance to sit around a fire and hear Vaughn, his books, prose, and poetry will have to suffice. Be sure to pack some juniper for your campfire, as Vaughn doesn't sound quite right without a little wood smoke.

So I've told my tale
I've spoke my words to you
Of raging river—lonely trail
Of misty mountain rising blue.

I hope I've caused a smile to be
Brought one chuckle or a grin
One small thought of breaking free
One old longing from within

At times I've sung a sad refrain
Sometimes with injustice burned
But my hopes were to entertain
As these pages you have turned.

If you would like to learn more about Vaughn, his oral history interview appeared in Volume 22:3 of the *Boatman's Quarterly Review* (Fall 2009). He got such a kick out of seeing the cover shot of himself as a boy, clutching his favorite chicken, Henny Penny, with a grin on his dirty little face. Additionally, Vaughn's family has set up a lovely memorial website with words from his family, excerpts from Vaughn's poems, and many photographs. The website can be found at: www.imorial.com/vaughnshort. You can even post a tribute of your own on there. Without a doubt, Vaughn will be missed by us all.

Brad Dimock

We'll Miss You Steve!

From the Grand Canyon National Park Press Release, dated December 7, 2010

Steve Martin, Superintendent of Grand Canyon National Park, has announced his retirement on January 1, 2011. Martin, who began and now ends his career at Grand Canyon, is a 35 year career National Park Service (NPS) veteran with experience as a park ranger, natural and cultural resource manager, business manager, superintendent and senior leader.

As Superintendent of Grand Canyon National Park, he managed all park programs as well as a staff of 500 who are responsible for this magnificent world renowned icon. The 1.2 million acre park is a World Heritage site and listed as one of the seven natural wonders of the world. The park receives 4.5 million visitors each year from all over the world and is the homeland to eleven affiliated tribes.

Photo courtesy of Cyd Martin.

Prior to becoming Superintendent at Grand Canyon, Martin completed a two year assignment as Deputy Director of the NPS in Washington, D.C., the most senior career position in the Service. As Deputy Director, he supervised all operations of the NPS including 390 park units, a $2.2 billion dollar budget and 20,000 employees. From September 2003 to April 2005, he served as Regional Director of the Intermountain Region overseeing 88 parks in eight states. Prior to these key management roles, Superintendent Martin had a long field career, including Superintendent of Grand Teton National Park in Wyoming, and Denali National Park & Preserve and Gates of the Arctic National Park & Preserve in Alaska. At Gates of the Arctic, he worked with Alaska Natives on cooperative conservation involving subsistence, wilderness and resource protection, and eco-tourism.

GCRG's Letter to Superintendent Steve Martin, Dated December 13, 2010

Grand Canyon River Guides would like to congratulate you on your upcoming retirement and also express how thankful we are for your many accomplishments as Superintendent of our beloved icon park. Coming full circle from commercial guide, to ranger, to your tenure as Superintendent of Grand Canyon National Park must have been an incredible journey as well as an amazing gift. Your drive to make that happen was mirrored in your subsequent enthusiasm, expertise, advocacy, and willingness to work with the Park's many partners.

In particular, we appreciate your intimate understanding of river resources, our unique river culture and the complex issues surrounding it, coupled with your willingness to reach out to river stakeholders in the spirit of cooperative collaboration. It meant a lot to GCRG when you said in 2007, "It is through healthy partnerships, such as with guides and other river users, that we will bring forward our most outstanding work." Truly that is the case with the successful implementation of the CRMP and greatly improved relationships between river stakeholders.

The simple fact that your heart belongs to the river resonates deeply with all river guides. We extend an open invitation to you and your wife, Cyd, to join us at our annual activities such as the spring Guide Training Seminar and Fall Rendezvous. We wish you all the best for the future, and we imagine whatever that might hold, Grand Canyon and the Colorado River will always be an important part of it.

Cheers!

Editor's Note: Jane Lyder, Deputy Assistant Secretary for Fish and Wildlife and Parks, U. S. Department of the Interior, has been named acting superintendent of Grand Canyon National Park. Lyder will assume her new duties in early February, and we will extend her a woarm welcome!

Get Ready, Get Set—For The GTS!

Yes indeed, it's fast approaching that time when guides will emerge from exotic locals and/or winter jobs, shrug off those winter blues, and start to think about spring and the start of the river season. Spring means the Guides Training Seminar (GTS) and other important classes, so mark your calendars and get set to learn and have fun!

Backcountry Food Handler's Class

When: March 25, 2011, 10 a.m. to 3 p.m.
Cost: $18
Location: Old Marble Canyon Lodge
Checks can be made out to Coconino County Heath Department. Send to the attention of Marlene Gaither, Environmental Health, Coconino County Health Dept, 2500 N. Ft. Valley Rd., Bldg #1, Flagstaff, AZ 86001.
Contact mgaither@coconino.az.gov or 928-853-8933 with questions.

Guides Training Seminar Land Session

When: March 26-27, 2011
Cost: $40 (unless you're sponsored by your outfitter)
Location: Hatch River Expeditions warehouse, Marble Canyon, AZ
Checks can be made payable to GCRG and mailed to P.O. Box 1934, Flagstaff, AZ 86002

This event is *open to the public!* If you love Grand Canyon and the Colorado River and want to learn more, this is the place to be! Plus, hey, it's a huge gathering of guides so what could be more fun than that! From the Native Voices on the Colorado River workshops to humpback chub movies, from current resource issues to Kolb boat replicas, the GTS is painless learning at its best. Check the GCRG website, www.gcrg.org for a draft agenda.

Guides Training Seminar River Session

When: April 1–7, 2011 (Lees Ferry to Phantom Ranch)
April 7–15, 2011 (Phantom to Diamond Creek)
Cost: $ 220 (upper half) and $ 280 (lower half)
Eligibility: You must be a current member of GCRG and you must have work in the Canyon in 2011
First Priority: will be given to guides sponsored by an outfitter, and then to all interested guides and trainees who have trips for the 2011 season.
Freelance requirements are as follows:

1. Must have all your medical requirements and other guide certifications fulfilled as specified by Grand Canyon National Park, *or*
2. You must be a licensed guide on another river, actively working towards becoming a guide in Grand Canyon.

If you're not sponsored, you need to send us a letter or resume with your background—tell us who you are, how you meet these requirements and why you should go. We will hold your check until we have made our decision.

Whether you are an experienced guide or a guide in training, the GTS river trip is the best way to learn about canyon issues and resources while you can see, hear, smell, and touch whatever it is you're learning about. There is always more to know about Grand Canyon and the Colorado River, so get on the boat (literally) for the best training trip around!

Kolb boat replica "Edith" on her way to completion by Brad Dimock. See her all finished up at the GTS, March 26–27.

Message in a Bottle

As the squall hit I looked upstream to see the wind lift an inflatable kayak and its two passengers five feet in the air and ten yards upstream before dumping them into the San Juan River. It was late August of 2010 and the monsoon season was starting to deliver. I was guiding on a San Juan river trip for Wild Rivers Expeditions and on this particular day we were witness to the fury of these seasonal storms at their best. Day four of an eight-day trip is always a busy one—earlier that day half the participants were leaving at Mexican Hat and we needed to send them off to the airport in Durango, reconfigure/resupply the boats and try to make it to Honaker so that we could hike in the shade the next morning. After some lunch we bid farewell to our departing friends and got back on the water. We had about twenty miles to make that afternoon and so far the skies were clear and still, but you could see the tops of thunderheads beginning to appear above the canyon walls.

At the Mendenhall Loop we took a short break to go up and see Bert Loper's stone cabin and spent some time reflecting on this fabled riverman's life in such a remote locale. As we were contemplating how exposed life must have felt in a rock hermitage atop this bend in the river, a rather large storm cell snuck up and sent us scrambling back to the boats—lightning crackling and thunder bellowing all around. We got back on the water and began pushing for camp. There was only ten or so more miles to go and we still felt that we had a good chance of pulling it off. The monsoons had other ideas. As we were making our way around the great gooseneck we could see a squall downriver, approaching fast. These microbursts are usually short lived so we pulled into a little alcove at the shore to wait it out. As I beached my boat I looked upstream to see the inflatable take flight. Game over—time to camp! Around the bend we found a spot and spent the evening drying out and telling extreme weather stories. As is often the case with these fleeting afternoon storms, it was a beautifully clear night with more stars above than seemed plausible. Still, you could hear the distant rumble.

We awoke early the next morning to clear blue skies. After breakfast and rigging we headed down to Honaker to go for our hike. The water was low and when we arrived it took every inch of bow line to tie up the boats. We spent the morning pondering the rich plant life, geology and human history along the precipitous Honaker Trail and returned just after noon to have some lunch before continuing on our way. While eating we noticed that the bow lines, which had been stretched to their limits that morning, were now slack and the boats were bobbing twenty feet down the beach. Every five minutes our marker sticks would disappear. "Fasten your seatbelts and place your seats and tray-tables in their upright position"—the river was coming up fast!

The San Juan basin drains an area as large as some states back east. Wilderness canyons, hardscrabble reservations and the almost-metropolises of Durango, Farmington, Shiprock and Cortez are cleansed each summer by the monsoons and it's the job of the San Juan River to transport anything that is not nailed down to the sea—well, to Lake Powell anyway. My fellow guides and I have come up with a certain stratigraphy to help estimate water levels when we're far from the USGS flow tables. The San Juan is one of the most silt laden rivers in the world and usually runs with a taupish hue. When the water comes up a couple of hundred cubic feet per second (CFS) you begin to notice small sticks and a layer of duff along the rip lines in the current. At 500 CFS additional flow there will be small branches, motor oil containers, spray paint cans and baseballs. One thousand CFS more and you'll begin to see large tree limbs, basketballs and tires. And with spikes of over 2,000 CFS the river becomes a mélange of all this with whole trees and home appliances in the mix as well. One season the BLM rangers had an informal competition and Brandt won, recovering seven refrigerators from the river! Furthermore, you can even tell the location of the cloud burst by the color the river becomes as it begins to rise. Taupish-grey comes from everywhere upstream of the Four Corners. Chinle Wash on the south side of the basin stains the river a beautiful orange and Lime Creek pulls down a lovely redness from Cedar Mesa to the north. So as we stood on the bank at Honaker that day and surveyed the salmony-orange hue and wall-to-wall flotsam, our virtual periscope said that last night's storm was rather widespread and long-lived—we would have elevated water levels for quite a while. So with much giddiness and glee we piled on the boats to ride the swell.

We had planned to camp at Ross that night (about ten miles from Honaker) and we made it there in about forty minutes. The Carols, who booked this trip, took to the two inflatable kayaks and engaged in some good spirited family competition. Mark and Royce squared off against Andrea and Joey to see who could pull the most trash out of the river. Boy, did they ever get after it! By the time we got close to Ross Camp the

two inflatable kayaks were piled high with the remnants of a plastic, disposable society. So much in fact that we pulled over to consolidate the trash (three bags full!) before the rapid ahead could reclaim it. When Andrea and Joey pulled up to offload their take, Joey exclaimed, "We found a message in a bottle!" All attention turned their way and sure enough Joey held up an empty Old English "40"—forty ounces that is—with a note inside. Imaginations ran wild.

What could this message be? A plea for help? A testament of love? An impromptu will? Shy of reading the note—which happened much later—how to tell? Perhaps the bottle itself could give some clue. Now, if Aaron Ralston was trapped somewhere in Cedar Mesa with his other hand pinned he would most certainly have used an empty Nalgene bottle as the vessel for his plea. You'd expect a glowing admission of undying devotion between two lovers to find its way downstream in an empty bottle of Pinot Noir. The damnation of a constantly failing vehicle could only be purged in a 30-weight motor oil jug. Personally, I was pulling for a rich, lonely widow's last will and testament leaving her entire fortune to whoever finds the note ("Gimme that bottle, Joey!"). But this was a bottle of cheap malt liquor, not chardonnay. Hmmm…

At camp that night, while dinner was being prepared, the family devised a way to get at the note. They twisted it up on a couple of chopsticks and pulled the note right out. Joey spread it out on the beach and everyone gathered around. I was stirring the night's stew and mentally dividing 10 (people) into $40 million (widow's fortune) when someone began reading the note. It read:

"My life is no good. Too much drinking and drugs. Fights with family. I have to stop all this, be a good husband and father. Quit the partying. I'm placing these things that ruin everything into this bottle, throw it into the San Juan to be carried out of my life. Signed_____"

Whoa! Once I got over the anguish of once again missing out on an early retirement I began to ponder this event. Our lives can often seem entrenched, especially when beset with behavioral issues. I believe that the author of this note, at a very low point in his life, noticed something in the river that spoke to him. As he sat on the banks of the San Juan perhaps he saw how ceaselessly it flowed and certainly he would have seen all the flotsam that the river was carrying away—he had an epiphany. In a stroke of genius he was able to separate behavior from the individual. On the one hand he could see the dysfunctional elements in his life and the effects that they were having on his health and family. Then on the other hand he saw the river and its amazing ability to carry a load. Brilliantly, he chose to cut out those parts of his life that did not serve and give them to the San Juan River for disposal. And the river abides.

I was a little disappointed when Mark disagreed with my feeling that we should replace the note and cast the bottle once again to the river. I guess I feared that the minute that note came out of the bottle our hero would inexplicably reach for a crack pipe and return to his former ways. But upon reflection, I think I understand. Mark saw this note as a testament to the human ability to grow—there are few lessons as crucial to a parent seeking to give their children the skills they will need to flourish in the world. That evening on the beach at Ross camp one man's soul-purging testimonial became another man's family heirloom—a relic showing us all that we can heal ourselves no matter how tough things may seem. I like to think of that note matted and framed in the Carol household reminding those boys of the time when a man threw off a tattered cloak with pockets full of dysfunction and strode off into the light. And central to it all, there's this river—eager to cleanse.

When I signed on to guide for Wild Rivers Expeditions this past year, I too was entranced by the river and its power. I bundled up my life and cast it to the San Juan River—I asked the river to carry me away. However, this river had other plans. It didn't carry me away from anything, but toward. It carried me toward a land full of beauty and perspective. It carried me in its liquid arms toward a world where each day is new and full of great potential. It carried me toward a host of great folks eager to be together and see what might be around the next bend. And I believe it brought that note inside an empty bottle of "Old E" toward me so that I would know that the river was there to help with tough, emotional issues as well. But then, a chardonnay bottle would have been O.K. too…

Jim Hall

Soap Creek Olla Project Update

One year ago, many of you read about the Soap Creek campsite restoration in the spring edition of the BQR. In 2010, the project continued to expand. Park staff continued to implement new methods while maintaining the original plant installation.

A portion of the Soap Creek restoration site, prior to major planting, November 2008. Photo courtesy of NPS.

A portion of the Soap Creek restoration site, following major planting, November 2010. Photo courtesy of NPS.

Background

Due to heavy use by river runners, backpackers, fishermen, and day hikers, Soap Creek has historically had a heavy level of human impacts that negatively affect both cultural and natural resources. Grand Canyon National Park staff have been working to address these concerns since the 1990s, but have recently undertaken a more aggressive approach to mitigating human impacts at Soap Creek. In November 2008, park crews created eight new campsites in the more durable, sandy, post-dam riparian zone, downriver from the kitchen area, to attract river users to less sensitive areas. They also obliterated pre-dam (or old) high water zone social trails and tent sites. In February 2009, park staff and boatmen from Wilderness River Adventures obliterated another large section of social trails. In November 2009, park staff and boatmen from Tour West installed 65 plants, eight ollas, and ten traditional berms during the first phase of a major replanting effort on the upper pre-dam high water zone terrace. In November 2010, park staff and boatmen from Arizona Raft Adventures completed the second phase of the major replanting, installing 265 new plants, 22 ollas, and 36 stand-alone berms. A small unplanted area remains at the site, which will likely remain unplanted until November 2011. These plantings were phased over several years so staff could collect valuable data and determine the best methods for ensuring restoration success along the river corridor.

What is different at the site since last year?

River users will continue to see the olla experiment in action. Park crews are experimenting with a method of irrigation which has been used for many centuries, called "olla gardening." With this method, modern, unglazed, commercially produced clay pots are buried up to their narrow necks and filled with water. Crews then plant native vegetation immediately around the pots. Because the pots slowly release water into the soil through the porous clay wall, the plants benefit from the availability of water over an extended time period. In November of 2010, crews installed a different form of olla in order to determine whether or not it could be more cost effective and efficient to maintain than the ollas in the original planting. Several new native species have also been added to the planting to gain a deeper understanding of water requirements for establishing those particular species in the field. Biologists, park staff, and volunteers have been continually monitoring the plants and pots, and will do so until the plants are fully established. As the plants become established, park staff will continue to plant the disturbed areas of the upper terrace until the site is completely restored. Ultimately, park staff hope to perfect the methods tested at Soap Creek to successfully carry out other restoration projects throughout the river corridor.

What have we learned so far?

While it's still too early to make definitive judgments

about all aspects of the experiment, park staff have gained some insight into required watering frequency, species success, and modifications to traditional watering techniques. For example, as a new technique, ollas were combined with traditional berms around certain plant species that had higher mortality rates in the original planting. The berms and ollas were combined in order to capture both the manual monthly filling of the ollas as well as natural rain events. In addition, after park crews spread locally collected duff and litter across the site as mulch, a significant number of native species sprouted on the site. This confirmed what was thought to be the dual advantage of using duff and litter as a mulch source to promote moisture retention and erosion prevention, but also confirmed that local duff and litter still contains a viable native seed source and is not completely dominated by nonnative species.

How will the new changes affect river users?

