



the journal of  
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# boatman's quarterly review



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## 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 computer disk, PC or MAC format; 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.  
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## Changing of the Guard

RICHARD QUARTAROLI HAS BEEN manning the helm of GCRG (appropriate boating metaphor!) for the past year. His contributions have been significant—from conducting a myriad of meetings (board meetings, fall meeting, GTS, CRMP planning meetings, you name it!), to constantly being involved with the important issues at hand. His vision of an Old Timer's Guides Training Seminar came to fruition with one of the best-attended sessions ever. And his involvement from start to finish was crucial to its success—from assisting with the Arizona Humanities Council grant, to the lengthy planning process, and even serving as emcee of the event. It has been a supreme pleasure working with someone so committed to Grand Canyon in every way, and so knowledgeable about its history. GCRG has benefited so deeply from the amazingly committed individuals who have held the president's post over the years, and Richard has joined their ranks. We hope that he'll continue to be involved after his term ends. I'm sure he will be, as Grand Canyon is in his blood. Thanks for everything, Q!

As of September 1, Michael Ghiglieri will step up as GCRG president with John O'Brien filling the "Veep" spot. The new board members will be Bob Dye, Jeri Ledbetter, and XXXX. Continuing on the board for one more year will be Matt Kaplinski, Drifter Smith and JP Running. It's going to be a challenging time, but this is a top-notch group of folks who will work hard on behalf of GCRG, the Grand Canyon and the Colorado River. We're lucky to have them. Our sincere thanks go to Chris McIntosh, Clint Anderson and Dave Christensen as outgoing board members for all their hard work the last two years. You guys have been wonderful and we appreciate your contributions and dedication!

The guard may be changing, but as we've said before, the board cannot work in a vacuum. We are here to represent you. That means that we need *your* input and energy as well—come to a board meeting (we'll feed you pizza!), write us a letter, call the office, contact the board members, ask those burning questions, volunteer. We want to hear from you. Let's work together!

Lynn Hamilton  
EXECUTIVE DIRECTOR

COVER: View of Grand Canyon from Desert View, ca. 1924  
Photo by Eddie Newman  
NAU.PH.90.9.1760

Thanks to Special Collections and Archives, Cline Library, Northern Arizona University

## “Pride of the Canyon”

ONCE AGAIN, writing the Presidential blurb is the last thing the editors are awaiting. Often it has to do with writer's block, having too much to say, trying to encompass all the latest happenings. So it is with this column and I apologize and wish to thank the editors, Mary and Katherine, for their superb work and especially their patience.

The recently renewed CRMP scoping sessions in five cities have begun and will be finished by the time you read this *bqr*. Members in the Four Corners states received an announcement giving cities and dates. As the deadline is September 20th, there is still time to send in your comments. All meetings so far have seen large crowds and many GCRG Board members and at least four Presidents attended in Flagstaff. The CRMP is probably the most important event for GCRG members since the Grand Canyon Protection Act and the Glen Canyon Dam EIS, so please make sure you submit your thoughts and opinions. Starting with a previous Board stance, the current Board has met and discussed an organizational position and hopefully you will find it “food for thought” as you formulate your stance. The CRMP is a NEPA process, so there will be other opportunities for input but if not now, the next one will be after the Draft EIS is issued and a preferred alternative identified (see details elsewhere in this issue).

Speaking of GCRG Presidents, ten of the twelve (Kenton counts twice) showed up at the Old Timers GTS, eight even being herded for a photo session by Dave, Geoff, and Kate. Appropriately, they posed next to a warehouse sign that simply stated “Clean Up Your Mess.” Which brings me to one point I'd like to make: that the GCRG is often accused of being anti-motor. Of the twelve Presidents so far, four might be counted as strictly oar, three strictly as motor, and five with both affiliations. That's about as even as you can get and I feel the Board also falls along those lines. The current Board acknowledges the historical use of motors and the continued use as an effective management tool.

Leading to another point: that GCRG is a Flagstaff club. Founded and based in Flagstaff, the largest contingent of Guide membership is in Flagstaff. We have had Board members from other states and areas, and encourage participation from all Guide members. This year's ballot is well-balanced and reflects that position: two each of motor and oar guides; two of four from “north” of the Canyon; and another woman re-entering the fray. This was the hardest ballot for me to choose three of four highly qualified candidates; as I write this, the tally is too close to call, so I know that you have probably had the same debate.

Lynn's financial report will detail the outpouring of

support from the entire membership in a last-minute fund raising effort. I want to thank everyone for contributing above and beyond the call; it is truly heartwarming. Lynn also did an incredible job of writing, contacting, and following up on numerous grant possibilities. Both efforts successfully contributed to assist the financial stability of GCRG. Unfortunately, for the reasons delineated in the report, the Board has voted to increase dues slightly. Dues began at \$20 in 1988, went to \$25 in 1995/96, and will soon be \$30 per year. The five-year rate goes up to \$125 (from \$100, still a savings) but life membership remains at \$277. Right now, for a limited time, you can still join, renew, and upgrade at the current prices.