While the site looks significantly different from the 2010 summer season, little to nothing has changed in terms of using Soap Creek Camp. All river users will still be able to stop for lunch or camp overnight at Soap Creek. The campsites created in 2008 in the durable, sandy, riparian zone near the river continue to be maintained by park crews, making them highly usable and attractive. Major erosion from 2010 monsoon season and the October rain events have also been repaired throughout the camp area.

What can you do?

River users are still crucial to the success of the restoration at Soap Creek. Park staff ask that you contribute to the success of this project by being a good steward. Please bring your passengers to the site to tell them about the project and encourage discussion. If you are camping at the site, encourage your group to locate tents low, close to the river, using one of the established camp sites. Please do not disturb the pots or the plants, as the restoration area is being carefully monitored and information from this project will be used to plan future restoration projects. Learn to recognize the importance and physical qualities of both the pre- and post-dam zones, and use that knowledge as you travel down river. Keep your camp and tents in the post-dam riparian zone at all camps to minimize your impacts. Take note of other areas you see that have been impacted, and take care to avoid creating new impacts. If you see damage, have observations, or questions, please get in touch with park staff. Stay on trails, Leave No Trace, and have a good adventure.

Kassy Theobald
Restoration Biologist

Grand Canyon Backcountry Management Plan

Another major planning effort is on the horizon—Grand Canyon National Park backcountry includes over 1.1 million acres of primitive, undeveloped area, most of which is proposed for wilderness designation. Although it takes an act of Congress to actually designate wilderness, National Park Service Management Policies require park units to manage all wilderness-suitable lands in the same manner as designated wilderness. Policies also require parks to have management plans to address resource protection and visitor use issues in park wilderness.

The planning effort will involve an Environmental Impact Statement to update the park's 1988 Backcountry Management Plan. The Park's backcountry includes the Inner Canyon and remote forested rim and plateaus in the proposed wilderness, as well as the non-wilderness Cross-canyon corridor (Bright Angel, South Kaibab and North Kaibab trails) and Toroweap in western Grand Canyon. The plan will also address management of backcountry areas along the Colorado River where backpacker and river use overlap, including campsites and tributaries enjoyed by both user groups. The Backcountry Plan will not, however, specifically address river use levels, launches, group size and other components detailed in the 2006 Colorado River Management Plan.

The process to develop the Backcountry Management Plan and Environmental Impact Statement is expected to begin this spring. The public scoping phase to identify issues and concerns is scheduled for early summer this year.

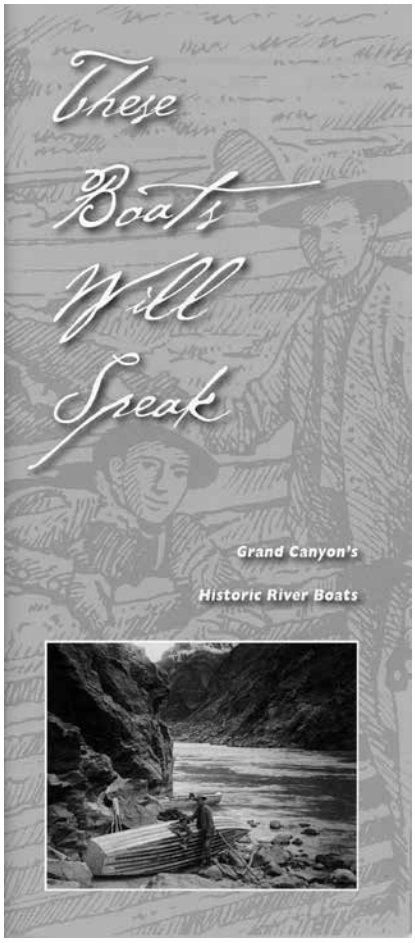
Guides, outfitters and all those interested in Grand Canyon's backcountry and wilderness management will have opportunities to be involved in this plan and others. It is likely that the Draft EIS for Overflights will be released in Spring 2011, that will include a public comment period on the proposed action and alternatives considered for managing airspace above Grand Canyon National Park. Information on these plans can be found at http://parkplanning.nps.gov/grca.

Linda Jalbert and Rachel Bennett

Thinking Outside the Box…Of Boats

Ten years ago at this time, Brad Dimock was cajoling anyone who would listen that, "we gotta do something about those old boats." There were then about a dozen river-running boats that have shaped the human experience in Grand Canyon and they were languishing in the Visitors Center courtyard.

"Save The Boats" became the rallying cry, and most of the ten-year period was focused on collection and preservation. Thanks to Brad and others who cared, those boats were saved, and others located and added to the collection. They are now in protected storage in the park; they've been cleaned, and hard-hulled boats have been placed on new cradles.



But doing something about the boats has never meant just putting them in a warehouse rest home. It's now time for the next phase: a place for the boats and related artifacts to tell stories to park visitors, to be touchstones that connect the river with the rim, to relate how exploration and exploitation became transformed into adventurous recreation for park visitors.

The historic 1926 NPS laundry building has been nominated, and found feasible, for adaptive reuse as the Grand Canyon River Heritage Museum. In words and drawings, the feasibility study team has suggested exterior renovation and expansion consistent with the building's original design theme. They have laid out a floor plan that will provide exhibit connectivity and security, and theatre and retail facilities. State of the art interpretive displays and devices will draw visitors of all ages into the human history of the river and inner canyon.

There's a saying, "Make no small plans, for they have not the magic to stir men's blood." It's usually attributed to Daniel Hudson Burnham, who designed Chicago's lakefront public park, and many buildings in Chicago, Washington D.C., and other cities. The Museum is no small plan. The feasibility report projects a cost of ten million dollars, of which about two million is for display, and interpretive design and layout.

Another of Brad's remarks—that this must be much more than "a box of boats"—soon led to the larger, more relevant, vision of a Grand Canyon River Heritage Museum. In addition to preserving and presenting the Park's river heritage, the Museum can be the anchor project for the master-planned Village Interpretive Center that will one day renew the nondescript district presently dominating the view from the concourse of Bright Angel Lodge.

Several essential phases lie ahead. One is to create and sustain awareness and advocacy for the project; others are to raise the money for renovating and upsizing the building, and for the installation of the exhibits and interpretive systems.

The advocacy phase is well underway: for several years, commercial river passengers have been donating, through a trip reservation checkoff, to an outfitter-managed fund that gives grants to several causes, including the museum advocacy project. Last year, the Museum Coalition established an online donation system, and has received several donations. Coalition organizations such as GCRG, the Grand Canyon River Outfitters Association (GCROA), the Grand Canyon Private Boaters Association (GCPBA) and the Grand Canyon River Runners Association (GCRRA) are encouraging their members to provide association support. All totaled, these don't amount to big money, but they're broad-based support and publicity upon which big money can be sought. For that phase, the Museum Coalition hopes to have a three-way project partnership with the Park, and the Park's official fundraiser, the Grand Canyon Association.

Once the major fund-raising program is launched, we expect the Grand Canyon River Heritage Museum project to attract national and international donors. Philanthropy is still extant, as evidenced by recent news items about well-known billionaires and millionaires pledging to give away large portions of their wealth during their lifetimes, and encouraging others

to do the same. There are Park Service programs that provide funding for adaptive reuse of historic national park buildings. There are funds and foundations that contribute to large projects of this nature. Some members of the Coalition have made personal donations to the advocacy phase, and expressed interest in helping fund the bricks-and-mortar phase with lifetime donations and end-of-life bequests.

Museum Coalition members are optimistic that the various funding sources can be melded into a phased matrix that will have the River Heritage Museum complete, and its doors open to visitors, within the next few years.

The Coalition's exciting new website at www.gcrivermuseum.org has a wealth of information about developments so far, and about the boats and related equipage, photos, and writings that are already in the Park's collection. You can also sign up for our mailing list as well as donate securely.

Copies of the new pamphlet *These Boats Will Speak* are available from the Museum Coalition at Box 936, Flagstaff, AZ 86004. GCRG also maintains a supply, as do most of the outfitting companies. This is admittedly an ambitious project. Support and encouragement are needed from river folks, and can then begin coming from all who care about Grand Canyon, wherever they may be. Please join us in spreading the word, and seeking potential funding sources. And please tell your friends and your river passengers about the Grand Canyon River Heritage Museum project.

Gaylord Staveley
EXECUTIVE COMMITTEE CHAIRMAN, GCHRC

Wilderness Slow Responder—When Tolio Goes Bad

OCTOBER 2010: THOUGHT I was going to make it thru a season without "The Tolio"—but, no, two days before the takeout, there are those itchy blisters—Dang! By the time we get to Diamond Creek, one of my toes is all blister—think small bratwurst. No problem, as long as I don't kick something with my bad foot and bust open the blister or someone doesn't step on it during the takeout, it'll all take care of itself after I get off the river. I've unfortunately had this a few times, so I know the drill—all will be good after a little time off the river…

I am limping a little, and my leg seems sore, but I figure that it is because of the *big* blister on that foot, so no cause for concern for this Wilderness Slow Responder (WSR)—after all, I've seen this before (okay, maybe never a blister *that* big, but hey.) We get the truck loaded before spending the night at the ramp, but no sleep for me as the blisters are itching (too tired to get into the major first aid for the anti-itch cream) and my leg is really sore. Might have been some fever or chills, can't really remember…

First light, up for coffee and final pack into the truck, drive back to the boat shop, limp around for de-rig and clean-up in kind of a daze—no alarm bells for this WSR, just need to get done and then lay down somewhere for a good sleep…

I show off my mega-blister (think bratwurst night) to Marc Yeston, who calls it "Himalaya Toe" because it resembles frost-bite damage in Nepal. He makes me promise I'll have someone look at it. Ok, but just want to go to sleep now…

Finally go wash off my feet so someone can look at them—and look at that: the whole foot is red and swollen *and* there is a red streak all the way up my leg ("Oh, that's why it hurts")…my WSR training tells me that these are not good signs, so off to seek professional help—Alan Motter (one of those nice medical people who always volunteers at the Whale Foundation Health Fair at GTS) tells me to stop by the house and he'll see what's up…"*Wow*! Look at *that*!—you are going to the ER, right now…" The ER Docs were great—tho' the whole Tolio thing had them puzzled.

Turns out that Staph A had decided to party down in the Tolio blister, I had quite the fever, and the *big* blister was just a distraction from what was really important…I think I remember learning about *not* being distracted by shiny (bloody) objects in my last WFR refresher, but being kinda slow on the uptake… So, lesson (re-)learned: look at *all* the symptoms, and don't be a Wilderness Slow Responder!

Greg Woodall

GCRG's Thoughts on Uranium Mining

GCRG would like to thank everyone who attended the public meetings or submitted written comments as part of the Arizona Department of Environmental Quality's public scoping efforts associated with the permitting process for three underground uranium mines in close proximity to Grand Canyon National Park. It is of note that every single person who spoke at the January 6th meeting in Flagstaff asked the Arizona Department of Environmental Quality to deny those permits. Thanks to all you Canyon advocates! Grand Canyon River Guides' comments are published below for your review. With the comment period now over, we will keep you posted on any new developments…so stay tuned!

Following is GCRG's letter to Mr. Trevor Baggiore, Deputy Director, Air Quality Division, regarding the Draft Air Quality Permits Nos. 52522, 52790 and 51803 for the Pinenut, EZ, and Canyon Mines; and Aquifer Protection Permit No. 52718 for the EZ Mine:

Grand Canyon River Guides, Inc., (GCRG) founded in 1988, is unique in that it provides a unified voice for river guides and river runners in defense of the Colorado River corridor through Grand Canyon. Our non-profit educational and environmental 501(c)(3) organization is comprised of over 1,600 individuals who are passionately dedicated to the continuing preservation of this national icon. Consequently, Grand Canyon River Guides' goals are to:

Protect the Grand Canyon
Provide the best possible river experience
Set the highest standards for the guiding profession
Celebrate the unique spirit of the river community

With those goals in mind, Grand Canyon River Guides would like to take this opportunity to comment on the pending decision by the Arizona Department of Environmental Quality (AZDEQ) regarding issuance of Air Quality Control Permits for the operation of three underground uranium mines - the Pinenut Mine, Canyon Mine and EZ Mine, applied for by Denison Mines (USA) Corp and the General Aquifer Protection Permit for the EZ Mine. We have reviewed the history of uranium mining in the area, the opinions and findings of scientists, and the statements of the local and regional experts and stakeholders including Native American tribes who have spoken about this issue in past years. Based on recent studies and our own intimate experience, understanding, and respect of the Canyon and surrounding region, we strongly encourage you to deny Denison Mines the aforementioned permits necessary for the operation of these three mines.

Denison Mines cannot ensure that there will be no irretrievable harm done to the regional aquifers, and herein lies a primary concern. The potential exists for uranium to become mobile in the flow of subsurface water, subsequent to disturbance of the breccia pipes where it is mined. This leads to contamination of aquifers which feed seeps and springs within Grand Canyon National Park. These springs are critical to the health of biotic systems which support plants, animals, insects, and birds in this arid region, while providing water for backcountry hikers and Native American tribes. Ultimately, these springs flow into the Colorado River, a water source for millions of people downstream.

Particularly disturbing is the fact that Denison Mines will not be required to post any bonds for cleanup of any contamination and, under the considered AZDEQ general Aquifer Protection Permit (APP), Denison Mines will not be required to have either baseline data relating to aquifer water quality, nor will they be required to monitor aquifer water quality during or after the life of these mines. How will any potential contamination be detected? Hydro-geologist David Kreamer, from the University of Nevada Las Vegas, has noted that *any rigorous uranium monitoring program should involve "the emplacement of monitoring wells, regular sampling and chemical analysis of water, and hydrologic and hydrochemical mathematical modeling."* He also notes that there is no such industry program in the Canyon and that the effects of uranium pollution on groundwater may take years, decades or even centuries to be fully manifest. ("Uranium Mining in the Grand Canyon, Biting my Tongue in Front of Congress", *Boatman's Quarterly Review*, Volume 22, #4, winter 2009–2010)

Furthermore, it seems entirely inappropriate that Denison Mines itself would be responsible for the minimal monitoring and environmental testing stipulated in the APP. We find that the lack of oversight, the insufficient environmental safeguards, and the absence of a scientifically credible and comprehensive monitoring program to be unacceptable, placing the burden of risk from any potential contamination on the public and on Grand Canyon itself.

In his compelling testimony before Congress regarding House Resolution 644, as excerpted from the citation listed above, expert witness David Kreamer

stated that,

> "The science has shown that it is unreasonable to assume that the groundwater below the rim of the Grand Canyon and in its breccia pipes does not have hydrologic connection with the Canyon's springs. It's unreasonable to assume that water supply to mines is trivial, particularly if more than one mine begins operation in the Grand Canyon region. It's unreasonable to assume that the surface mining structures, the dams, berms, dikes, won't reduce recharge to the Redwall-Muav aquifer, and that's if they don't fail and flood the subsurface with contaminated water. It's unreasonable to assume that mining in the Hermit Shale aquitard won't pierce the perched aquifer system in the Grand Canyon. It's unreasonable to assume that potential pollution to springs and drainages in the canyon won't occur – we've already found it. And it's unreasonable to assume that no potential huge cleanup costs will be associated with any pollution that does occur."

Grand Canyon, one of the "Seven Wonders of the World", has been in the making for five million years, and was designated as a National Park almost 100 years ago. It currently draws millions of people to Arizona every year. These visitors come to marvel at a landscape that has been protected for its unique qualities and for the benefit and enjoyment of people worldwide. Tourism has been and always will be a significant part of Northern Arizona's economy, but is dependent on our abilities to make wise decisions that honor and protect our beautiful, fragile landscapes. *Denison Mines admits that these mines all have short lifespans of two to five years, yet the potential impact from these uranium mines could negatively affect Grand Canyon tributaries and the Colorado River for generations to come.*

Additionally, please consider the human cost of uranium mining pollution on the eleven Native American tribes who hold Grand Canyon sacred. These include the Hualapai, Havasuapi, Kaibab-Paiute, Hopi, and Navajo whose lands are directly adjacent to the canyon and river and who use the watersheds for drinking water and to sustain livestock and crops. As a Diné Nation member, river guide, and vice president of Grand Canyon River Guides, Nikki Cooley says:

> "Uranium mining near Grand Canyon has a deadly history for many Native and non-native Americans. My late grandfather mined uranium for a short part of his life yet he died from cancer that is linked to his time working in the mines without necessary protective gear or training. The Navajo Nation, once known to be virtually immune to cancer, now has doubled the rate of cancer cases since the 1970's. There are many Navajos who have unknowingly built homes using contaminated rock, sand and wood, consumed water and meat from livestock that grazed near or on former uranium mines, who are now suffering from various forms of cancer. With such a tainted history, why are we continuing to expose and risk the health of our natural resources and people? As a river guide, I tell my passengers to respect and honor a place that is like no other and to treat it as you would treat your children."

And, mirroring some of those sentiments, GCRG board member Robert Jenkins, who is a commercial river guide and member of the Hopi Tribe, states:

> "People may not know what has happened on Indian lands, but there are two sites that I know of that were contaminated by uranium mining out on the reservation decades ago. This caused our people to abandon their homes, almost like our own "Chernobyl" right in our back yard. Those settlements are gone now – buried, but they should not be forgotten. Hopis and Navajos were displaced and who knows how it has affected the lives of those residents over time. One of those settlements north of Tuba City was in a drainage close to the Little Colorado River that is sacred to the Hopi tribe. Could it still be affecting the LCR? Uranium mining has already had a devastating affect on our tribal lands."