As I come to the close, I would like to thank you for being with me for this ride: the membership; Mary and Katherine, editors; all the Board Members; Lynn, the catalyst in the adhesive that glues GCRG together; and best of luck to Michael, on his run. As JWP finished his “turn in the barrel” (see *The Best of Bob Boze Bell Low Blows*, 1994, p. 111), in leading this trip for the last year, so must I. I have been proud to serve as your GCRG President. But, more importantly, I am proud to be a member of GCRG, to be a river guide, to be a boatman in the Grand Canyon. Member or not, all of you should also be proud of the effort and job you do. All have their setbacks, but this is some of the best work in the world.

A quote from Bill Beer (*bqr*, Fall 1996, 9(4):7), river runner, old timer: “You've got a tremendous organization with a tremendous group of people. And I don't think the world recognizes what you are. I don't even think you recognize what you are...Respect yourselves...There's no organization like this – no national park in any country has an organization with the efficiency and the intelligence that you guys have. I'm astounded at the quality of people here. And I say to you – if you don't want to use it, that's up to you – but don't underestimate yourselves.” Thanks, Bill, and from him and me, “Always have fun.”

Q.



## Dear Eddy

**B**Y NOW EVERYONE is probably aware of this season's gastrointestinal bug that made approximately sixty people pretty miserable back in June. I haven't confirmed this but I heard from a friend that there have been a few more cases in recent weeks. The health department and the Center for Disease Control and Prevention (CDC) are calling it a Norwalk-type virus. These are fairly hardy little germs that are able to survive in varying temperatures from freezing to around 140 degrees fahrenheit and are resistant to relatively high levels of chlorine. You can get it from contaminated food and water and from close contact with an infected person who is shedding the virus. The people who study this sort of thing used to think that a person who has been ill remained contagious for 48-72 hours after recovery but recent studies have detected viral antigen in stool samples for up to two weeks after illness. This is where we need to sit up and pay attention.

About four days before I was supposed to leave on my first river trip I woke up in the middle of the night with what I thought was a case of food poisoning. I'll spare you the details but I was too sick to do a shuttle drive that morning. I stumbled around in a daze for a couple of days trying to get ready for my trip and by the day of the trip I was back to a hundred percent. I voluntarily submitted a stool sample for analysis at the request of management the day before I was to leave, the results which would not come back for another week. As I was literally pulling out of the driveway to go to the Ferry I received a phone call telling me that a park service bureaucrat had issued a recommendation stating that anyone who has been ill on the river should not go out on another trip for a period of fourteen days following their illness and that I was being pulled off my trip. Needless to say, I was a little dismayed and very pissed off because (1) I hadn't been on the river yet this season, (2) no test results had returned showing I had this Norwalk-like virus and (3) this was supposed to be only a recommendation. Obviously some pressure was applied to convince the management to keep me from going. If you don't know this already, you might note that the Parks "recommendation" has metamorphosed into a requirement. This is why I'm writing this article. As it turns out, I tested positive for the Norwalk-type virus and I'm pretty sure I got it when a shit can (that was ready to explode) was opened right next to me and I was exposed to the foulest vapor I have ever experienced. I drive a lot of shuttles when I'm not on the river and there was some speculation that I might have been exposed while in a closed vehicle with recently ill people. At the time I didn't factor in the shit can episode and I didn't believe

I had a Norwalk-type virus so I took no special precautions to avoid contact with people. It might be interesting to note that out of the dozen or so friends and relatives that I had close contact with starting the day I was bumped off my trip, no one became ill. Not the little kids that I wrestled with, not my 71 year old mother who I made dinner for, not the friends I shared beers with—no one.

My point in all of this is that I think the Park's requirement is unreasonable, unfair and unnecessary. Since the two week shedding period seems to be focused on stool samples, unless you are engaging in some pretty kinky sexual activity or digging thru shitcans there is little evidence to support the notion that you are a hazard to the public welfare. It makes sense to me that someone who knows they might be contagious could easily avoid the kind of contact that might infect others in a river trip setting by staying out of the kitchen, not shaking hands, being diligent in hygiene practices, etc.

I was told by Marlene Gaither that these bugs are so widespread in this country that chances are pretty good that one person on every trip could be a carrier. Do we start screening our passengers? Do we all need to wear full body condoms? Should we hide in a dark quiet room because the world has become too scary or should we approach this problem with the training, experience and common sense that most river guides seem to possess? I'm not suggesting that we treat this lightly. If you're puking your guts out at the Ferry you should probably stay home. You should also know that Workman's Compensation denied my claim even after receiving the positive test results. I was fortunate in that the owner of the company I work for payed me for the trip out of his own pocket. How many other outfitters will do that especially if a lot of guides are affected? I can think of a few that I'm pretty sure won't.

The park service is probably shooting itself in the foot with this requirement. I don't know but I just have this feeling that guides will stop cooperating with the data collecting if they know that the result will be lost income. If you have back-to-back trips and get sick at any point during one trip—and report it—you're likely going to get pulled from your next trip. This is the kind of insensitive, overreactive bureaucratic activity that we need to stand up to as a community of guides. Isn't that why we have a guides association? Certain park service bureaucrats seem to have an aversion to talking to the people whose tax dollars pay their salaries which is why I feel it's all the more important to let them know how you feel about this issue. Don't wait, do it today!

*Shawn Browning*

**A**S MANY OF YOU are probably aware, this season, there were several river trips on which a significant number of people became ill during or after their trip. These trips were concentrated in the first part of June. There were other trips before and after this period which had an occasional illness reported. The Grand Canyon National Park staff has been working with representatives from the Coconino County Department of Public Health, the Arizona Department of Health Services, the United States Public Health Service (PHS), and the Centers for Disease Control and Prevention (CDC) to collect laboratory samples and gather data to research the cause of these illnesses.

Through laboratory analysis, we have been able to positively identify a Norwalk-type virus in a number of samples. These virus are highly contagious and easily transmitted, especially within groups of people under close, confined conditions. In healthy adults the illness is generally of short duration with symptoms of nausea, vomiting, and diarrhea lasting 24–48 hours. However, in the young, elderly, or otherwise compromised, individuals the symptoms may be more severe and may pose a much greater health risk.

There were 58 confirmed cases reported in the period from May 24 to June 8, 2002. This figure may be adjusted as we gather more data from both commercial and private trips. We are currently gathering additional information from interviews and questionnaires and will develop plans for possible environmental sampling.

While this virus can be transmitted in several ways, including person-to-person and through food handling, the necessity of proper water treatment cannot be over emphasized. The proper method of water treatment is as follows:

- Obtain water from free flowing areas of the river or side stream.
- Settle the water to remove suspended solids (use alum to settle fine particles if the water is murky or muddy).
- Filter and disinfect or boil the water to remove pathogens.
- Store the water in clean, sanitized containers.

The filter needs to have a pore size of one micron or less. The disinfectant can be either two drops of chlorine per gallon or five drops of tincture of iodine per gallon of filtered water. Both filtering and disinfection are necessary to make water safe to drink. If you boil the water, it must boil for one minute plus one minute for each 1000 feet above sea level.

If any person becomes ill during or shortly after a river trip, whether it is on a private or a commercial trip,

the illness should be reported to the Grand Canyon Illness Reporting Coordinator, Jim Nothnagel, 928-226-0168. This information is crucial to tracking illness on the river so that we may identify what is causing the illness and determine what we can do in the future to help prevent it. I would like to extend a special thanks to all of the guides and private boaters for their help and cooperation in dealing with this latest outbreak.

*Jim Northnagel*  
GCNP SANITARIAN

#### REGARDING INTERVIEW WITH TOM MOODY, BQR 15;2 — FASCINATING!

**A**CORRECTION: the Neffs—Everett and Lizzie (Rich and Donny's dad and mom) ran my grandmother's (Mae Moe) Nevills Lodge after she had sold it to Utah Wonderland Tours who then sold it to the Riggs. I am not certain if the Neffs or the Ferees bought it from Jack and Shirley Rigg. At any rate they didn't not know Daddy, maybe of him.

Donny and Rich both ran for Gay and I—Mexican Hat Expeditions and Glen Canyon Boating. Also he did not run the cataract boats down the San Juan and Glen—San Juan boats were used for that purpose. They were sixteen feet long, approximately six feet across at the oarlock, with decked over stern and bow for storage. They too, ran stern first, but were *great* in the famous sand waves. They carried four passengers, plus the boatman. Donny was, I believe, the youngest to row a cataract boat through the Grand Canyon at probably age 59. Donny was one of the most delightful people—funny, hard working and a great employee.

*Joan Nevills Staveley*

I'M FINALLY HOME for a couple of weeks after a hot summer's worth of commercial trips and I have come home to an action alert from the Flagstaff Activist Network in my mailbox. It says, "Grand Canyon needs your help!" I opened it promptly, expecting to read about some pending environmental threat. Instead I find an urging to attend the Colorado River Management Plan (CRMP) scoping meeting and am given "information" to convey. These points include:

- *"Tell the park to provide outstanding opportunities for solitude and a primitive recreational experience without the use of motors."*

Boatmen know, given the current allocation, that this is a contradiction. Get rid of motors and solitude will certainly be a thing of the past.

- *"The general public, citizens who don't need the corporate river outfitters, must wait up to twenty years to obtain a permit."*

Boatmen know this is extremely misleading at best. Most private boaters are hardly the "general public" and we keep running into the same ones over and over again. Has anybody ever waited twenty years? The waiting list is a system that encourages hoarding, cheating, and gluttony and is keeping the "general public" out of the Canyon.