Again, Grand Canyon River Guides strongly urges you to deny Denison Mines the permits they need to operate these uranium mines near Grand Canyon in Northern Arizona. We believe any consideration of uranium mining in the Grand Canyon area to be inconsistent with AZDEQ's mission to protect and enhance public health, welfare and the environment in Arizona.

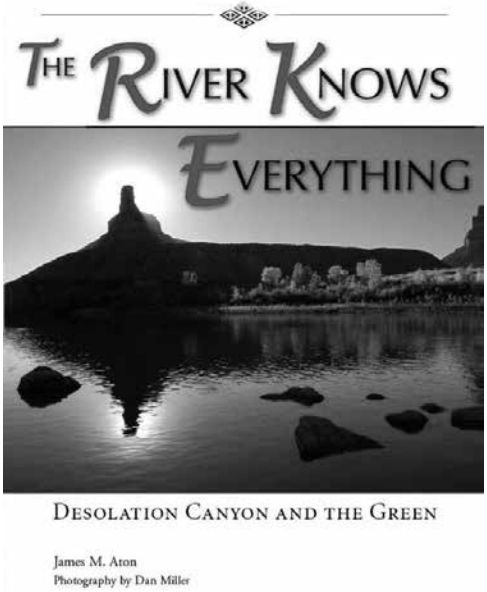
Thank you for consideration of our comments.

The Board of Directors of GCRG

Book Reviews

The River Knows Everything, by James M. Aton, photography by Dan Miller

I've long been a proponent of Grand Canyon boatmen learning ever more about their surroundings. This not only involves exploring in the physical sense, but finding out more about the Canyon's natural and human history through books, lectures, films and so forth. It also involves looking upstream, for the Colorado River is a far greater entity than we can see from the bottom of our mighty gorge. Lake Powell, Cataract Canyon, Canyonlands, Westwater, Ruby and Horsethief Canyons are all part of the Colorado. As are the tributary streams, the San Juan, the Green, the Yampa. It you haven't met these members of the immediate family, you have a lot to learn about the Colorado.



But until recent years, although there has always been plenty to read and study about Grand Canyon, her upstream sisters have been all but devoid of historical works. Fortunately, that is changing. Jim Aton and Bob McPherson set the standard for an environmental history with their San Juan tome *River Flowing From the Sunrise* in 2000. Webb, Weisheit and Belknap published their comprehensive *Cataract Canyon* in 2004. Mike Milligan put out *Westwater Lost and Found* the same year. Lodore's history is now covered in a number of books. But the gaping hole in documentation remained Desolation and Gray Canyons on the Green. Other than a few river guides and Ellen Meloy's wonderful narrative *Raven's Exile*, the human and natural history of the Green River wilderness has remained invisible and all but forgotten.

Jim Aton has remedied that with *The River Knows Everything*. Aton begins with geology that formed Desolation, then works his way through the vegetation, fish, mammals, and into the humans. Desolation has a magnificent native history, starting with the archaic, blossoming with the mysterious Fremont whose art and relics abound, and finishing with the Ute, who are still there.

Desolation may also have the richest Anglo history of any of the canyons of the Colorado. Starting in the mid 1800's the area was visited and inhabited by trappers, miners, outlaws, and ranchers; ferryman, moonshiners, dam builders, and contemporary Utes; and of course, river runners. Aton has dug deep to provide these people's history, researching old archives and interviews, tracking down aging descendants, to assemble the definitive history of this remote canyon. He finishes with a chronology of managment of this diverse ecosystem and discusses the real and present threats to Desolation—most urgently right now, petroleum mining.

Aton's partner in the book was photographer Dan Miller, whose many full color images enhance the book immeasurably. It is a beautiful book, and a big one, priced at $34.95. I know that's on the high end for boatmen, but Amazon and other online stores will let you have it a good deal cheaper. And although it won't fit in your ammo can, you'd best find a spot for it.

If you haven't run Desolation and Gray Canyons, it is high time you did, and you're in for a treat. But you'll miss a lot of what it has to offer if you don't read *The River Knows Everything* first.

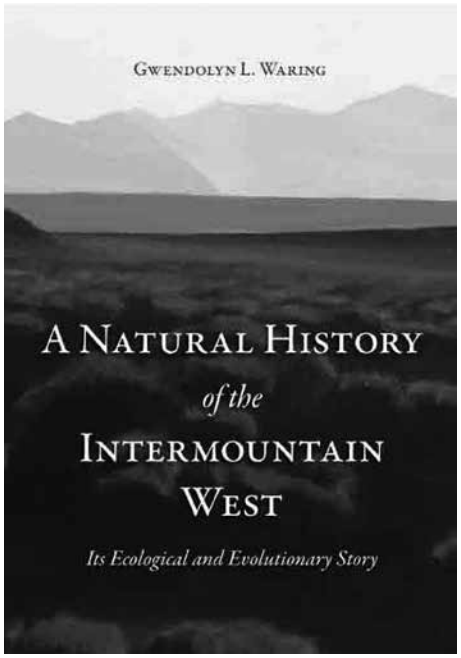
Brad Dimock

A Natural History of the Intermountain West: Its Ecological and Evolutionary Story, by Gwendolyn L. Waring; University of Utah Press, 272 pp, 77 illustrations, ISBN 978-1-60781-028-5, Paper $29.95

Long-time Grand Canyon biologist and artist Gwen Waring has done something truly remarkable in her hot-off-the-press, *A Natural History of the Intermountain West*. An artist and evolutionary ecologist from Flagstaff, she pulls together in this book the many threads of life and its evolution in western North America. Encompassing the ecosystems of the deserts and mountains, vast geologic timeframe, and how life developed and changed in relation to the land,

she has written an overview of our landscapes that far surpasses any previous efforts, and she has done so in a way that is delightful to read and captivating in the intimacy of its detail.

The book is organized around time and change, developing an understanding of landscape evolution through the geologic ages. She then chronicles the stories of water in this arid region, and why and how it has become an essential and scarce resource in the two great intermountain drainage systems: the Colorado Plateau and the interior-draining Great Basin. What I found to be truly profound was her understanding and description of life's arising and shaping across enormous spans of time, and the magnitude of changes the landscape has traversed during that process, particularly through the climate changes associated with the conclusion of the last ice age. To put things in perspective, all of human history has taken place during an anomalous 10,000-year interstage between ice ages. This is pretty humbling, and makes me wonder, despite our arrogant hubris about being able to warm our planet, how long it will be before the climate plunges back into the colder conditions that so dominated the past ten million years. Yes, we lost many large, wonderful, shaggy, scary animals in post-Pleistocene time as the climate transitioned from cold to hot, but the many survivors of those changes quickly and strongly adapted to those changes, a testimony to the resilience of the land she loves so dearly. When I hear a meadowlark sing, see a globe mallow flower, or smell the scent of a skunk, I can't help but think of the depth of life: the extraordinary temporal, climate, and habitat transitions through which their and our own ancestors mustered the moxy to survive, adapt, and bring forth this seemingly endless stream of life. It's so much extraordinary luck, a miracle that we're here to admire the telling of this story in our friend Gwen's fine new book.



Dr. Waring's eye is that of a trained evolutionary ecologist and a landscape artist, one who can read the history of a river by the native fish it supports, and see in a flower the movement of whole ecosystems through geologic time. Her chapter on mountains relates present day vegetation to the often slow, but sometimes quick processes of plant evolution and migration. Why does the tiny patch of habitat above treeline at the top of the San Francisco Peaks contain more than 75 species of plant species that are otherwise found in the arctic: how the heck did they get there, and what will happen to that tiny enclave of boreal life when the climate warms? Her chapters on ponderosa pine forest and the pinyon-juniper woodlands are must-reads: these ecosystems that so dominated the upper and middle elevations of the West have shifted around tremendously, literally disappearing and reappearing over time. Pinon pine marched into the Southwest 10,000 years ago and has become one of the dominant plants in the West, but it did not occur here prior to the Holocene.

Her chapter on grasslands is the best and most readable synopsis that I've read of how the Western range evolved and responded to climate change, the comings and goings of large herbivores, and the onslaught of domestic cattle. The grasses play such an important role in the life of the West, but most people don't get to spend much time thinking about grass physiology. Here, Dr. Waring describes how climate selects for grasses with different photosynthetic pathways, shaping the diet and food chains of the West.

Her summary chapter details the life histories of six common wildflowers of the West, the improbabilities of reliance on their insect pollinators who, like boatmen, accomplish extraordinary tasks, but often appear to be overly-engaged in random behaviors. Dr. Waring also describes in marvelous detail herbivores and their evolutionary adaptations to their prey, the plants they consume: how you come to be what you eat. Odd as it might seem, her focus on these six plant species is a very effective synopsis of the subject of this book: how all the factors of geography, geologic and evolutionary time, changing climates and fauna, and changing relationships among biota come together in the life of each individual organism, and in each of our own lives.

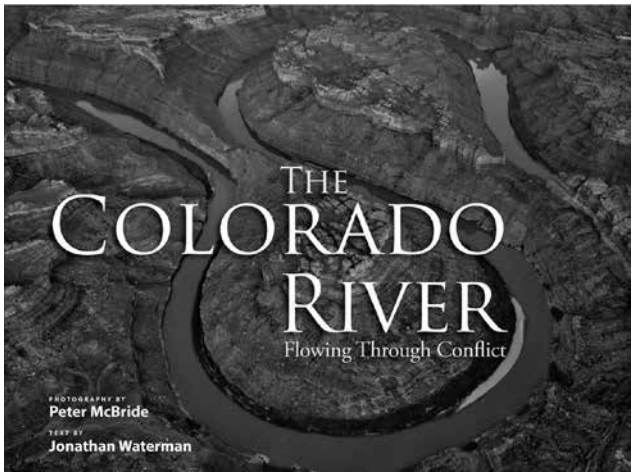
The dynamic story of life in the West that Gwen Waring has been able to integrate and transcribe in this book is, simply, the real story. It is a tale that brings together the life work of thousands of dedicated scientists working over the past century and a half in the West, and for the past 2,000 years in our Western culture. Great, creative minds trudging their scien-

tific equipment across vast, inhospitable landscapes, ploughing through realms of data, making headway in understanding how the land and life came to be. Western science has a phenomenally rich intellectual history, one that has blessed us with profound insights into the nature of reality, insights and technologies that we all too readily abuse without honoring the Earth. This book celebrates the richness of insight, and bemoans the anthropogenic ecological onslaughts and insults that degrade Western life.

Each of us recognizes the strong sense of place the West evokes within us, but Dr. Waring gives us insight into this land as a place of sense. Many advances in science are small, many of the interpretations are subject to review, but some of the findings and insights are so vast that one's mind simply reels in new dimensions of thought and understanding. The pursuit of truth through science is an extraordinary adventure, and integration of the many threads of thought and study, of time and change, are Gwen's gift to us in this book. This is the real story, how the West and its life came to be and how they are now. It is the story that we should read to our children around campfires and when they go to bed at night. This is the story of our relationship to the natural world, seeing into the lives of the plants and animals around us that we so often ignore or don't even see. Gwen's book is a remarkable, visionary step forward into a full-bodied understanding of this land, its life, and the nature of change in our beloved West. What a read!

Larry Stevens

The Colorado River: Flowing Through Conflict, Photography and Text by Peter McBride & Jonathan Waterman; Big Earth Publishing, 160 pages, full color, ISBN 9781565796461, Paper, $27.95



Hello, canyon lovers. I've had the opportunity to review a book you might want to take a look at and maybe add to your river library: *The Colorado River: Flowing Through Conflict*, by photographer Peter McBride and writer Jonathan Waterman. They traveled the length of the Colorado, from mountain headwaters to dried up delta, to capture the river and its trials and tribulations in images and words. It's a great chance for the canyon-centric among us to ponder the river as a whole.

This is an oversized photo essay book (about 9 x 12 inches) that would fit just fine in a rocket box. It's divided into three main sections. "The Mountains" covers the river from the Never Summer Mountains to Cataract Canyon. "Big Reservoirs, Grand Canyon" takes a look at the stretch we know best. "To the Delta" follows the waters from Hoover Dam down. Each section starts with a nice map that shows tributaries, dams, and diversions, and there's a map at the start of the book that shows the whole basin. I liked them.

The heart of this book is the photographs, and they're excellent. Many are aerial shots that give the kind of raven's eye view I'd like to have more often. Some show the river's water in the places where it's used—a Las Vegas swimming pool, suburban Phoenix, lettuce fields in the desert. I especially liked the half dozen shots matching historical photos. There's a Nimms photo from the Stanton expedition that looks up into Glen Canyon, through and beyond where the dam is now. Very cool. And last but not least, the photos of the delta. We should all have a look at the Colorado River delta, and think about what it's been and has become.

Each section of the book begins with a few pages of text. It's mostly facts and figures, with a bit of history, geology, biology, and other good stuff. There's also much more info throughout the book in the photo captions. I enjoyed what the text had to say, but unfortunately, it wasn't as carefully fact-checked as it could have been. As a guide (or other version of canyon lover) you may be surprised to learn the canyon is two miles deep (p. 66), or slightly offended to see a photo of Clear Creek labeled Saddle Canyon (p. 80). You get extra Grand Canyon geek points if you know why the timeline on p. 156 isn't quite right when it says that in 1922, "Seven U.S. states signed the Colorado River Compact."

The most striking number to me, though, was one

that closely matches what I've seen elsewhere: it takes about 1800 gallons of water to produce the feed for one pound of beef. That single factoid provides a lot of insight into why the river is running dry.

The message of the book is an important one, and it's on target. The Colorado River isn't just one place, with one use and one meaning. It's many places, each beautiful in a particular way. It's the lifeblood of the Southwest. Its water has been engineered into our society. Much of it is shunted away, even past the borders of the watershed. Soon there may not be enough river to go around.

At GCRG we care a lot about the canyon and the river that runs through it. To do our best to take care of them, we need to have an understanding of the larger system they're a part of. This book is a nice way to get a look at the big picture.

Some of those other stretches of water look awesome. Anybody want to go boating?

Sam Jansen

Commercial Operating Requirements: 2011 Changes

There have been some small but important changes to the 2011 Commercial Operating Requirements (COR's). Rather than wading through the lengthy document to figure out what looks different, the changes and a few reminders from the NPS are listed below. If you would like to view the 2011 COR's in their entirety, you can find them at: www.nps.gov/grca/parkmgmt/riv_mgt.htm.

New Regulations for 2011

Outboard Motors—Engines such as E-Tech two strokes that meet or exceed the criteria of four stroke engines with respect to emissions and noise may be approved for use on a case-by-case basis.

Fire Blankets—Fire blankets are now required for use under the fire pan for charcoal and wood fires. Fire blankets must be approximately 60 x 72 inches.

Whitmore Exchanges—Whitmore exchanges must be completed by 10 A.M. If more than three trips take out in one day the exchanges must be completed by noon. The NPS had allowed this to occur for the last two seasons, now it is indicated in the COR's.

Cremation Camp—Camping at Cremation by groups without exchanges is prohibited.

Important Reminders

Split Trips—Please remember that the only reason trips may split is for the purpose of a loop hike.

Sharing camps with permitted backpackers—We received complaints this year from backpackers who were told by river guides that certain camps were for river trips only. All of the camps on the river that are open to river runners are also open to backpackers.

Communication between river trips—Communication between river trips, particularly between commercial and private river trips is very important. This is a subject that is talked about at length by the Lees Ferry Rangers at private river trip orientations. Open communication between groups helps eliminate arguments over campsites. It also prevents the "us versus them" attitude that can and has occurred between commercial and private trips. Over the last several years the communication between commercial and private trips has improved and the number of documented complaints from one group about the other has decreased. Please communicate with other boaters and help that positive trend continue. Remember we are all here to enjoy and protect Grand Canyon National Park.

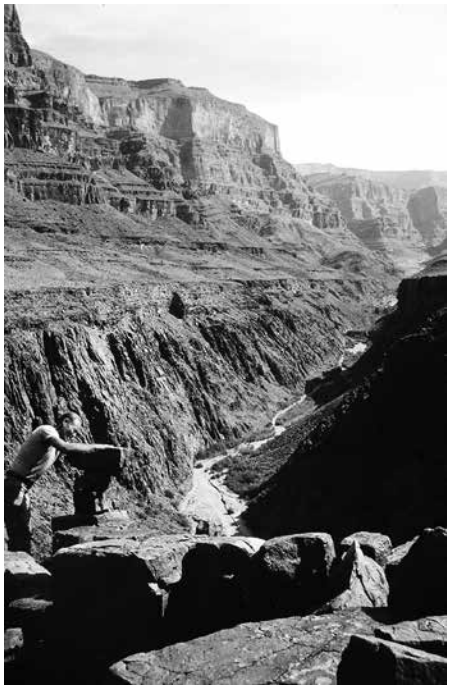
Mike McGinnis
River District Ranger

The Mystery Stick

An astute river runner with good distance vision, standing on the right bank beach at Separation Canyon might have a question. Looking across the river, if one looks very closely, one can see, high on the plateau, a vertical stick, as shown in the first photo. What is this stick? Is it natural or was it placed there? This is the story.

In June 1966, four of us planned a trip from Diamond Creek to Separation Canyon on air mattresses. In addition to the four of us, friend Harvey Butchart was going to join us and float with us. We all met with Harvey at the Peach Springs Café, and Harvey had Jim Ervin with him. Ervin had tried to float in an abandoned rowboat from Diamond Creek to the Hoover Dam construction site in the 1930s with a friend in search of work. But they had serious problems that resulted in the friend's death and a harrowing hike out for Jim. Harvey had located Jim, who had promised to show Harvey the route that he had used to save his life. With this development, Harvey begged off the float portion of the trip, but promised to join us somewhere on the left bank.