- *"Motorboats are not as safe as oar-powered craft."*

Boatmen know that this is just untrue and hardly deserves comment.

These quotes are only a sampling of the misinformation that is being spread. Who are these people? I could list the twelve groups in the letterhead but it is probably fair to say that these ideas come from the Grand Canyon Private Boaters Association (GCPBA)...of course. Look 'em up on their web site and you will be able to distill all the above.

It turns out that many of the Concessionaires are sending out a similar request to past clients and boatmen to get comments into the CRMP and to counter the message of the GCPBA. This incorporates a full page of "information to include in your comments." Even though I cannot find any misinformation in these points, I still come away feeling manipulated, the salient issues being conveniently overlooked.

So this is how the management plan will be decided. Everybody dancing around the real issues to protect their particular positions. The private boaters association duking it out with the concessionaires using the same political tools like spin control and "talking points" (the term that was used by Vernon Jordan in an attempt to manipulate Monica Lewinsky's testimony to a Grand Jury). What a mess.

Let's speak the truth here, the real questions are simple:

- Do motors hinder a wilderness experience or provide for one by creating less contact between groups?
- Can we consider placing limits on the number of times an individual (private or commercial) boater can access the park? There are no limits now.
- Is it really fair for a commercial company to make millions(?) of dollars, selling access to a National Park? Especially when non-commercial access is so difficult to attain.

Seems like quite a few of us are too afraid to ask these questions. Why? Well, simply put, our jobs depend on a continuation of the status quo.

But here's what's really burning me...where are our voices? Why is it that the men and women who may have a monopoly on common sense concerning these issues are silent? Are we really just afraid? Where is our Boatman's Activist Network? Where is the Grand Canyon River Guides(GCRG) for God's sake? Has common sense become so unfashionable as not to speak it?

So go to the meetings if you can or send in your comments or go to the computer right now and e-mail your points to [gca\\_crmp@nps.gov](mailto:gca_crmp@nps.gov). But whatever you do, make the words your own. No matter how tempting it is, I for one, will refrain from telling you what to say.

Dan Hall

#### REGARDING INTERVIEW WITH DAN DIERKER, BQR 15:1

I DID ENJOY Lew Steiger's interview with Dan Dierker included in one of the latest BQRs. It brought back memories of my first ever river trip with Dick McCallum and GUYE (Grand Canyon Youth Expeditions) in June 1971. Ah...lunch, "Georgie" style. But Dan forgot to mention the pilot biscuits—seemed to be a staple of every midday meal (at least on our trip).

My trip was a girl scout trip. All of us, ranging in ages from 12–14, attended Flagstaff Junior High School. Some of us were on the pom-pom squad. I'll never forget practicing our routine one late afternoon on a beach somewhere in the lower Canyon. What a sight.

Thanks again for the article. It was great.

Robin Slayton-Martin

DON LAGO IS TO BE congratulated for the exciting discovery of another Jack Sumner letter, written late in life (1906). In addition to repeating much of what he wrote to Stanton (*Colorado River Controversies*) he adds the suggestion that Walter Powell was afflicted by “petticoat dementia” which Don takes to mean syphilis. My research suggest otherwise: Walter Powell’s military records in the National Archives in Washington D.C. contain a number of affidavits written throughout his life in support of a disability pension for insanity. Not one of them alludes to anything related to venereal disease. Particularly telling is the twice repeated affidavit from a fellow officer, one Lieutenant Xavier Picquet. This is paraphrased in my novel, *The River Is Mine* in the form of a conversation between George Bradley and John Wesley Powell (pp.115–116). The full text of one of Picquet’s letters follows; his spelling and punctuation have been retained:

Statement in relation to Capt W.H. Powell late of Co 2nd Ill Light Art.

*I was well acquainted with him, served with him in the 4th Division 17th A.C. [Artillery Company] during the fall of 1863 and all through the Atlanta Campaign, up to the 22d of July 1864, on which day we were both captured by the enemy, we were in the same prisons, but were at the time that the following events happened, at Camp Sorghum, the name of the prison (illegible) at or near Columbia S.C.*

*At that place Capt W.H. Powell was taken down sick, and sent to the Hospital so called because it consisted of a tent. We neither saw nor heard any more of him until thanksgiving day, on that day our mess was assembled in our humble cabin speculating on what was probably still in reserve for us, when what was our astonishment he suddenly appeared amongst us, he stood, His tall form dominating all of us, his head towards the heavens, his arms held aloft in supplication as it were, and out of his lips there poured forth an eloquent but solemn and sad prayer, for an instant we stood confounded, and instead of a general and hearty peal of laughter the tears stood in our eyes, we perceived that our comrade was out of his mind.*

*We gently took him to the Dead line & called the officer of the day to whom we consigned him, we then learned that our comrade in his delirium had escaped from the Hospital and at the peril of his life rushed across the Dead line to see his comrades. That is the last time I saw him. During the time I knew him, that is about a year of army life Capt W.H Powell enjoyed good health. Written with my own hand without dictation. Xavier Picquet*

*Late 2d Lieut Co K 32d Regt Ill (illegible)  
A.A. Ordn officer 4th Div 17th A.C.*

While not conclusive, Picquet’s letter offers evidence that there was nothing wrong with Walter Powell until he was subjected to the rigors of incarceration without shelter in rain and sun, suggesting that sunstroke was a more likely cause of his illness. Further evidence lies in his surviving another fifty years to 1915, hardly the longevity of a syphilitic in those days. By contrast, there is no evidence anywhere of “petticoat dementia.” It’s well known that Sumner hated Walter, calling him in a letter to Stanton, “About as worthless a piece of furniture as could be found in a day’s journey.”

In this latest letter Sumner repeats his earlier statement to Stanton that Bradley died of an accident in San Diego, whereas he actually moved back to Massachusetts and died there a few weeks later, in 1885 (see Darrah, *Utah Historical Quarterly*, 1947).

That Sumner was an important member of the expedition there is no doubt, but his later statements that he took “full command of the expedition and Keep (sic) it to the end” expanding his earlier, “I had undertaken much of the running part of the expedition” is no more credible than Powell’s taking credit himself for everything that happened, except, of course, the accidents and the alienation of the Howlands and Dunn.

*Ardian Gill*



# The Last Hand Hold

## Harvey Butchart 1907–2002

I'LL ALWAYS HAVE FOND MEMORIES of my treks with Harvey Butchart. I had the fortune to traverse places with him few people have, and places that I thought I never would. The distances we wandered were vast, and the terrain we traversed was some of the most rewarding I've ever had the opportunity to experience. From the mountains of eastern China, to the flatlands of Illinois, to the hidden recesses of Grand Canyon, we logged many miles together.

Yet, despite all the ground we covered, we never actually shared the trail. And while I'd followed in his footsteps on so many occasions in Grand Canyon, I've never actually seen his tracks. But I always knew they were there.

Unfortunately, by the time I got serious about my Canyon hiking, Harvey was well into the twilight of his astounding canyoneering odyssey. Years ago, like so many Canyon hikers once they started looking beyond the corridor trails, I inevitably learned of Harvey Butchart. His name was synonymous with hiking the Grand Canyon backcountry, and his legendary status was already as entrenched in the Canyon as the rock itself.

For decades starting in 1945, Harvey Butchart dedicated his life to the most intimate and personal of landscape exploration, travel on foot. Like no known person had ever before, he tenaciously wandered Grand Canyon's hidden passages, scrambled its lofty pinnacles, and viewed its awesome realities with undying devotion. Before it was over, the native of Hofei, China and former Northern Arizona University math professor, would ramble some 12,000 miles, summit 83 peaks (35 as inaugural ventures), pioneer more than 116 approaches to the Colorado River, and garner the respect and admiration of countless Canyon nomads.

For myself, as with so many hikers who've also trudged in his wake, Harvey Butchart eventually became just Harvey. His first name was simple, yet

endearing when used with the informality and affection typically reserved for friends. It also was literally a Canyon buzz word, and I quickly learned that phrases like, "Harvey says" and "according to Harvey" were standard jargon in Canyon hiking circles. Beyond

that, his hiking logs and *Grand Canyon Treks* books were like the gospel according to Harvey, a source of truth and wisdom for the remote Canyon trail.

Although I felt kindred in spirit, when I first approached him, it still wasn't without some hesitation. I knew he encouraged correspondence from his *Grand Canyon Treks* books, but I wasn't sure to what extent he welcomed it. After all, he was, again, the fore-

most Grand Canyon hiking expert and the inspirational mentor for a multitude of hopeless Canyon-hiking addicts. And despite several years of my own hiking in the Canyon, my experiences were comparatively trivial, which I thought he might find irritating, somewhat like a neurosurgeon trying to discuss the finer aspects of brain surgery with an EMT. Fortunately, just the opposite was true. In classic down to earth, humble Harvey Butchart fashion, he was free and patient to share his Canyon experiences with someone like me. Through it, in a literal but very real sense, we were able to have those memorable journeys for which I am very grateful.

As for Grand Canyon, while his footprints have long since vanished, the impressions he made are still there, and always will be. I believe that more than ever now. If you look you'll find them, and if you listen hard enough, you'll also hear his footfalls beside your own. They'll always be there, for inspiration, guidance, or just company. A lasting legacy, to a remarkable man, in a remarkable place.

Born on May 10, 1907 in Hofei, China, John Harvey Butchart was the second of four children born to James and Nellie Butchart, missionaries to China for the Disciples of Christ Church. His father, an Ear, Eyes Nose and Throat (EENT) surgeon, tragically died



Math Department: Dr. J. Harvey Butchart, 1947.  
NAU.ARC.1947-5-17





Harvey Butchart in hiking gear, Flagstaff, 5-27-61.  
NAU.PH.97.46.96.12

from an infected wound in 1916, in 1920 the Butchart family eventually returned to the U.S., and his mother's home state of Illinois.