So the four of us, John Harrington, Homer Morgan, Jorgen Visbak, and me, set off down the river on our air mattresses. When we reached Bridge Canyon City, we decided to hike to the plateau above and then hike down river. This turned out to be a bit of a chore and an adventure, but eventually we found ourselves at the overlook across from the mouth of Separation Canyon, and the point where the vertical stick is. The second photo shows Homer Morgan building the cairn that holds the stick. What is not shown is the pair of black lace panties that we hung on the stick as a flag, and which long ago were the victim of the weather and time.



Each time that I run the river, when I reach Separation Canyon, I remember that long ago float and hike and point out the stick to those with me. If you have been at all curious, you now know what it is and how it got there. Oh, yes, we were met at Separation Canyon by friends who motored up from Lake Mead to meet us and to take us back to Las Vegas. And we used their boat to go upstream where we met Harvey sitting on a rock and reading *Time* magazine, and he joined us. The last photo shows Harvey conversing with us at our Separation Canyon campsite.

Bill Mooz

Adaptive Management Update

Looks like there will be some big happenings in the Glen Canyon Dam Adaptive Management program this year. I'll jump right in to some of the highlights:

High Flow Experiments: The Bureau of Reclamation has a ten-year experiment planned to see if repeated high releases from the dam can really build and maintain canyon sandbars for the long term. The basic idea is pretty straightforward. Each Spring and Fall, take the amount of sediment stored in the river channel and plug that into a computer model at flows ranging from 45,000 cfs for 96 hours down to 31,500 cfs for one hour. If the model shows that a high flow would be beneficial and if there aren't other factors that outweigh the benefits, then run the high flow. When conditions are favorable, we could see two high flows in a year. To me this seems like a big step forward in adaptive management. If the process moves quickly enough, the first high flow could be this Spring!

Native Fish Management Plan: As I write the details aren't yet out, but it's my understanding that the scale will be similar to the 10-year high flow experiments. The basic idea is to use dam releases to keep the native fish happy, especially the humpback chub, keep the trout doing well above Lees Ferry, and make life hard for trout near the Little Colorado River.

Socioeconomics: There's some movement toward getting proper socioeconomic studies done in the canyon. What we're hoping to see is a reasonable accounting of the value of the Grand Canyon, in dollars. It's a weird way to measure it, but important if you want to make comparisons with the value of hydroelectric power generation. These studies have been needed for a long time and won't happen quickly, but it's good to see some progress.

River Trips: Jerry and I (with a little help from friends) are working on coordinating a river trip for the press if there's a high flow this Spring, and a river trip at another time for the members of amwg and twg. The first one would be all about public outreach, to give the public an update on what's going on in the Canyon these days. The second one is to get managers down there to get to know the place they're managing. Trips like this have floated before, but it's been a while, and some of the folks advising decision makers about the river have never actually been on the river. We'll do what we can to change that.

The Big Picture: The Colorado River is part of a complex system, and adaptive management is a complex process. Jerry and I are learning day by day, and doing what we can to pull for the Grand Canyon and recreation. Feel free to email us if you have questions or comments. And keep having fun out there!

Sam Jansen

Cliff Edge

Shadows flow into rivers
drowning the canyon below.
it is beyond leaving time,
yet, I remain spellbound
at the cliff edge,
unwilling to depart empty-handed
while reaping swallows
still wheel and glide
bright as flashing brass
caught up and cast
across the slanting sun's path.
Ordinary living has done nothing
to prepare me for this place.
A little more time then
as evening bends the light.
I must gather wing carvings,
some early star petals
to carry away intact this trip.
Something legitimate out of occurrence.

Rick Petrillo

Back Of The Boat—
The Whale Foundation News Bulletin

Free GTS Health Fair

Mark your calendars now: the Health Fair will be held at the spring GTS on Saturday, March 26th. Last year 68 guides took advantage of these free services. At lunch look for our tent outside the warehouse on the Hatch pad where our healthcare professionals will offer the full package:

1. screenings for skin, colon, and breast cancer along with diabetes and cholesterol;
2. take your blood pressure;
3. oral and eye examinations;
4. discuss family health histories and more.

If you are an uninsured (or under-insured) member of the river community, we strongly encourage you to take advantage of this incredible opportunity, and, again, it's *free*. Many, many thanks to the Flagstaff Community Foundation and the Geo Fund for their financial support of this effort.

Ninth Annual WingDing

Another *Whale of a Night*! The ninth annual, fun-filled rendezvous of the Grand Canyon river family was held on Saturday, February 26, 2011 at the Coconino Center for the Arts in Flagstaff. Guides came from around the West to be part of the celebration! About 400 of us bid on 150 auctions items, the proceeds from which will go to support the well-being of the Grand Canyon river guiding community. To name only a few responsible for the evening's success, we say hats off to: Simone Sellin for coordinating the wonderful dinner; Lisa Born for organizing the delicious desserts, John "JT" Taylor for organizing the outstanding music; Bill Vernieu for providing his sound system and talents; Erika Andersson, Bianca Bauch and Shay Hester for taking charge of the welcome area and door prizes; Alex Thevenin, Alida Dierker and Sarah Hatch for heading up the auctions and the checkout stations, Adam Bringhurst for dialing in the bar, Jeri Ledbetter for her hard work behind the scenes; Dan Dierker for his commitment to recycling; and, finally, to Dan Hall and Matt Kaplinski for being our all-time auctioneers. Once again this year we had many loyal friends who helped set up, clean up, bake desserts, run the auctions, run the welcome area and the meet/greet team. We couldn't pull it off without the help of everyone. As the old Beatle's song goes: "We get by with a little help from our friends!" *Great thanks, everyone*!

Kenton Grua Memorial Scholarship

The Whale Foundation awarded two scholarships in our second 2010 granting cycle (November deadline). The recipients were Emily Perry and Laura Fallon. Support from the community has allowed the Foundation to award five $1,500 scholarships to guides seeking further education in 2010. We encourage all folks to apply for these grants which are given to guides with traditional and with non-traditional educational paths. All applications are blinded before a rigorous review to insure impartiality. Information and the application are on our website: www.whalefoundation.org. Please note: We will have one award cycle only in 2011 in which we will grant three $2,000 scholarships. This next application deadline is June 1, 2011.

Whale Foundation Board of Directors

Great news for 2011! Recently, the Whale Foundation welcomed Bert Jones and Tracy Scott to the Board of Directors. We also elected our 2011 officers. The president is Christa Sadler. Continuing this year as Treasurer is Derik Spice. Bert Jones has stepped up to be Vice-President and Tracy Scott will serve as Secretary. We thank each Director for donating their considerable time and talents to support our river family.

If you are interested in volunteering for the Board or in other capacities, please give us a call at 928-774-9440. We look forward to hearing from you!

The Whale Foundation
P.O. Box 855
Flagstaff, AZ 86002
Toll Free Help Line: 1-877-44WHALE
Business: 928-774-9440
Web: www.whalefoundation.org
Email: whale@whalefoundation.org

Draft EIS For Special Flight Rules Now Available

The following was taken from a press release issued by the National Park Service on February 8, 2011

The National Park Service's (NPS) Draft Environmental Impact Statement (DEIS) for the Special Flight Rules Area (SFRA) in the Vicinity of Grand Canyon National Park is now available for review and comment.

The DEIS analyzes four alternatives for actions to manage aircraft overflight activity to substantially restore natural quiet in the park. Alternative "A" is the no action, current condition alternative which continues all aspects of current management of helicopter and fixed wing operations in the SFRA. Alternative "E" alternates seasonal use of flight corridors with only short-loop tour routes, enlarges flight-free zones, and requires conversion to quiet technology. Alternative "F" modifies the current condition with conversion to quiet technology, providing a seasonal shift in Dragon Corridor, and modifying west end routes. The NPS Preferred Alternative includes alternating seasonal use for short-loop tours but long-loop routes open year-round, an annual allocation and daily cap, several route and altitude changes, and conversion to quiet technology required within ten years. The DEIS also summarizes four additional alternatives that were considered and dismissed from further analysis.

Public participation is important for development of a successful environmental plan. Therefore we ask for your thoughtful evaluation and comment. Public comments will be accepted for 120 days from the date of publication in the Federal Register by the Environmental Protection Agency.

Please submit your comments on the NPS Planning, Environment and Public Comment database (PEPC) at www.parkplanning.nps.gov/grca. Select the link Special Flight Rules Area in the Vicinity of Grand Canyon National Park to download a copy of the DEIS and to submit comments. It is preferred that comments be submitted on the website above, but comments may also be mailed to: Superintendent, Attn: Office of Planning and Compliance, P.O. Box 129, Grand Canyon, AZ 86023. PEPC will also be the method for any updates on public meetings and locations, and information on the DEIS.

Before including your address, phone number, email address, or other personal identifying information in your comment, be aware that your entire comment—including personal identifying information—may be made publicly available at any time. While you may ask us in your comment to withhold personal identifying information from public review, we cannot guarantee that we will be able to do so.

For information or questions concerning the DEIS, call 928-638-7328 and a staff member will assist you.

Thank you for your interest in Grand Canyon National Park.

Announcement

Chesney Kallan Price, was born November 23, 2010, weighing 7.5 lbs and 19 inches long.

Proud parents are Wes & Kris Price, both 10 year guides with Diamond River Adventures. As her namesake peaceful water, may there be great runs ahead.

Tales From The Truck

On Friday, August 6, 2010, a 37-foot J-Rig launched by Western River Expeditions wrapped at the bottom of Crystal Rapid. The following morning, August 7, an 18-foot Outdoors Unlimited (OU) raft wrapped on top of the Western boat. There were eight total OU boats: four 15-foot paddle rafts, three 18-foot gear boats and one big-ass, floorless, 22-foot beast known as "The Chub." Crew and passengers of both trips, along with NPS, spent more than 24 hours together at a small beach on river right, halfway through Crystal Rapid. What follows is an account of that incident.

What I remember the most about coming up to the Little Colorado River (LCR) that day was the confluence. You know right where the LCR comes in, it's got the line in the water of the two converging currents. It's placid, tranquil, nearly still water. You can see the swirl lines of sediment billowing together. When we floated by on the morning of Thursday, August 5, the cool eddy swirl current lines weren't what caught my attention. The main attraction was the wave train coming out of the mouth of the LCR. Yup!…a Class II rapid. Throw in six-foot logs cresting in the tops of brown waves, a surprising number of basketballs and an entire recycling center's worth of clear plastic water bottles, and the realization hit—this was no ordinary LCR flash flood. My boat paddled right up to the confluence. It stunk. Like human urine.

The thrill of running the rapids in the inner gorge is one of the countless highlights experienced on Canyon trips. It's exciting. As Grand Canyon guides, we've been blessed with the chance at running the river multiple times. We get to see different water levels. The rapids change. Horn Creek at 8,000 CFS and Horn at 18,000 CFS are two different animals. The point here is this: our scheduled high release for that month was 16,500 CFS. While we didn't possess any method of truly gauging CFS in the LCR, we knew it was significant. The rock in the rapid just above Crash Camp had morphed into a smooth rolling wave. The thrill of running the Inner Gorge at 16–18,000 CFS is pretty good as it is, but when we got to Unkar, it felt more like a big roller-coaster ride. Essentially, we were running completely new rapids.

More disconcerting were the logs. Big, heavy waterlogged bobbing lumps, a slightly different shade of brown than that of the river. Problem is, they just appear and disappear randomly. You can't see them until they surface and you never know when, or where, that will be. Flipping a paddle raft is one thing. Flipping at high flows, in heavily sediment-laden water strewn with floating "rocks" is another—for one, it hurts a lot more. My paddle crew began to regularly empty the boat of the growing pile of sticks and twigs collected after each break of a wave. Finally, a good two-footer toppled in and I think everyone understood implicitly that we were in something a little different. "I hope one of those six-fucking-footers doesn't come crashing over the bow in the middle of Sockdolager Rapid or some bullshit like that," ran through my head plenty of times that day.

The trip had an exchange at Phantom Ranch the next day. Per regulations, we take Cremation camp. At Cremation the water level really started to confuse us. We knew from running the opening section of the Granite Gorge, the water was much higher than 16,500 CFS. Cremation Camp during a regular daily flow fluctuation peaks in the late afternoon and drops out over night. As the day progresses the water at Cremation rises. While we wait for the next set of passengers to hike in on the Bright Angel Trail, we have time to witness the river slowly creep higher up the beach from where it was when we awoke at five A.M.

But when we woke up at Cremation that morning, the river had never dropped from the night before. Weird. We stop at Phantom and a ranger on the boat beach informs us that we are running over 23,000 CFS. Over the course of 30–45 minutes running back and forth up to the ranch and back, the river level began to rise again. So we are high and going higher.

No shortage of anticipation and adrenaline today. Despite a paddle boat dump truck at Granite, the river grants us safe passage and all eight boats clear the big three rapids, Horn, Granite and Hermit. The passenger exchange unfolds efficiently and we make it all the way down to Crystal Camp that afternoon. We pull out above the rapid and camp on river right.

After the initial de-rig of gear, folks take off to check out the rapid. I'm cooking tonight so I stay in camp. The news comes trickling in as folks make their way back from looking at Crystal. We keep hearing, "What are they gonna do??" My cook partner and I drop our spatulas and run up to the overlook above Crystal Camp. From here we can see down to the rapid. A crowd of our passengers has gathered and some have run back to camp to grab cameras.

The bottom of Crystal is a rock island. Two currents of water run around the island. After clearing the first section of the rapid, you can run either right or left. Today, a motor-rig is wrapped directly in the

middle of the river at the bottom of the island. You can see the tubes bent around a rock called "Big Red." These guys are solidly stuck. I've certainly dealt with wrapped boats in California but those have always been 14- or 16-foot boats. Not 37-foot motor-rigs. "I don't know what the fuck they're gonna do either!"

We didn't have to wait long for an answer. Within ten minutes of walking up on the hill an NPS helicopter comes over the ridge. The bird circles above the wrapped boat a few times and then flies right over us. Close enough to make eye contact. It's clear they want to land. We clear everyone out and the NPS crew touches down and pops out. It's Dave L.—I've played guitar with him down here before. They are going to fly back to Flagstaff, pick up a zodiac and attempt to get all the passengers from the Western rig off the boat. We need to keep the area up here clear. Apparently this happened a couple years ago and the passengers spent the entire night on the boat out in the middle of the rapid. Since the Park Service won't fly at night in the canyon, the first goal is to get the people off the boat before sundown. They've got in the neighborhood of ninety minutes to get it done.

The helicopter takes off and is back again very quickly. This time, a large cargo net hangs in tow beneath. I'm cooking but a group comprised of OU passengers and crew huff it downstream and help out pumping boats and loading gear. I'm sure the Western crew will try to salvage as much off the boat as they can. Come to think of it, what do they have and what don't they have?…Shit…We're gonna have to give those guys some stuff. They got everyone off the boat and fortunately they had tents on that boat. So they have tents and passenger dry bags but no real food or kitchen set-up. We send them food and water and a groover. The NPS crew comes back up after nightfall and we dig into the dairy cooler and feed those guys as well. Seems odd that just a few hundred meters downstream fifteen people are sharing sleeping bags and gorp while we eat seared Ahi tuna. We send them all our extra dinner. We'll have to see how things go for them in the morning but we may need to leave them some breakfast stuff as well.

Morning comes and the NPS crew grabs some coffee and a bite to eat and heads down to deal with the wrap. It's going to be quite the day of hard work for those guys. We break down camp and as we get closer to pushing off, the rain picks up again. The river hasn't dropped at all. We load the last things on the baggage boats making sure to pull a bit tighter on those camstraps today, then walk downstream to scout Crystal.

Crystal is a significant rapid and OU always scouts here. We want the baggage rower, who could potentially be on their first ever trip down here, to have a real clear idea of what's going on in this rapid. Plenty of days remain out on the river and a screw up at Crystal would leave us dealing with whatever consequence for over a week. So, while Crystal may not be the biggest hit in the Canyon, it's a rapid we treat with a ton of respect. Today, I want to scout it for myself. The right line looks good. We'll sneak down the right shore and avoid the big stuff in the middle. From there it's either way around the island; just pick one way and don't change your mind.

Our crew consists of five guides and three baggage boatman. Two of the three have rowed the Canyon a couple of times before. The other was really rowing the river for the first time…certainly the first time rowing Crystal.

All of us at some point ran Crystal for the first time. And not unique to us nor anyone else is the idea that you get the line explained to you by more experienced boaters. You get to scout the rapid, hear different tips from various boaters about which line is good, what angle to have, should you push or pull;

how much momentum etc. What binds us is the fact that after all the preparation and build up, at a certain point there is no more help from anyone. You got to get in the boat and go. No more advice. Just you, the oars and the Colorado River. In those moments you are in tune with every person who has ever rowed a boat down here. We've all done it. The time comes when you and the river have an intimate connection that transcends time. And every single one of us has been there. If you want to be a boater, you gotta do everything for the first time. So ask yourself, the first time you ran Crystal, was it running nearly 24,000 CFS, dark brown water with logs surfacing everywhere, a steady, driving rain and a 37-foot J-rig wrapped at the bottom of the rapid? Well, that's how it was for our first-timer.

The four gear boats run first followed by the four paddle rafts. I watched the gear boats drop in, but at a certain point I had to pay attention to my own line. I knew no one had gone upside down in the opening hole but had to focus on my own boat after seeing them clear. We drop in and I was fortunate to have Led Zepplin as my crew—they paddled like rock stars and we had a clean run. Immediately, tuck the boat right and bounce up and down in the surging eddy watching the three other paddle rafts have equally rock star lines. We are all through the top part of Crystal. I want to go left around the island. Have to be extra careful and sure at this water level; especially with that motor-rig out there. I start the ferry across the river and take a peak downstream. I can see people on the motor-rig and they have some yellow thing draped across it as well. My focus stays on getting the ferry accomplished until I hear my name being yelled out from somewhere on river right behind me. I look back and the gear boats are eddied out river right where NPS dropped off the Western passengers. They wave at me to eddy out right. Once again I peer downstream at the wrapped J-Rig and this time it registers. The yellow thing on the boat isn't any rescue sling the NPS has, it's our fucking boat!!!! Shit!!! Who's boat is it??? Are they ok??

One by one the other paddle boats pull up on the beach. The shit boat made it to the beach along with the kitchen boat and the paddle boats. The Chub passed the beach at the same moment the wrap happened and is eddied out river right about 100 yards downstream of the last waves in Crystal. The dinner boat is the wrap. Shit! All our food. The Western customers huddle together in a few tents along the shore hiding out from the rain. All of these yellow boats coming in has given them some entertainment. Some are roused out of the tents and into the rain to observe the yellow boat now stuck on top of their boat. There was now around fifty people on this small beach halfway through Crystal—A.K.A. lower Crystal Camp. It's 8:30 A.M. We might be here awhile. Initially guests and crew stand on the beach at the edge of the water watching helplessly as the crew out on the boat struggles with how to free the two boats. Eventually the rain and lack of movement start to kick in and you can see that people are getting cold.

What do we have? We need to take stock. We have a couple of para-wings. We set both up and now we have some shelter. We have twelve chairs. Get those out and now a few people can sit underneath the para-wing and get out of the rain. We wait and wait and wait. Eventually the crew on the boat loads up the zodiac and comes back to shore. We are going to be here a while. They haven't even come close to freeing anything up out there. It's lunchtime and we have hungry people to feed. How are we going to eat? We take the opportunity to use the zodiac to get down to the Chub and pull a bunch of lunch stuff off the boat. We have our Kitchen boat and so we go ahead and just set up our entire kitchen. We have a meat/ice cooler on

the kitchen boat and the dairy cooler is also available to us. We break into everything we have and make lunch for fifty. We'll figure out the next nine days later. Right now we have to feed people and that includes the Western guests and crew as well as the NPS.

Over the course of lunch, we realize that this is turning more into a salvage job than anything else. Our boat is slowly ripping under the pressure of the water. One tube is down and it seems as if the metal boxes are starting to crush. After lunch, the NPS crew along with OU and Western guides goes out for a second attempt at freeing the boat.This time though, there is a salvage emphasis. The nose-bag of the dinner boat holds the passenger's dry bags. The crew cuts open the nose bag with a knife and one by one slowly gets all the bags out. That was amazing in and of itself. TheGott water cooler comes off as well as more chairs. Pretty much everything else on that boat is food.

What we do have is our tents, kitchen commissary, propane, water filtration system and groover. Thank goodness we have those. The day progresses with no real visible progress being made out on the wrap(s). Trip after trip of other groups comes by and asks how we are doing and if we need anything. A Western trip drops off enough food for dinner for all of us. Last night we fed them and now look who's feeding us. As the day wears on, the pressure of the current smashing the OU boat into the Western rig begins to take it's toll. The frame on the OU boat is starting to bend. A second tube in the bow of the boat has also popped. With the two blown tubes, ripped nose bag and frame bent, the OU boat is beginning to look more like a piece of trash than a raft. The boxes are beginning to crush as well as the coolers. Who knows what, if anything, will be salvageable off that boat. When the crew finally comes off the boat late in the afternoon, the description of the wrap is that it's similar to wrapping on a stanchion of a pier. On a regular wrap, the rock you are on prevents water from going under the boat. In this circumstance, the water is flowing not only over both sides and on top of the boat, but also underneath as well. Frustrated faces and sighs tell the tale of the crew's lack of progress.

We've been on and off the sat phone all morning and a big round of credit goes out to the staff of OU and Western back at the warehouse. While all this was happening, they arranged to put a Western boat on the water sameday and load it up with food for both trips. OU needs a complete resupply for the last nine days. Food and supply was bought, packed, driven to the ferry, loaded on a boat, launched and on the water moving downstream by late that afternoon.

Back at Lower Crystal, the sun gets closer to setting and the OU and Western crews team up to make a dinner for fifty. OU gear, Western food and crew and guests of both along with the NPS. At the end of the day, the only thing different about the wrap is that the OU boat is closer to completely destroyed than it was at 8:30 A.M.

Morning comes and the frame of the OU boat is broken in two. The jagged edges of the ripped frame are visible from shore. The boat resembles more of a curtain drape over the Western rig than an actual raft. The OU boat is not salvageable. It just so happens that on an OU paddle trip, all of the breakfast dry goods are packed in a metal box in the back of the Kitchen boat. Another combined cook crew pieces together a breakfast for fifty between the OU dry goods and whatever Western could scrounge up. NPS gives another morning round of attempting to free the boat before coming back on shore and telling OU to go ahead and start moving downstream. We're gonna leave the boat behind. Ultimately no one got hurt and that is the best we can ask for. We have enough food for a lunch today and then we can do a dinner tonight and then we really will be pretty much out of food.

Dinner is a collage of what remains in the coolers we have and sleep swoops in quickly on everyone that night. The boats float in the eddy just feet from the slope up to the back of camp.

We sleep on the boats. At some point in the middle of the night I make the late night, walk the plank, back of the boat pee stop. Boat doesn't seem to be rocking too much. I get my perch, feel stable and fire away. Something isn't right. I'm peeing off the back of the boat but it sounds like I'm peeing on sand. I have done this enough times though to know what peeing in water sounds like. The late night and grogginess blur my senses. I have to grab my glasses from the sidebox and turn on my head lamp. I *am* peeing in the sand. In fact, all of our boats are about 20-feet beached on shore. The water clearly dropped out. The huge ledge beach at Randy's Camp is back and we are about three-quarters of the way up it. Our boats are fully beached.

Outside of our entire trip being 20-feet out of the water and dealing with how to get the boats back in the water, there is the small issue of "We don't have any food " to contend with. We have cereal and that is about it. No sooner are we considering this issue than the whirl of an engine creeps into the morning stillness. Sure enough a Western J-rig pulls into view and they stop on a dime when they see us. We can see big coolers on the back and the passengers look familiar. This is the Western boat that launched the day of the wrap. As it turns out those guys got up to Lees Ferry,

rigged everything and put-in late in afternoon. They only got about six miles before camping and then they started cruising down river at first light and got to Crystal around three; a good 90-plus miles. They didn't stick around to see the sights. The stranded Western passengers hopped on board and they kept going. All the way to Randy's Rock—mile 125-ish. They went nearly 120 miles in one day. Wow!!! Hat's off to those guys for sure. They couldn't have shown up at a better time either. The boats were high and dry, beach was muddy as hell from the water drop and we're scrounging for food. It was a real pleasure to see the Western crew hooting and screaming as they pulled into the eddy. We had all been through something up there and it was cool to see them again.

The Western passengers are, I don't know how many days behind on their trip, but they were at Crystal for roughly 72 hours. Needless to say, we unload the new food, swap out a couple coolers and the Western rig takes off.

We did make it through Lava and on to take-out and it was another canyon trip in the books—just another trip huh? Well, not really.

All canyon trips, chisel life-long memories into the brain. Images, sounds, smells, the feel of the water under the boat; everything etches a little groove into your psyche. It's a lot to consciously remember. For those of us lucky enough to work down here and come back over and over, it true; some trips are more memorable than others. No one will forget this one. Why? Because of a wrap? In part, but really it was much more than that. The wrap was simply a conduit for a greater sense of community to display itself.

A couple things about boaters; they wave. You don't have to know one another; you just wave. We're somehow inherently the same. We are similar to one another. We recognize this and wave to each other. We smile and yell ridiculous stuff in some demented form of humor that we share together. We're the only ones we know who also wear dirty board shorts, flip-flops and a button down. We like ourselves and we like each other.

We all think that we know how to get shit done the best. Face it. We all do that to some degree. We're proud and we can even get pissed at each other about this kind of stuff. All stems from a sense of pride and independence. It's healthy.

We don't want anyone to get hurt. Believe me, when I'm looking at baggage boats with all our gear and think about losing it, or having to deal with flipping the raft over etc., I really want every raft to style every rapid. We want confidence high, everybody feeling good. You don't want to see your friends flip little old grandma at Lava. No little kids in the water with petrified Mom freaking out and rescue dad launching out of the boat to swim after them. Just like in baseball—no crying. We don't want to scare anyone. We don't want anyone to have a shitty time. I want us to all have clean lines all the time. I feel comfortable in thinking the majority of the population probably does not see flipping rafts in big rapids, in anyway shape or form, as amusing or entertaining. For some reason, boaters do. Secretly, we all want to see the boats mess up. Despite the veracity of the previous verbal diarrhea just spewed out, deep in the recesses of our subconscious, curiosity whines for an answer to ,"What if the boat…?" scenarios. As long as no gets hurt or scared and we don't lose anything, it's actually kind of fun.

We all share that little secret.

We are an eclectic group yet share a unique combination of environment and experience that morphs, and shapes us. It sharpens our focus. It binds us as a community. Ultimately, it transcends us. We are the ones who probably understand that the most. We all have our, "This one time…" stories and we love to share them. We get to do that a lot. We're lucky that way.

What made this particular trip memorable for me was that our community displayed something that I'm unbelievably proud to be a part of. Every single trip, be it commercial or private, from Crystal down all the way to take-out stopped and asked us if we needed anything. How could they help us?

Boaters help one another. It was implicit that we were in trouble and needed help. No one even blinked an eye. Every trip we encountered was only too willing to offer up whatever they could. Extra Gatorade to olive oil to aluminum foil to bleach and dish soap. Days afterward, sitting at Havasu and pretty much absolutely fine on everything and boaters were still asking how they could help. I'm proud to say that I work with and am surrounded by a community of people who are only too willing to lend a hand when they see a friend in need. Even if we've never met before. We are all out on this river together. I'm glad to know that we have each other's backs when the proverbial shit hits the fan. Or in our circumstance, we leave a boat with all our food behind in the middle of a rapid—yup first time on that one for sure.

Thanks for the help everyone!!! A huge hand needs to go out to the OU passengers. I cannot thank them enough for having the most important thing anyone could have throughout the entire time we were at Crystal (and for the rest of the trip for that matter)—a really positive, upbeat, roll-with-the-punches attitude. From hustling back and forth between upper and lower Crystal to help with the initial Western wrap to setting up Parawings, chairs, moving paddle rafts, playing bocce ball in the rain and telling jokes. They were instrumental in turning "another canyon trip in the books" to a, "This one time…" story that will last forever. They were great. Thanks to the NPS. Thanks to Lindsey and Ben and the whole Western crew. Thanks to the staffs back at home who got everything loaded up and launched in one day. And thanks to my fellow OU crew members. We can talk about this one for years!!!!

Peace out! See you on the river.

Matt Webster

Waterways

Dawn binds itself together
while mule deer pause
dipping muzzles to the stream.
A raven's croak affirms daybreak
high in some dim fir and soon
a hidden wren's clear treble
goes tripping down the scale.
This is the hour
of the ancient heron
threading morning mists,
tracing in graceful flight
wild waterway meanderings.
The interval of otter pairs
rapacious in deep eddies,
rolling at the surface
quicksilver gleam between dark paws.

Rick Petrillo

Sticks

Driftwood from
high water mark
sparks quickly,
burns hot and fast.
Keep the fire small,
drawing well below;
travel polished sticks
placed crosswise
one after another
above licking flames.
The smoke ascends
in a lean column
easing through
surrounding river fog
like a shadowy trout
    finning upstream.

Rick Petrillo

George Billingsley

I WENT ON A RIVER TRIP, down the Little Colorado once—with a lifejacket and inner tube.

This was back in '67, with Vern Taylor. We went down the Horse Trail. I think it's Mile 18, up from the confluence of the rivers. Anyway, we went down and did a scientific trip for thirteen days, to sample the springs. So we floated in the muddy river, in the middle of August.

We had 60-pound packs to carry all the equipment for doing geochemical studies of the springs. Five of us, five guys, went down there and did that. We floated in the floods: tied our packs on inner tubes, and we had our lifejackets on, and we just hung on. But the river flow was mostly just pure mud.

STEIGER: Would you walk around the rapids?

BILLINGSLEY: Yes, because you could hear them, for one thing—a lot of them.

STEIGER: Wasn't it almost constant?

BILLINGSLEY: It was. We bashed into rocks so much that it was not worth it, in some places it got really rocky. It really was just a mass of boulders. We got down to Blue Springs, and had some clean water to drink, for a change, besides letting it settle out overnight and drinking thin mud. That was an experience. The floods would hit you anytime. Unbelievable amount of debris—trees, weeds, dead sheep, whatever—would come floating along. It would just rise, real fast, and we'd get out when we noticed all this crap starting to float around us. We'd wait and see how big it was…It'd usually come up three or four feet. By the time we got down towards Beamer Cabin or the Park boundary area, three or four miles upstream, this *huge* flood came along. It had mesquite trees—everything was floating down the river. It was so scary we didn't even think about floating in it, because it was very fast water, and a constant rapid. I was not gonna float it, so I walked. I didn't mind carrying my heavy pack in the heat. It was a hundred and some odd degrees, but it didn't matter. It was better than drowning in that mud. We got to the Colorado River, and the river itself was flooding. The island at the river junction was almost covered. I mean, it was an amazing amount of water. We floated from there on down to Tanner Trail, in the river, because it was bigger and smoother. But the

Little Colorado River expedition, July 18, 1967. Beginning of trip at Horse Trail. Left to right: Bob Phillips, Bob Marvos, Gene Walker, Vern Taylor, George Billingsley.

Redwall Limestone narrows, Little Colorado River below Blue Spring. Left to right: George Billingsley, Vern Taylor, Bob Phillips, Gene Walker. Photo by Bob Marvos

driftwood was so thick you couldn't do anything. We didn't have any control, we were fighting driftwood all the time. The five of us became separated. I had no idea where the others went.

We were all going to meet at Tanner Trail, because that's where we were going to hike out. So if we *did* get separated, the plan was to meet there. Well, I never saw anybody.

I got past the salt mines somewhere there, and my God there was this huge, giant whirlpool I got into with a ton of driftwood. I couldn't get out of it. I went around and around in that thing for probably an hour. And in the middle, wood was spinning on end, going down in some giant hole/whirlpool. I kept getting closer and closer, and I was trying to get out of that, because it scared me. I had visions of the whirlpool taking me down and drowning me. So I fought and fought, and I got out, finally, to the edge, and actually managed to touch a sandbar or something. That was the best-feeling sandbar I ever touched! But I got out, and from there on I said, "That's it, boy, there's no way I'm going down here with this stupid lifejacket and inner tube!" So I just carried it all on down the river. I finally found one of the other guys, laying on the beach, totally wiped out. He had the same experience further down. Never saw Vern or anybody else. When we finally got down to Tanner Trail, there we all got together, and miraculously we were all alive, but we had some really hairy tales to tell. It was *huge*!

STEIGER: Must have been 40–50,000 [CFS]?

BILLINGSLEY: At least that. When we got back to the museum, where we based our operations out of that summer, we checked the gauging stations at Cameron. It was 18,000 CFS on the day we were caught in that flood, just coming down the Little Colorado. I mean, those trees had to have been ripped right out of the banks right there somewhere. There were a lot of mesquite trees.

STEIGER: So this was before you ever went down the river in a boat?

BILLINGSLEY: Oh yeah. I didn't know what the river was like, but according to Vern, "There's only one rapid we gotta make sure we miss." It was Lava Canyon Rapid. I said, "Fine. Give us five miles' notice, I'm gonna walk it." But I saw it, and I walked around anyway. It was a big rapid. It had *huge* waves in that thing. I was so glad to be walking! Even though I was dying of heat.

We got to Tanner Beach and we burned the inner tubes. We had a prearranged signal with the Park Ser-

vice, because Vern let them know what we were doing, and how long we were going to be gone. The smoke was going to be the signal that we were that far, and we were coming out. Nobody ever saw the smoke—big, black smoke, but nobody ever saw it. But we didn't have to carry those heavy inner tubes out. We got out and reported that we're here, and the ranger said, "Oh, let's see, what's your name now, where'd you go?" (laughter) That was a thirteen-day trip, and it was pretty exciting.

Vern said it was the first science expedition of the Little Colorado he could think of. We sampled all the springs we found, and what the pH and chemical composition and stuff were. But he never published any of that—I don't know why. It was too bad, because it was a lot of information.

STEIGER: Now, didn't he go on and teach at Prescott College?

BILLINGSLEY: Yeah, he went to Prescott College. At the time we did that, he was teaching at USC in California—he was a geochemist. He almost drowned on that trip in some unknown rapid. His inner tube with the pack went one side of this big giant rock, and he went the other side, and the rope tied between them caught on the rock. He had it tied to him so he wouldn't lose his inner tube or anything. So the inner tube was on the *other* side of the rock, and he was on *this* side, and the rock was in the middle, and they were both strangling each other. He was able to breathe, because he was just hanging on, but he couldn't get loose. The rest of us, the four of us were sitting there looking at him, couldn't get to him. We didn't know what to do. We thought, "Well, maybe we can float down there and with a knife cut the rope." We tried to yell at him. It was impossible because he couldn't hear anything. But the river was coming up—just mud, just pure mud. You couldn't get it off—it would just cover you, no matter what you did. Finally after about an hour, the river started covering the rock. Then somehow the rope came off, and he and the tube went on down, and we recovered him downstream. But he was so wiped out he could hardly move.