Ultimately settling in Eureka, Illinois, Harvey (who was referred to by his middle name) went on to attend his mother's alma mater, Eureka College (as did future president and classmate to Harvey's younger sister Ruth, Ronald Reagan). Graduating in 1928 with a degree in math,

he married his college sweetheart, Roma Wilson, a year later, in 1929.

After earning a Ph.D. in mathematics from the University of Illinois in 1932, the depression had Harvey teaching around the Midwest in various positions, including university faculty stints in Indiana, Oklahoma, Missouri, and Iowa.

In 1945, Harvey applied and was hired for the position of math professor and department chairmen at Arizona State College in Flagstaff, Arizona. Mainly the move was to try to get to a drier climate at the urging of their doctor, for daughter Anne's asthma. It was a good match. In September of 1945, Harvey hiked in Grand Canyon for the first of what would eventually tally over 1000 days. It was be the dawning of a new hiking era in Grand Canyon, and heralded in Harvey's reign as the undisputed monarch of its hikers.



Harvey and Susie at Turquoise Bay, October 1, 1967  
Phot by P.T. Reilly  
NAU.PH.70.3.3118

He did his last Canyon hike at age 80 in 1987.

Harvey "slapped the wall above his last hand hold" and finished his final trek in Tucson, Arizona on May 29, 2002, dying at the age of 95. He was preceded in death two months earlier by Roma, his wife of nearly 73 years.

Thanks for everything Harvey. You were right. It really was a "sporty" climb.

Tom Myers

## Jan Yost

Andy Hutchinson



JANET LEA YOST passed away unexpectedly in her home in Durango, Colorado on July 15th, 2002, just a few weeks past celebrating her 46th birthday. This has been a tremendous shock to family and loved ones, especially those whew knew how happy, healthy and full of life she was.

As head of the art department at Durango High School and river guide for Grand Canyon Expeditions, Jan surrounded herself with the things most important to her—love and beauty. She considered the Grand Canyon a second home and carried that spirit of place through her daily life. Through her numerous commercial and private river trips in the canyon as well as her

extensive backpacking adventures from both the north and south rims, she soaked the love and beauty up and it spilled over onto those around her. Like most canyon lovers under the spell, Jan was empowered by the Canyon, and knew the magic of translating it to others—passengers, students and friends alike. She was a teacher in the truest sense, a living example of being true to yourself—and it was infectious.

Janet was a fine watercolorist and her paintings say much about her. As a painter of landscapes, still-lives and portraits, her dominant subject matter was Grand Canyon. From rim vistas to a sagebrush valley to water reflecting off polished cobble at the base of a rapid,

Jan is a deer at Nankoweep, a Bighorn running up a slope in Conquistador Isle and a Canyon Wren in Blacktail. Her spirit is painting a line of dories in the Havasu Harbor or sitting on the rim at Toroweap with her feet dangling off into the abyss, watching swifts play in the air. She's riding off into a Maynard Dixon sunset, in her boots and chaps, wearing her favorite red bandana on her horse "Red". Adios Juanita, vaya con dios, our dear one!

*Andy Hutchinson*

Allen Gillberg



there is a warm glow in her work. Jan loved vivid, bright colors, true and strong, underneath subtle layers of shadow and form, creating fabulous depth. Like a campfire on a brisk, cool evening, her work grabs you from afar and pulls you in for a closer look. She was always "mind painting", whether sitting on her boat in the early morning sipping coffee watching the light change, or describing shadow play to her passengers on the river. She pushed her students to maximize the potential she observed in their work. One might say she had a magic eye for this or perhaps just the patience to study it all. Quality over quantity and the journey rather than the destination were her obvious priorities.

Janet was a true romantic. A "Harvey Girl" with a cowgirl's heart, she loved the west and all of its extremes. She will be remembered that way by those who were fortunate enough to know her. Especially her husband, Derald Stewart, whom she introduced to the Grand Canyon. He has told me she changed his life and sent him down a new path. Her friends would agree that she taught us all something that has enriched our lives.

#### ODE TO JAN

I cried myself to sleep  
Last night when I learned  
That you had gone.  
But knowing you has  
Given me strength,  
So I guess I'll just carry on.  
Your spirit is free  
But left are we  
To ask the question why?  
Doesn't it seem just way  
Too soon for you, my friend to die?  
Ah Jan, but while you were  
Here, perfectly clear,  
A beautiful song was sung  
And in our hearts there  
Will always be  
A vision of you—  
forever young.