* * *

Well later on, I think '69—Susan [Varin] and I and Ellen [Tibbetts] and a few others, we hiked from Cameron all the way down and out the Tanner. That took five days. But we did that in the wintertime. There was no water, until you got to Blue Spring. And then we swam a lot below the spring, because the water was 70 degrees, and the air temperature was constantly in the '30s, because of the inversion layer. It hardly ever got above freezing, so we floated a lot in the water to keep warm. But we didn't have lifejackets…we did have air mattresses, but basically we just hiked and we didn't

Little colorado River crossing: January 26, 1970 – Ellen Tibbetts, Jim Sears, John Wereman.

Don't try this at home... January 3, 1969. Jim Sears and Susan Varin are trying out the air mattresses on the 38 degree Colorado River before crossing. Air temperature was 44 degrees and no wind. Both capsized later and nearly drowned. Mile 71.

float very much down the Colorado River. But hiking was…Oh gosh. (consulting log) Oh, okay, that was in 1970. We walked 76 miles that trip, in five days.

STEIGER: Had it down to the mile! You would keep track of the miles?

BILLINGSLEY: Oh yeah. You have a scale on the map. There's a little gadget with a wheel on it you can actually trace your line on the map and it'll measure the mile…

I've only got three thousand miles logged, and there's people that hike *tens* of thousands of miles…

But still, I wouldn't recommend floating on an air mattress on the river to *anybody*. That's just stupid. We did it out of ignorance. Looking back, I would not recommend that. In fact, I wouldn't have done it back then, if I had known then what I know now. That's really a message I'd like to pass on to people—don't do that. You're really asking for it.

* * *

Yeah, those were exciting times.

* * *

George Billinglsey, a geologist, worked for Grand Canyon Expeditions during a pretty glorious chapter there that transpired in the early '70s. Before that he worked for the Museum of Northern Arizona, and after that for the USGS. *He had a major hand in some of the maps a lot of us use every trip.*

George's wife Susan (featured in an earlier BQR*) was also a boatman for* GCE*, and his daughter Marijka has rowed for Canyon Explorations/Expeditions. This "Adopt-a-Boatman" interview was conducted October 26, 2007, at the Grand Canyon River Guides office in Flagstaff, Arizona.*

* * *

I was born in Barrow, England, came over here to Arizona when I was two, and have been here ever since. Lived on a ranch on Date Creek, southwest of Prescott, Arizona. Went to grade school in Congress Junction, and there were about eighteen to twenty kids in all eight grades. Finally most of them left, and the school closed down after I went on to high school at Wickenburg.

On the ranch, you were taught responsibilities back then. My dad was pretty insistent about feeding the animals. So my job was feeding a lot of animals, and I didn't mind that; and taking care of the fields and what not. But his main rule was, and I never forget it, you feed everything and make sure it's all taken care of, *before* you even think about feeding yourself. He was *very* strict about that. And one time I didn't, I was goofin' off. He would always check to make sure, when he came home, "You didn't feed the chickens," or something like that—I've forgotten what it was. He said, "No supper." So I didn't have supper. And that was a lesson I learned. But it made sense. I mean, the animals are dependent upon you, no matter what. We were taught that very young, and that was important. Responsibility was very important.

It was a ranch and farm combination, just regular cattle. We'd have up to maybe 600 head to feed in the

wintertime. Summertime, we'd turn 'em loose on the desert, and they'd scrounge around the cactus and try to survive. My job was mostly farming, so I worked the fields. When I was six, seven years old, I was driving tractors and all kinds of machinery. Yarnell Mountain was part of our ranchland in the desert and all that. It was one of the earliest known ranches in the area. I don't know all the history—my brother knows it. But a stagecoach used to run from Prescott to La Paz through there in the mid 1800's, because it had water. So it has some history. The O-X Ranch is what it's called. We were so busy we didn't have time to do much of anything else, and going to school was kind of a break, but it was also boring.

The grade school had three rooms, and all eight grades were in those rooms. But there were four of us that graduated from eighth grade, and shortly after that, the school closed. Off to Wickenburg, and that was a big school, two hundred forty-some kids. I felt lost there. Forty-two of us ended up graduating from there.

Then one day while I was feeding cattle my dad asked, "What do you want to do?" I said, "I don't know." He said, "Well, why don't you think about college?" I said, "Well, I don't know dad, I barely got out of high school." He said, "Well, consider it a done deal: you're goin' to college. I've been savin' my money up, and that's what you're gonna do. I don't have much, but you're gonna make it." "Okay." And that was the best thing, because I didn't know there were opportunities other than farming and ranching.

My dad wanted to go to school. He never got that opportunity, because they really needed him on the ranch at that time, when he was young. He decided he wanted me to have the opportunity to learn there's other things in this world besides farming and ranching, feeding cows, and shoveling stuff, and digging holes, and all that. At the time, I didn't give it much thought. I was kind of tired of school. I was reluctant to go to college. But once I got there and found out, it was an entirely different scenario. This was Arizona State College at Flagstaff back then, '63.

So I started in '63, and I opted for taking a class in different things to find out what they're all about. I thought meteorology would be fun to take, learn about the weather, because I was always interested in it. Archaeology sounded kind of fun. And geology. I soon realized that meteorology was not my ticket, because there was so much math, and I could barely add or subtract. So I just forgot that. Archaeology was fun. Dr. Euler was really good, I took classes from him. But geology was more interesting, because I could relate to what I was seeing every day. I always wondered about the mountains and rocks, and that's how I got started. It was fun, and not that many people in the classes—three or four people sometimes. So you learned a lot, everybody could learn together, we all helped each other. That's the way it was. Nobody failed. And that was kind of nice, because it was a matter of learning—failure wasn't an option.

It became NAU in 1966. The student body voted on the name. When I started, Arizona State College was *just* over 3,000 students, and everything was on the north end of campus, in the stone buildings. When it became a university, it suddenly started to grow, big time. The town was 18,000 people when I came here. Had two stoplights downtown and a third to get into Arizona State College, it was a five-way stoplight, right there. Now they're building this convention center where we used to drive straight into the administration area. I stayed in Peterson Hall and then Old Main dormitory. I learned later that my room was Dr. Butchart's old office—he used to teach from there. That was the offices for faculty then, but it became a men's dorm when they moved to the new Science Building.

* * *

STEIGER: So how did you first encounter the Grand Canyon?

BILLINGSLEY: In '64, I decided with a couple of friends to go up there and have a look at it. We thought, "Well, let's just take a hike down there. There's a trail." I didn't know much about the Grand Canyon. The Kaibab Trail was there, of course, where everybody sees it. So we took off and went down there shortly after. Just wanted to go down and see what the river looked like.

We went down the Kaibab, then out the Bright Angel. I just threw everything in a gunny sack that I found at a local feed store here, and threw a blanket in there, some canned food, and some water, and took off. We didn't have any money for anything, so that's how we did it. But I soon learned after about four or five miles down, that was not the way to go.

STEIGER: You just threw this gunny sack over your shoulder?

BILLINGSLEY: Yeah, I just hung onto it, over my shoulder. My arms got really tired, but most of all my back was getting sore from the canned food banging on my back with every step down the hill. And I had arranged the blanket around the cans. It still didn't work, so I was pretty sore and stiff. But the smells and the sights and the wonder of the rocks and everything were absolutely fascinating to me. So we climbed back

out of there the next day on the Bright Angel Trail, and decided "we're gonna do this some more!" So I got started on hiking in '64…Yeah, it was canned food. We didn't know what else to take. Beans and soup and that kind of thing. There was an irrigation ditch down at Phantom Ranch—no water in it, but it had a lot of grass and leaves from the local cottonwoods. That made a nice mattress, so I just threw a blanket around me and went to sleep. Found a nice flat rock for a pillow, and kept my hat on. I was used to campin' out like that, but it was cold, it was in the winter. Didn't see anybody. There were a couple of people at the ranch and a few deer—that was about all. Well, there was the mule barn. There were a couple of wranglers there, so people were making trips by mule back then, and it was very popular, I guess. But we didn't see anybody else on the trail. It was pretty empty.

We did a second trip, to Clear Creek. "Let's go see what that looks like." There was an old trail that left Phantom Ranch, according to a fifteen-minute topographic quadrangle we had, and we found that, and you could barely follow it. We got to the top of the Tapeats, and then there was no trail at all. There were some burro trails on the Tonto Platform there. So we just made our way across, toward Clear Creek, got there, climbed down some cliffs and ledges—don't know where the trail was—but we made it down there. It was a nice running stream of water, so that was pretty neat. There were wild burros all over the place, on both sides of the river, and you could hear 'em all night long, braying. And we liked that sound, because it meant there was something else alive in the canyon besides us, because you just didn't see life at all—an occasional raven. Wild burros were the thing to see—or hear.

In the early seventies, there might have been an eradication program to get rid of them, but I thought they were unique to Grand Canyon. I learned later they were introduced from prospectors many years ago. Some people felt they were competing with the bighorn sheep for food and what not. And they would always foul the water, wherever there was water. But to me, they were Grand Canyon—because I didn't know any better. And they were alive. It was just really nice to see them and hear them. Anyway, that's how I got started hiking and it grew on me. In '67, it really got going good. And that's when I met Susan [Varin, now Billingsley] down there at Hance Rapid. She was on a hike. And really a neat gal.

STEIGER: You guys didn't meet in school?

BILLINGSLEY: No, we met on the hike. She joined the hiking club at that time. So a bunch of us went down there.

STEIGER: You say Hance Rapid. Was that when you first talked to her or something?

BILLINGSLEY: Yeah. We went down the Grandview Trail, and basically there was no trail to follow once you got below the Redwall Limestone. It was just vague. But we could see where it had to go, and we just made our own way. Once in a while you would find a little path. It was mostly a burro path we followed, and we got to Hance Rapids and camped. And then we went up the Hance Trail, and that was almost impossible to find. We didn't know where it was, and I'm sure we weren't on the trail more than three-quarters of the time. It went up Red Canyon. But the map showed it goin' up there, and so we tried to figure out where it would be most of the time. Some other girl on the trip was really sick, so I ended up carrying her out piggyback style, and that was a real challenge. She got claustrophobia down there, and she felt the walls were closing in. It scared her to death, and she was really in bad shape, just wouldn't eat, kept throwing up, dry heaves. She had no energy. So Susan ended up carrying her pack and stuff, which wasn't much. I ended up carrying her piggyback, because there was no other way to get her out. We couldn't leave her. And she fainted several times trying to walk. The only way to get her out was just carry her out. It was way after dark before I finally got up near the rim, and some of the guys came back down with flashlights, wondering where we were. Then they helped carry her the rest of the way out.

STEIGER: So you and Susan kind of stayed back with her?

BILLINGSLEY: Yeah. But it was a tough go for Susan—and a couple of the other girls too. It was tough for everybody, because it was sort of a learning experience for all of us, and we learned a lot—basically how to get around and find where the trail might be. Most of us were all new on that sort of thing. But other than that, we had a good time. It was a really fascinating part of the canyon to see.

But hike by hike, we learned. I mean, I could find my way around, and I had learned how to maneuver in the desert. The Grand Canyon is a big desert. It was just a tougher place to get around, because you had restrictions as to where you really could go. But that didn't bother me too much. It had a different feeling: different smells and sights.

STEIGER: Now geology, when did it occur to you that was going to be your profession?

BILLINGSLEY: The first semester, when I took the course. It suddenly answered a lot of my questions I always wondered about in high school and before then, about the mountains and the rocks. Here was

this stuff they were teaching, and it made sense, and it was so obvious. A lot of it I already kind of figured out, but it made more sense to read what it's all about, and understand why things are the way they are. Once I got in the Grand Canyon, I began to realize there's really a unique rock history here that I can figure out. It wasn't that hard, but there was so much to learn. So it was a fun thing to learn. The hikes allowed me to be off in some other world, looking at the rocks, as well as struggling along; you know, having a good time with everybody else. That was the nice thing about the NAU hiking club. We were all different as far as our educational studies, and we'd always share information from what everybody was learning about different things. So that made it more interesting. Somebody knew something about the bugs or the plants or something, and I knew something about the rocks. It just really made for a better trip, because we were constantly in a learning mode, as well as having a good time down there.

It wasn't always Grand Canyon. I mean, there were other places: the Superstition Mountains, Rainbow Bridge, Death Valley, Lake Mead. Whenever we could afford to drive and get enough money saved up and go somewhere, we'd do that, but typically Verde Valley was a common destination, because it was close by and cheap. Grand Canyon wasn't that far, but not everybody wanted to go in the Grand Canyon. But there was a hard core bunch of us that really did, and so we stuck together: Susan and I, and Jim Sears, Jan Jensen, Ellen Tibbetts, Bob Dye. There was a whole bunch of people. I don't have the names right on the tip of my tongue right now, but I've got them all written down in my journal.

STEIGER: Did you interact with Dr. Butchart much?

BILLINGSLEY: Yeah, we got to know Dr. Butchart through the hiking club, and also took math classes from him.

STEIGER: You said math wasn't your forte, though?

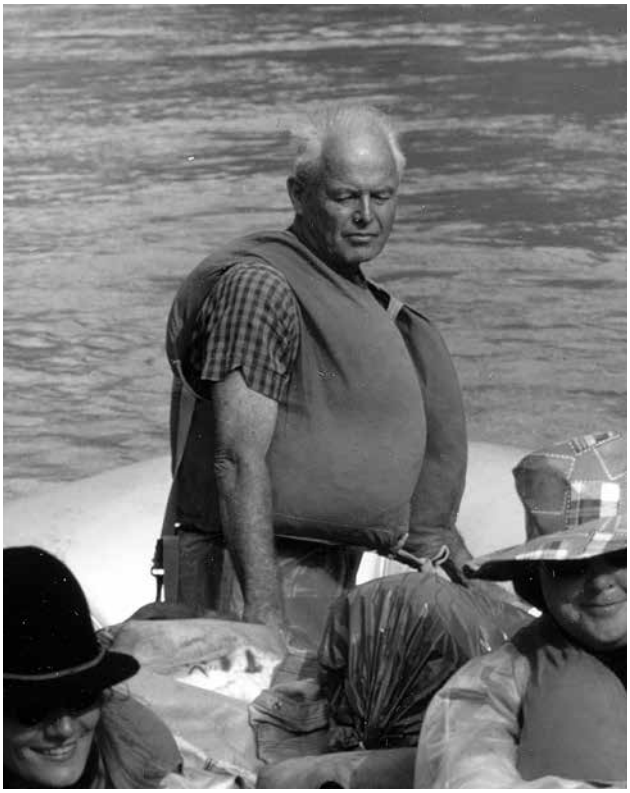
BILLINGSLEY: No, but it was required, even for geology and archaeology. There was just no getting around it. That was my stumbling block: math. So I took general math, anything, just to learn how to add and subtract, and had to work up through algebra and all these other courses they had listed. I thought, "Oh, man, there's no way." But I got to know Dr. Butchart in those classes. After failing them a couple of times, I would retake 'em, and we got to know each other. He knew I was hiking the canyon, and got to be good friends. But he'd say, "You've got to try." And so he would try desperately to teach me, but I really had a mental block against math. But after about two or three times, he would draw a line under my name and say, "Okay, I'll let you go by with the lowest grade." And that was passing. That's all I needed. If it wasn't for Dr. Butchart, I would have never gotten a degree, because there was no way I was going to get through those math classes, all the way through calculus. So I owe an awful lot of gratitude to Dr. Butchart. But we hiked a few times. He was interested in going from "A" to "B" as fast as he could, and climbing buttes primarily. I was interested in seeing what was in the canyon, as far as geology went, and I wanted to take my time. So we'd start off together lots of times, but he would end up taking off, and we'd meet a day or two later somewhere, because I didn't want to keep up the pace.

STEIGER: What were the questions, like the geologic questions, that you found yourself asking early on, just as that place started to unfold to you?

BILLINGSLEY: Well, there were a lot of different geology courses we had to take, and stratigraphy is one of them, learning the rock layers, how they formed, what was the environmental past, how to study them in detail under a microscope to find out what makes a rock a rock, how it could come together in certain environments. That was fascinating. Then I began to see the real historical past of the earth at the Grand Canyon. After a couple of years or so, I thought I knew it all, because Dr. Eddie McKee was one of the people I met, and he was the Grand Canyon geologist. So he helped me learn quite a bit while I helped him measure sections. He would show me how to do it. We spent a lot of time working on the Supai Formation he was working on then, so I measured sections all over the canyon with him, to get his big Supai paper out.

STEIGER: Now, was he teaching, too?

BILLINGSLEY: Not at the time. He was working for the Geological Survey. He was a park naturalist for Grand Canyon for many, many years…I think as a naturalist you don't just know geology, you also know biology, the plants, everything about the canyon, any natural science. He can name off all kinds of different plants, lizards, and birds. His wife Barbara was a biologist, and so she knew all these things, and they were trying to teach me all the names. So I got to know a lot of the plants, animals, birds and lizards and what not from both of them. And they were always writing notes and observing, writing down information they saw all the time. So I got to kind of doing that—just like Dr. Butchart got me to writing notes on all my hikes of where I went and what I saw. He told me, "You know, one day you're not going to remember what you did." And he's right. So as soon as we got done with a hike, I would sit down with my old manual typewriter and type it up. I didn't write everything, but the things that impressed me: where I was, who I was with, and what



Edwin D. McKee, October 10, 1972. Driving George's boat in Marble Canyon.

not. I'd always measure the temperature of the air and water whatever it was—curiosity, kind of a weather thing—and what rocks I saw, what new discoveries I saw. And that was the thrill of it all—what was in the next canyon. That's why we went, we just wanted to see what was there. And that was fun, but you had to write it down. I'm glad I did, because I can't tell you now exactly what-all I did back on these hikes we just talked about. But I have it written down, and I've got about 1,200 typewritten pages, single-spaced.

* * *

I got interested in the river in 1968. I was coming back to school for a Masters degree and decided "I'll just pop over to Lees Ferry," since I was coming out of Colorado at the time, working up there. At Lees Ferry, there was a river trip getting ready to go, and I asked around—I had nothing better to do—talking to a couple of the guys, and they said, "Why don't you come along with us? Talk to Ted Hatch. He's over there. Ask him if you can go." So I went over and talked to Ted Hatch. He said, "You got $315? That's what it costs." I said, "Yeah, I've got that." I had just got done working, I had all my money saved up. So I wrote a check for $315. He says, "Okay, get whatever you've got and throw it on that boat right there, and you're gonna leave." I said, "Okay." I just had my small backpack, and didn't have anything waterproof. But I had my clothes on, my hat, and boots, that was it. I got to know some of the guys who were young fellows, and helped them load up and everything, and then passengers came and they all hopped on three boats—there were four boats. But they all hopped on three, except for one boat was only five young guys, and not much of anything else. So I thought, "Well, gee, can I ride with you guys?" And Ted came over, "This is the training boat. These guys have never been down here, they don't know what they're doing, they're learning. If you want to go with them, you have to tell me for sure—and everybody here witnessing—that it's at your own risk." I said, "Sure. Fine." Because the other boats seemed crowded to me, and they had piles of duffel and everything all piled up. So I hopped on and got to know these guys. I was up for the adventure.

Dennis Massey was the trip leader, Earl Staley was the second boatman, Roy Cromer the third, and Jim Conley, Jim Wharton, Pete Reznick, Ted Stewart, and Gayle Holman were the trainees. Jim Conley had been down once before, so he was kind of trying to instruct. It was the first time with engines, and they were trying to figure out how to make 'em work. We couldn't get the thing started, and finally Ted Hatch just shoved us off. We had oars—front oars and back oars. No side tubes.

STEIGER: Floors in 'em, motors hangin' off the back?

BILLINGSLEY: Yeah, and it was orange, a wood framework. We started floating down the river, so we grabbed the oars. Ted said, "Get the thing going!" I said, "We don't know how to get it started!" We kept fiddling with it. There was something wrong. He said, "Well, fix it on the way. You're on your way now." So we took off.

STEIGER: He pushed you off?

BILLINGSLEY: Yeah. And the other three boats were ahead of us.

STEIGER: Not waitin' for you either?

BILLINGSLEY: No, because their job was, if we came along, they would rescue us if we had problems—and we did. (chuckles) But we finally got the engine going, and it was an experience. When we got to the rapids, it would drown out, and we'd grab the oars and start rowing.

STEIGER: So you were involved in that too?

BILLINGSLEY: Well, I didn't actually get involved with rowing, because these other guys were really the training guys—they were being trained—but I was learning from watching them, and if I had to, I could lend a hand. That was no problem. I offered, and did, on

occasion, but not as much as they. It was really their job. At House Rock we lost the engine at the top of the rapid and went sideways into the hole. It was a big hole, very low water, and it was a pour-over, and we just about flipped. I was almost drowned in that one. That's when I realized that this is not something you want to take lightly. This river's powerful. For a while, it was fun, but that woke me up when I had only two fingers hangin' on. I was floating in the water, and then slammed back in the boat. Then the others came out and rescued us and pulled us in. I was a drowned rat, and it scared me.

STEIGER: Was that your first night's camp there?

BILLINGSLEY: Yeah, at House Rock. Oh, it was a giant beach, and practically all sand. There were a few rocks here and there, but it was mostly sand. Then I really got a little bit worried about going on down. But I thought, "What the heck, it can't be any worse than that, can it?"(laughter) But I was afraid of it, because I don't know how to swim, and I did not want to get in the water, if I didn't have to. But I stuck with that boat. They said, "If you want to go back and ride with the others…" "Nah." I was getting' to know these guys a little bit, and it was a lot of fun. We were all about the same age, early twenties.

There were a few more mishaps here and there. But it was a lot of fun, I enjoyed it, because I got to see the Grand Canyon, parts I always wanted to see. The geology was fascinating, and it just kept goin' from there. Dennis Massey was the head boatman at the time. He was a big fellow, but very quiet. But all he had to do was tell me, or people around there, how to do things, who's doin' what and where—nobody argued with him. He basically was in control. And everybody was fine with that. He seemed like a pretty nice guy, enjoyable to talk with, but he was very quiet.

* * *

The second trip was in '69, and that's when Susan and a bunch of us from the hiking club hiked down to Phantom and got on there. Steve Bledsoe was running that trip. I got to meet Patrick Conley and Kenton Grua, Rick Petrillo, Brick Wells, Jimmy Hall, and many others. There were five boats and 50 passengers. .

STEIGER: Well, that first trip in '68…Crystal was bad and all that?

BILLINGSLEY: Crystal had formed in '67, yeah. House Rock was the real eye-opener. That gave me a sense of fear for the rest of my trips on the river.

No, we didn't see anybody else…it was pretty much just us, just the four boats on that first trip. As I recall, they were just singles…You know, there were no outriggers. They were 33-footers, I remember that. All the duffel was tied up under canvas and chained down or roped down or whatever—had chains everywhere. But some of the rapids they made us walk around, which I was happy to do. I was a little apprehensive. Crystal was a big rapid, but we didn't walk around it. We looked at it. But it changed a lot since anybody had been down there, even Dennis. It was changing on a monthly basis. It was developing a giant hole. By the time I got to running the river regularly in '70–'71, it was really getting to be a giant, giant hole. But basically it was just a rock garden before then. You had to hit rocks, there was just no way through without hittin' rocks. That's about all. Most of the guys would end up rowing anyway, because the engine would just never keep running. It would go underwater and it'd just drown it out. There was no way to lift it out or move it. So that was the problem we had to figure out: what do you do about that?

STEIGER: So you'd start out motoring, and when the motor died, everybody would…?

BILLINGSLEY: Yeah. There were two guys with the oars ready. They'd yell out, "No engine!"And then the other guys would start rowing, and we would just wing it through there. But we hit every hole there was, because you just headed down the rapid, not knowing where you're going. We didn't know where to go. Even Jim, who'd been down once or twice, trying to train the others, he couldn't remember where you went. Some rapids, he remembered, "Well, you stay over to this side no matter what." Mostly we just bungled through…Rowing just made you feel good to be doing something, whether you did it right or not. That's what it was all about. I didn't get to row, but that's okay. I helped 'em bail. Those things would fill up with tons of water.

STEIGER: Yeah, you said your second trip was with Bledsoe and Pat Conley?

BILLINGSLEY: Yeah, and there were a lot more people on that trip, about fifty. Steve was a pretty neat guy to know, and the others: Pat Conley, Kenton Grua, Rick Petrillo, Brick Wells, Jim Hall.

Like I say, there were about seven or eight boats on that trip, because it was fifty-some people. It was a real flotilla of people. It was fun. I carried a five-gallon grease bucket full of food and supplies down the trail, by hand, and that about ripped my arms off by the time I got down to Phantom. But I was gonna leave that at Tuckup, because that's where I was going to do my Master's thesis work for geology. So they agreed I could take it along.

STEIGER: It was a metal bucket?

BILLINGSLEY: Yeah, it was metal, with a lid on it, so

Hkers on the river. March 25, 1973. After a 9-day trip from Diamond Creek to Pearce Ferry. Left to right, Ken Stevens, Bill Rietveld, Ellen Tibbetts, Jan Jensen (sitting), Susan Varin, Ed Anderson, Debbie Astel, George Billingsley, and Bob Dye.

you could clamp it down to keep the mice out. I carried it down the trail by hand, to hand. I tell ya, I think my arms grew three or four inches by the time I got to the bottom. But there was no other way to carry it, plus carry a pack.

The hiking club group we hiked in with started from there, so it wasn't a full trip. But we went all the way down to Temple Bar on that one too.

The people were great. It was an adventure. They didn't complain about storms, getting wet, freezing or melting or whatever it was. Nobody complained. You were just excited. Couldn't wait to see what was around the next bend, and the rougher the better. It was fun. It was a real congenial bunch of people. After a while you get to know each other, and it's just a lot of fun.

Bailing those boats was a constant job, but what else are you gonna do? It was something to do. If you made it through the rapid, your adrenaline was going, and you had the energy to just flail that water out. The water was warm. It was always muddy and warm. There was lots of mud and sand beaches. There wasn't much vegetation along the river—very little. But sand everywhere. It was constant. There were some big beaches. Nevills was a beach for about a quarter of a mile there, just solid sand.

So anyway, I started running…Let's see, that first trip I was really just a paid passenger. The second trip, same thing, I paid to go. I was still into hiking pretty much back then. I got my Masters in Geology at NAU in 1970, then worked as a seasonal Park Ranger at Supai for the summer. The third river trip was in 1971 with Ron Smith's group [Grand Canyon Expeditions]. From there on, I ran with them for that season. That's where I really got started, just training. I went to Ron's office with somebody I knew in Kanab—Art Gallenson—he was a geologist at that time, and still is. He introduced me to Ron, and he wanted me to go down the river. We got paid, but you were just a helper, basically. So the first few trips you just went along as a helper. But it didn't cost anything either, so that was fine with me. But I began to learn, train, and stuff like that. Then I got hired part-way through the season.

STEIGER: Who did you train with, do you remember?

BILLINGSLEY: John Sohrweide mainly. Art Gallenson, Dean Waterman, O'Connor Dale, Regan Dale, Tim Means, Blake Hopkins, Scott Dunn, they were gettin' into it pretty well by then. George Gerhart, who was Bego, and Sue (Ote), and Marc Smith came on about that time. Tim Means and Judy. Scott and LeAnn. There was quite a bunch. Dan Merrill, Wayne McAllister, and many others were helpers, and then like

me, gradually worked up into the boatman position. By the end of the '71 season, I was running the boat pretty well. Ron hired me on as a boatman for the '72 season. So '72 was a very busy year, and I was a boatman then. Bob Dye got on a couple of trips, and Ellen Tibbetts and Susan. They got interested in the river and they took it from there and got involved one way or another. Bob's still on the river. So '73 was a big year—roughly ten trips a year, nine-day trips. These were all motorized trips, we didn't do any rowing. '74, '75, '76, and in '77, that's when I began to slow it down and opt out of it.

* * *

I have nothing but deep respect for Ron Smith because sure, he was in the business to make a living, but he put all of his money right back into the company. We'd have the best equipment on the river. Everything was new, and the best. Constantly updating, making it better, that's what he did. That made all of us work doubly harder because he thought more of the crew than he did anything else. And as a result, we wanted to make it the best, and so we worked hard to make it so. And that worked really well. We had the nice, shiny boats on the river and all that stuff. And we had the training wheels [side tubes], which made me feel a lot safer. Everybody went to those, and why not? I mean, it made it safer. You get sideways in those 33-footers with no side tubes, man, I mean you're likely over.

But it was a fun and great experience outdoors. It was more fun if you could educate the people on what they were seeing, and they really wanted to know. And then we let them help with whatever it was we did: cooking, cleaning, setting up camp. Some of them absolutely insisted. And we let 'em, and they were happy. And as long as they were happy, we were happy. So that really helped us quite a bit, and most of the trips were that way. I enjoyed havin' kids on trips. There were kids startin' to go down the river then—you know, families. The kids were fun. Made you feel like a kid again, just to experience their discoveries. Nothing like water and mud and sand to get a kid going. So those were important things. And the older people—we had people in their eighties come down. They were very scared, but they felt they didn't have anything else to lose, and they'd always dreamed of going on the river. They were very interesting. They were just enjoying life on a daily basis, just glad to be there, no matter how rough it got. And everybody always tried to help them. And they had great stories to tell, they were fun people. We had a blind lady from England who was 82 come on a trip. She was just great! Couldn't see, but she could smell and hear, and do very well with that… But Ron and Sheila were absolutely the best people to work with at the time.

STEIGER: Well, you never were doing this with the idea it was going to be anything but just a fun summer job, right? I got the sense from talking to Susan you were sort of always on the way to working for the USGS, is that right?

BILLINGSLEY: Well, geology was my thing. Ron paid us, and we didn't spend much money, because you saved all your money to help get you through the winter. But basically that was a seasonal job. It was fun, and it was fine for the time, because I didn't have any other plans. But in the long run, yeah, you'd have to get serious. When Ron let Susan have her own boat, we ran as a team, and that was very much fun. We had a great time, the people got to know us, and they felt comfortable.

When Susan became pregnant, about '76, she did a few more trips, and we ended the season, and then it was obvious she'd have to get off the river. I decided I'm goin' too. There's no way I can do this stuff, without her. I didn't want to be with anyone else down there, no matter what. So I decided, "Okay, I'm gonna get serious here. I've got a family going and we've got to start getting serious about where we're gonna live. You can't just live out of a pickup and an ammo can and a sleeping bag." Those days were coming to an end.

I worked for the Museum of Northern Arizona as a geologist in the wintertime. I'd run the river in the summer, and I was mapping the geology in Canyonlands and Capitol Reef National Parks and Grand Canyon.

STEIGER: And who was using those maps?

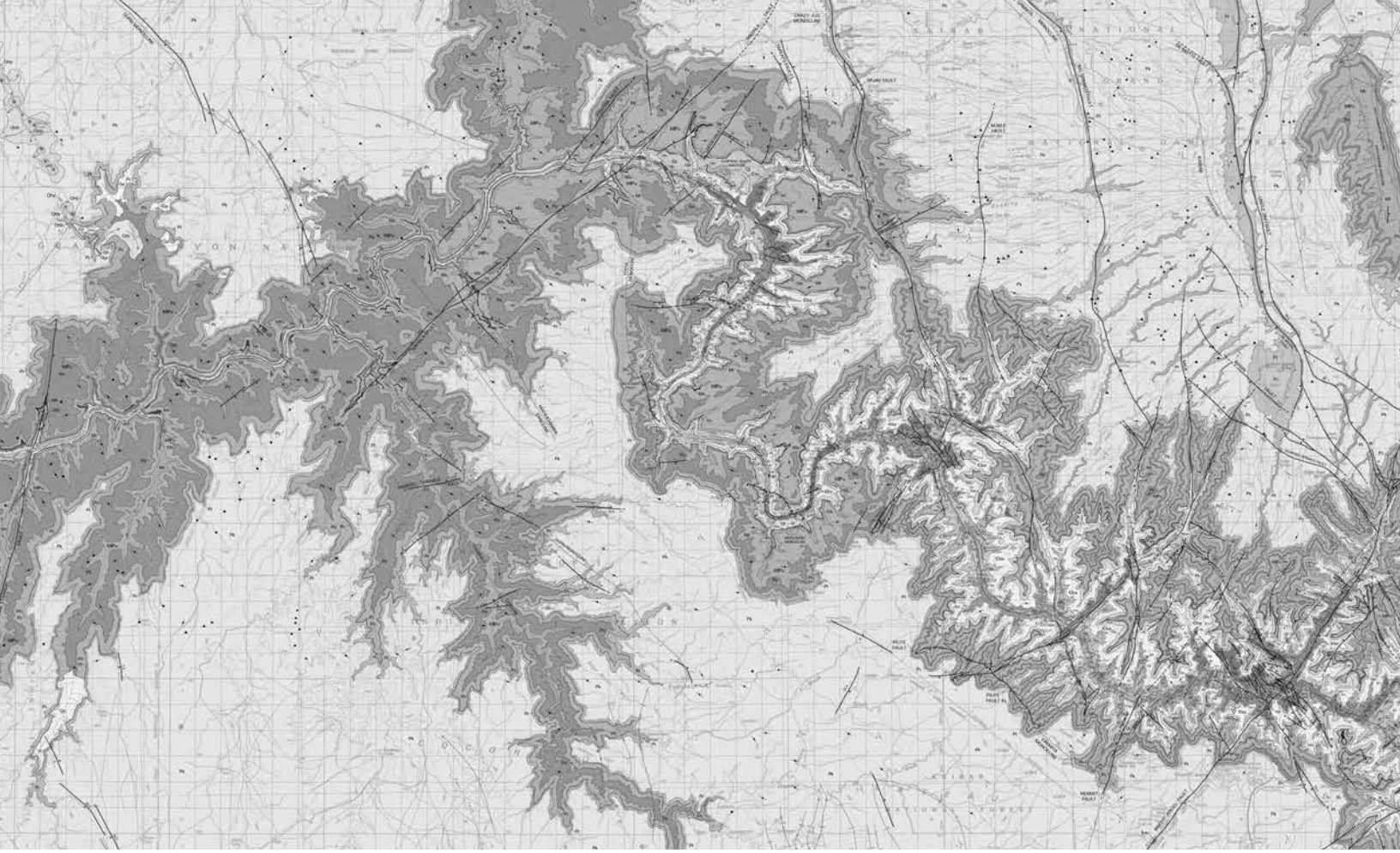
BILLINGSLEY: Associations, like the Grand Canyon Association, the Association of Canyonlands and Capitol Reef. They were the ones that had the funds to get these maps published, and that's what kept me going as a consultant.