*Steve Nicholson*

## A Colorado River Plant Guide

**T**HE MONSOON RAINS have coaxed our plant friends along the river out of hiding long enough for us to begin to categorize, photograph and describe them for a field guide that is currently in the works. To date, we have been hunched over our Excel file comprised of 250 some-odd plant species we are considering for the field guide, and now we are looking for your input.

Although our format has not been formalized, we wish to include a variety of perspectives on plant ecology, name origin, natural history, prehistoric and historical use, and contemporary significance. In addition to this information, each plant will have a description, photograph, and line drawing. Many of you have unique ideas about how the plants of Grand Canyon shine, adapt, survive, and strategize: perspectives we hope you will share. Maps and photographs are especially prized if you've been playing with your camera this year.

We have also been conversing with the Grand Canyon Association (GCA) about the possibility of a publishing contract. To date, the project has won the support of Grand Canyon National Park staff, and we will know more about the possibility of publishing with GCA in October, when their Board of Directors meets.

We are looking for suggestions—what would make the most sense from the people who spend the most time on the river admiring or puzzling over these plants? At this point, we are organizing the list of species as well as who would like to write plant descriptions and contribute art and photographs. Our deadline for a preliminary draft is October 1st. If you would like to receive a copy of the species list, a sample plant description, or be on our list serve to receive updates, please contact us. We appreciate all of your enthusiasm and support and thank you for your help!

*Kristin Huisinga, Kate Watters and Lori Makarick*

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## 2002 Fall Meeting in Flagstaff, November 2

**T**HINK FALL, and think meeting time! The 2002 GCRG fall meeting will be held on Saturday, November 2nd at the Professional River Outfitters (PRO) warehouse located at 2800 West Route 66 in Flagstaff (across from Woody Mountain Road). The meeting will run approximately 9:00 AM to 5:00 PM with dinner and party afterwards. Planning is in its early stages, but you can bet we'll be talking about the progress of the CRMP, possible test flows, and Whale Foundation info among other things! So, bring a small chair, a mug and dress for the weather in case it's actually nice and we can be outside. Bring some dough too so you can stock up on GCRG goodies for Christmas! Oh, and one more thing—we realize that many river guides have dogs, but if you can leave them at home, we'd appreciate it. Too many dogs and ensuing "altercations" have become increasingly disruptive to our big meetings. So, help us out and come pooch-less. We'll find some fun film footage and feed you breakfast, lunch and dinner. Mark those calendars so you don't forget and remember that it's the first Saturday after Halloween! See you there!



## Adopters Still Needed!!

**A**DDITIONAL VOLUNTEERS are needed to adopt a few more beaches for our 2002 Adopt-a-Beach program. It is not too late to help out with this photo monitoring program if you have more trips lined up this season. Priority beaches that need additional coverage are: Grapevine, Lower Tuna, Bass, 110-Mile, Lower Garnet (and Upper Garnet), Matkat, and Travertine Falls (below Diamond Creek). Low priority beaches still needing coverage are 23-Mile, Boucher, Talking Heads, and Upset Hotel. National Park Service personnel have been kind enough to pick up some of the aforementioned “orphan” beaches, but we still need the more systematic monitoring that guides can provide to strengthen our data.

So, call the GCRG office right away at 928-773-1075 and Lynn will set you up with everything you need. It's an incredibly worthwhile program and your efforts help on so many levels—stewardship, resource protection, flow management, public awareness and more. We've been monitoring the beaches since 1996 and are now able to establish trends and causalities over time. We've even added some beaches in the Glen Canyon reach as well as below Diamond Creek to round out the dataset and provide a more complete picture throughout the system. Let's keep the Adopt-a-Beach program strong!



## Moving Waters Culminating Conference

**Y**OU ARE INVITED to attend the Moving Waters Culminating Conference, September 25–28, marking the end of *Moving Waters: the Colorado River & the West*. The conference will be held in the duBois Ballroom at Northern Arizona University in Flagstaff, Arizona. From December 2001 through July 2002, Moving Waters has presented hundreds of programs in more than 22 communities within the seven states that share the waters of the Colorado (Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming). Moving Waters has explored the history and meaning of the Colorado River, and has endeavored to generate a regional consciousness of the river.

The conference will be a public space where a dynamic conversation will occur with a diverse audience of researchers, policy makers, and advocates. The conference will consist of lively panel discussions, interesting plenary lectures, book vendors, an author's reception and book signing, and a wonderful celebration of story and music with Katie Lee and friends. Field trips will be optionally available at the conclusion of the conference.

Please join us at NAU in Flagstaff this September for the Moving Waters Culminating Conference. For a complete program, fees and registration information go to the Moving Waters website at [www.movingwaters.org](http://www.movingwaters.org) and select Culminating Conference. For questions about the conference, call 928-523-0494 or email [community.culture@nau.edu](mailto:community.culture@nau.edu).

## Announcement

**A**nother boatman has entered this world. Anders Lee Neimi was born on August 6, at 5:20 PM to Lars and Melissa Neimi. He weighs six pounds, twelve ounces. Both mother and baby are doing most excellent.