STEIGER: When you're actually doin' the maps, how did that work, in that day and age?

BILLINGSLEY: Well, I had an office at the museum, and I drafted everything by hand.

STEIGER: Did you do it from aerial photos?

BILLINGSLEY: Oh yeah, and we hiked a lot. That was one of the reasons we did a lot of the hikes. You had to field check. You can't make a geologic map without field checkin'. You just have to go see the rocks. Otherwise, you're gonna have errors. John Maxson made the first Grand Canyon geological maps, and they were very good. But John was not able to get everywhere. He did use aerial photography, and he did



a remarkably good job in getting those maps done in the eastern and central part of the Grand Canyon in the sixties. But when I went in there, using his maps, I found a lot of material that was missing or not right—minor things, basically. And so Peter Huntoon and I decided to improve his maps a little bit, because he really did the best job, but we just wanted to improve them. So Peter Huntoon and I got involved with that, and we got funding through the Grand Canyon Association to do that job. So that Eastern Grand Canyon map is the big dragon map everybody's seen. So that was our first big map.

STEIGER: That's the multicolored one?

BILLINGSLEY: Right. It's a great big wall decoration. I drafted it by hand, and the association sent it off to a map company in Washington, D.C. , who did the professional drafting to make it printable, and that's what you see today. That map has been around for a long time, and is still used.

STEIGER: You see it on river trips all the time, people carry 'em in tubes and roll them out, just to show everybody what's goin' on, where we are.

BILLINGSLEY: Yeah. So that was good. That was also part of my continuous learning experience in geology. Also Canyonlands was a learning experience, and Capitol Reef, beautiful places. The more geology I saw, the more I got into it, and realized, "This is what it's gonna be." The river was fun, but it was kind of like a seasonal job with the Park Service. And I had an option to get off the river. Some of the people I know have been down there forever and didn't have the option to go on to something else, or didn't want to, didn't matter. It was their decision one way or the other. But I decided when the family was started, that was it, time to move on. So I worked for the Museum through all the seventies, and finally got in with the U.S. Geological Survey in 1980, and I've been with the Survey ever since.

* * *

I don't know…I've spent 36 years [as of 2007] in the Grand Canyon, hiking around and what not; and I have not seen it all. I'm just finishing up the last maps of Marble Canyon, and then I'll have the whole thing mapped: from Lake Mead all the way up to Lees Ferry and, Glen Canyon Dam too. I can do the geology and put the data down, but it takes a lot of people's effort to help get these maps published. And that's going to be my small contribution to the geological sciences, basically. But it's based on a lot of other geologists' work—during and before my time. I mean, there's a few really neat geologists working in the Grand

George Billingsley examines the Surprise Canyon Formation west of Dubendorff Rapid, top of Redwall Limestone, Sept. 24, 1985.

Canyon, and even less nowadays than used to be, I think, because students are beginning to realize, "What is there to do? We see all these publications about the Grand Canyon geology." When all these maps are out, they're going to say, "Well, there's nothing left to do." That couldn't be further from the truth. There is a lot of work to be done in Grand Canyon geology. There are rocks we don't know anything about, and all we can do right now is lump them into various formations or map units. Nobody's looked at 'em, nobody's studied 'em… The upper part of the Muav in western and central Grand Canyon: there's about 400 feet of limestone and dolomites there we don't know what to do with. It's lumped into the Muav limestone right now, or as unclassified dolomites. (STEIGER: Those two little brown cliffs that go along in there?) No, they're bigger than that. Even McKee's work on the Supai Formation, dividing it into all these different formations; nobody's done anything with them since, and there's a lot of work to be done with that. The Hermit Shale is not a shale: it's a siltstone, sandstone unit. Nobody's messed with that since 1929. And it's very thick and it changes facies. In eastern Grand Canyon it's only 50 feet thick. In western Grand Canyon and Marble Canyon, it's over 700. It's got limestones and other rocks. It needs to be studied. Those are just examples…When I found and named the Surprise Canyon Formation, that was just one of those examples. I saw this unique rock that had lots of fossils in it, and it's very different from other rocks…It's not a continuous formation through all of Grand Canyon, it's only exposed here and there. But it's now one of the new Grand Canyon formations. I first discovered it in western Grand Canyon, in the Bat Tower area. And it's a river system, channel deposit, and it goes all the way to Marble Canyon. I've mapped seven different rivers of that time, filled with these rocks—the most fossiliferous rocks in Grand Canyon. It's got everything from petrified trees, coal beds even, starfish, and lots of fossils that have never been found before in Grand Canyon. So that makes it a unique formation. I first studied it over there where I first saw it, near the Grand Wash Cliffs. Surprise Canyon is the nearest geographic name of that area that has not been used before for a rock unit, and Surprise Canyon is a big canyon. So that was the only name I could find on the topographic maps that I could use, that hadn't been used before. So that's why it's called Surprise Canyon Formation. A lot of that work was done using helicopters, so I got well over 200 hours of helicopter time to get to all these rocks.

Steiger: But you see elements of that formation all the way up?

Billingsley: All the way to Marble Canyon. The first place you see it is 23-Mile Rapid. It's on river right below the rapid. It's the red slope right above the Redwall Limestone, at the base of the rapid. That's where I measured a section. But it's very small there, it's only 30 or 40 feet thick. It's bright maroon-red. The next channel with petrified logs in it is just above President Harding Rapid, Point Hansbrough. Spent a few days up there.

Steiger: Still on the right?

Billingsley: It'd be on the right side, but it's also on river left. It's a river channel that crossed the canyon there three times. And it goes up Saddle Canyon to the west. The river was flowing from east to west—all the rivers were at that time. They're 320 million years old. And by the time you get to the western Grand Canyon, there were huge canyons, 400 feet deep, carved into the Redwall Limestone. But, like I said, it's mainly in the river channels carved into the Redwall that you see the formation, and it's not everywhere in Grand Canyon. There is a big publication I put out through the Museum of Northern Arizona, but it's not very widely distributed, so that's why people don't know much about it.

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Every time I go in the canyon, I find new stuff, and it's the thrill of discovery that keeps you going. And if you really want to learn an area, map it…But like I said, I didn't do anything unusual that anybody else hasn't already done really. I was part of the game, that's all…

* * *

Oh, there's some places down there I've seen you wouldn't believe, that are so beautiful. I'm not going to tell you where they are, because I feel very protective of them. (chuckles)

Steiger: Susan said you guys made a pact that you wouldn't give up the good secrets.

Billingsley: Right. Because we've seen it happen. You remember you would hike up Saddle Canyon, to those springs up there, and how beautiful that was back in the '70s? Then it became known, and now look at it. There's a lot of places like that. There's places I'm not even gonna tell you, because…I know they're going to be discovered someday, but to me there's just some things that need to be kept quiet and secret—absolutely beautiful spots that made such an impression I just cannot stand the thought of a lot of people going there.

You do have to work to get there. They're very remote, and likely not going to be discovered for a long time. But then again, what do I know? There's more people hiking today than ever before. And yes, they will be discovered. I just hope I don't hear about it, because it would be crushing to me.

Steiger: Well, at least they'll still be there. That's the good thing.

Billingsley: Yeah, some things need to be left alone…

* * *

Anyway, I just wanted to say that hiking is the number one enjoyment of the Grand Canyon for me. River running came, and it was fun, but hiking was always the most enjoyable thing I've done. Geology was always there…I'm really glad I had the education. There I owe a great debt of thanks to both my parents for at least starting me in school and saying, "That's what you're going to do. Go to school." From there I took it and made my own way. But if it wasn't for them insisting I do that, rather than stay on the ranch, I don't know. It was a super good thing for them to do that. I've always been very, very appreciative of what they did.

Crystal @ 72,000…

I JUST FINISHED READING the interview with Jon Stoner and the side story on Crystal Rapid at 72,000. The Georgie boatmen he discussed in his interview were myself (Raymond Gorospe) and Chuck Mills. I thought I might share my memory of the events that occurred during that period. Of course, I am 63 years old now, so not all of my memories are accurate—but the day before Crystal, and the few days following, were so different from any other canyon trip that I had ever made, that I recall most of that experience clearly.

It would be impossible to tell this story without a little history about Georgie and her boatmen.

I was a full-time professional firefighter/paramedic with Los Angeles County when I was introduced to the Grand Canyon, in 1974, by a neighbor who was a Los Angeles City fireman. He told me that his dad—also a fireman—guided river trips through the Grand Canyon with a woman named Georgie during the summer. At that time, almost all of Georgie's boatmen were full-time professional firefighters, who would take time off work during the summer to run river trips. None of them were professional guides, although some would run every trip of the season. To their credit, they never lost a customer or a boatman to the river. They were also never paid—nor did they ever accept tips from the customers. They considered these trips to be their vacations, too. The funny thing that I learned after running my first summer, was that after taking time off from work, paying for travel, and buying extra food, it would actually cost us money to make these trips. Georgie was notorious for being minimalist on food. Since we firemen were used to cooking at work, and enjoying a good meal, we always brought plenty of extra food to supplement the all-canned meals that were the staple of her trips.

After my first trip, Georgie approached me and said that the other firemen had said I was a big help and a good worker, and she would use me as a boatman if I liked.

New boatmen started off as swampers, on either the single boats (33 footers), Georgie's big boat (if you were lucky enough—because she only allowed certain people to work on her boat), or as oarsmen on the triple rig. Georgie called these the Thrill Boats—three, 10-man boats tied together. The middle boat had a 15hp motor, and carried fuel cans and food bags, and customers would sit in the front compartment. The outside boats had a boatman on an oar each, and more seating for customers. When running downriver, the outside boats faced the river banks, and the motor

Raymond Gorospe, Georgie, Chuck Mills, 1976

controlled the boat—the oars were usually not needed. When running a rapid, the motor set the boat up for entry into the rapid, and then turned so that the oarsmen were positioned up- and downriver. The motor helped if needed, but mostly the guys on the oars maneuvered the boat through the rapid. The advantage was a wormlike configuration that would roller coaster through the rapid.

Training consisted of watching the more experienced guys, and trying to emulate them. You would move up to running a motor when Georgie thought you were ready, or if you were the most experienced person on that trip. All boatmen shared in responsibility for the trip, but the motor man set the schedule and picked camp sites for the day. We worked as a team.

In reality, we all ran the river the way Georgie told us. She center-punched most of the holes, including Crystal and Lava, and so we did, too. Years later we abandoned those tactics and took the safer routes, but not Georgie. She was set in her ways. I saw many quit over the years, after only a couple of trips, because they felt she was a little too harsh. I remember one short-timer telling me that he thought she was crazy. That was his last trip. To fail her was not an option. Our relationship with Georgie was a combination of love-hate and Mommy Dearest. We were never employees—we were family. And at times that family was dysfunctional. Disappointing her could result in being hit, bit, kicked or any combination of those. Often blood was drawn. In those days Georgie stayed up late wrestling, fighting and drinking with us. Only Coors beer for her. Many of us called her Mother.

I once asked Georgie why she used firemen as boatmen. She told me that she found them to be dependable, hard workers. That they worked as a team without any egos, and that the customers liked them. She said that they were used to working in dangerous situations, and could handle most things that came along. I would like to add that maybe not having to pay them was a bonus too.

On June 22, 1983, just below the Little Colorado River, a Park Service helicopter hovered over the triple rig I was running and dropped a small bag containing some rocks and a note. It read, "Releasing up to 70,000 CFS tonight. (my memory is a little fuzzy on this number—it may have been even higher). Camp high and be safe." We camped just below the Little Colorado River on the left, at a camp Georgie called Copper Blossom Mine.

The morning of June 23—my 36th birthday—started a trip like I had never experienced before. I had some bad luck with motors that trip, as my main motor and both spares had broken down. I borrowed one of Chuck's 25HP spares. I quickly found that a 25HP motor was too powerful for a triple rig. Under full throttle, it would tuck the back of the boat under water. My solution was to tie a rope from the carrying handle to the boat frame. As I recall, most of the rapids that morning weren't any special challenge. Hance was a baby, with most of the rocks covered, so we were able to get through with minimal maneuvering. When we arrived at Hermit, I readied the rig by putting the biggest guys in the front boat. I would need those guys to lean out into the wave to help prevent the front boat from flipping back over us. I had assured the customers that this was a really fun and safe rapid with multiple waves. I shared with them that I had swum this rapid in the past and had come through unscathed. When we hit the first wave I realized that this was no longer the Hermit I knew. The third wave was enormous, and by the time the back boat was in the hole we were stacked straight up and down. The last thing I remember was yelling at the guys in the front boat to lean out and seeing that boat come over on top of me. The next thing I remember was being in a very dark place. By the time I oriented myself, I realized I was in between two boats. I was able to work my way out and discovered that we were configured like a hamburger: the rear boat had tucked under the middle boat, and the front boat had flipped over on top. Three of the customers were on the upside-down front boat, and the rest were in the water.

Chuck had made it through on the single boat without any problems. He saw our situation and managed to get the people out of the water. By then I was able to get our bow line out and throw it to Chuck, who then towed us to shore. We spent a couple of hours totally de-rigging and re-rigging the boat—fortunately, we hadn't lost anything of importance.

We camped above Crystal that night, and Chuck and I scouted it after setting up camp. Upon seeing it I turned to Chuck and said "How are we going to get through that?" Always the positive and unfazed one, he assured me it would not be a problem.

Since I would be celebrating my birthday in the canyon that trip, I had brought along champagne for the occasion. We celebrated well into the night, and I woke up feeling pretty positive about the day.

On June 23, Chuck and I scouted Crystal once more before launching. Our normal route was right at the hole, or just to the right of it, but that would've been suicidal at that flow. I decided I would hug the right shoreline and try to avoid the rocks at the mouth of Crystal Creek. Once in the water, the current immediately began pulling us toward the hole. The oarsmen, Jimmy Johnson and Bob Cota, were rowing as hard as they could toward the shore, and I had the 25HP motor at full throttle. Since we had started off so far to the right, we were only sucked into the big wave just to the right of the main hole. The lead boat flipped, but I was able to motor us past the rock garden and Big Red. Eventually we got to the right bank with all of our people. I figured when Chuck got through we would flip the one boat back over and head out again. Next thing I saw was something black coming down river. I'd never seen a single

Thrill Boats

boat upside down before, except in photos. It was quite an unsettling feeling. As they got closer I could see several people on top of the upside-down boat, along with Chuck on all fours.

The next time I had a chance to look upriver I saw more boats upside down. I flagged down a boat heading toward us. I told them our single boat had flipped and we had people in the water. I wanted to get back on the river quickly so we could get to Chuck.

Jim, Bob and I were able to flip the lead boat back over, re-secure our gear, and get moving again. Our customers were freaking out, especially since we had already gone through the Hermit incident. In the meantime, the Park Service helicopters had shown up, and guys in wet suits were jumping out. I don't remember almost running over Jon, but I can tell you that in the best of circumstances, the triple boat configuration is difficult to maneuver. But with the water as turbulent as it was that day, it was nearly impossible. We saw two people caught in an eddy and tried to get to them, but even with the 25HP motor going full throttle, I was unable to reach them. I told them the Park Service was in the water picking up people, and to try to get to shore if they could. I felt like crap leaving them there, but there was nothing I could do to help them.

Here is where my memory differs from Jon's. I don't remember any of my customers getting on his boat to be evacuated. In fact, we didn't even know they were evacuating everyone at Bass until I caught up to Chuck, who had been pulled into an eddy just below Bass on the right side. A customer on his boat had managed to free the bow line, and had jumped on the ledge to tie off the boat. Chuck, it turns out, had been trapped in the motor well while the boat was turned over. He told me that he had figured he was going to die there, when suddenly he was released and came up next to the boat. He was able to pull himself up in spite of the fact that he had suffered major ligament damage to one of his knees. I then remember a Park Service helicopter touching down on one skid close to us, and eventually taking all of our customers—minus the three that went in the water. I don't know who picked those three up.

There was no way that Jim, Bob and myself were going to be able to flip Chuck's single boat over, so we freed all of the equipment we could reach, and left it on the rock shelf. I wasn't too happy about leaving Georgie's boat there, and it turns out that neither was she. I later heard that she was quite upset that we didn't bring it out with us. She said that everyone else had gotten their boats out, and couldn't understand why we had not. I guess it was not good advertising. She was able to salvage it on her next trip.

Once all of our customers and Chuck were evacuated, the three of us headed out. Georgie was a day ahead of us, so our priority was to catch up to her as soon as possible. Normally we merged our trips below Lava, camping that night and hitting the helicopter pad the next morning.

Georgie, circa 1980

Our trip from Bass to Lava was uneventful. We were able to procure plenty of food from an ice box floating down the river. At that time we didn't carry ice, so we put some fresh meat that we found, and ice from the ice boxes into one of our WWII UDT bags. I think we camped that night somewhere below Fishtail, which wasn't one of our regular camp stops. There we cooked up all of the fresh meat because all of the ice had melted. Apples and oranges were also plentiful, as the water was full of them. The only problem we encountered in Lava was trying to bail out the water after the run. The triple rigs were very hard to control when they were full of water, and normally the customers did all the bailing, so we had to work quickly to bail it out ourselves in order to get to the beach on the right.

When we met up with Georgie, I immediately went to her and filled her in on what had happened. In typical Georgie fashion, she took it very calmly on the surface—but something behind those piercing blue eyes told me all was not well.

Nevertheless, I continued working with Georgie until her death in 1991. After that, Ted and Steve Hatch were kind enough to let me run a few trips with them, until 1994, when I ended my guiding experiences. But no trip would ever compare to that trip in the summer of 1983 . . .

Raymond Gorospe

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