## From the Back of the Boat—The Reentry Blues

I NEVER KNEW THERE was a name for it. I never knew anyone else felt the same bitter sweet pain—of loving my river home and the red rocks so much, that each leaving carved a huge hole in me.

As the Whale Foundation has evolved, I've been privileged to hear from some of you who also have Canyon red for blood. I feel relief I'm not the only one who feels torn away from the vital river world, to be thrust back into the busy tumult, with no time for dreaming or just being.

I now know the word for that yearning—reentry. Reentry means we have to brace against the moment when the gear truck turns away from the river corridor and sighing, we adjust to a different, faster current. These are the dues we pay for being embraced by that vast, unique universe that others can only dream of and may never know. Listen as Katie Lee eloquently writes about that switch we have to flip in order to rejoin the up-top world:

“You will never be homesick until you have a home. You will not suffer ‘reentry syndrome’—until you've been out of this world. Until you have touched, seen, become a part of the Other World, heard its call, and felt the magnetic pull to go back *out* of this world and return to Nature's.”

Reentry takes many forms, its pulse not the same in each individual, but the greatest manifestation of this syndrome won't be denied—Frustration. The frustration of not being able to explain the Other World to someone who hasn't been there. Where one person will feel ostracized by this disconnection, another will feel aloof and pleased. Some will be angry, some joyous, others thwarted and disgusted with the world they live and work in. Some even feel guilty for having experienced what the others have not and cannot share.

At times that makes me feel like the most fortunate human being on this earth—at other times, the most devastated.

We Riverphiles are plagued as soon as we leave the sounds of a living river behind.

Brad Dimock, co-author of *The Doing of the Thing* says, “For many of us, reentry is the hardest and most disturbing part of the river experience. Having just recently discovered (or rediscovered) an entirely different world, it is wrenchingly difficult to leave it, to return to the so-called real world. Which, one wonders is the real world after all?”

The more one comes to know and love the river and the solace it brings to the soul, the more miserable reentry can be. Those of us who spend our lives on the River experience the symptoms on an even greater

scale. The end-of-season blues can be devastating, the worst of all is the time when a boatman must leave the river for family, health or fortune. Many of us never fully reenter, but live out our lives trapped in some limbo, torn between the pain of parting from the River, and the joy and vision it has given us to carry through life.”

Adam Stern of Glen Canyon Institute, noted a particularly difficult reentry from the Green River: “The first visit was breathtaking, the return visit was breathgiving. But by the time I approached the airport, I felt like my spirit was being squeezed into a snug piece of Tupperware after it had just spent a week expanding in the sun. Sad, because I felt like I was giving up the week's gains.”

In retrospect, however, I think the long term benefits justify the pain of reentry. That's why we return to sacred spaces. The trials and scares we encountering the wild, as well as the awe, are Good. The experience of living in the real world (nature's) as opposed to the human construct grants the ability to separate real problems in your life from imagined ones. This provided perspective to get on with the task of living, if you're enough, or to humbly accept your failings if you're not—Reentry demands a physical return to rank and utter bullshit (comfort of home excepted) but with a spirit strengthened, wizened by the experience, more equipped for living—maybe.”

Katie gently reminds us to “Step lightly. When your friends have just come off the river or a wilderness hike, give them space—try not to ask serious questions, or have them concentrate on a problem—they're still ‘out there,’ not at all ready for this brain-battering, rivet machine we live in and must deal with. Quite likely they are wishing they were not here with you at all.”

Reentry may be the cost we all share in being allowed to experience a unique world others can only dream of, and may never have. It is real, but so is the beauty we have gathered within to replenish ourselves with memories, pictures and camaraderie—until we're again, in our canyon world. Let us know if you want to talk about the transition, we will hear you.

Sandy Nevills Reiff  
THE WHALE FOUNDATION

(See Katie's entire article in *Mountain Gazette*, No. 86, and in a forthcoming book of river essays. The Whale Foundation is dedicated to supporting the well being of the Grand Canyon guiding community with mental, physical, spiritual and future planning professionals.)

# Things to Remember on the River Trip of Life

## Lees Ferry to Waltenberg

**G**OOD HEALTH IS MUCH BETTER than ill health whether we're talking physical or mental. The Whale Foundation's mission is to support the guiding community, so here's a health thought for every mile...Lees Ferry to Waltenberg this time and on down to Diamond next issue. Enjoy and just do it!

Exercise is good  
Make it fun  
Have a goal  
Everything about running holds true for walking, too  
Stretch before exercise  
Face traffic  
Don't run on the canted side of the road  
Minimize hard surfaces; concrete is the worst  
Gradually increase speed and/or distance  
Wear a hat  
Use sunscreen  
Protect your feet from sunburn  
Use sunglasses  
Sun protection for your ears if you wear a baseball cap  
Eat breakfast  
Juices are good  
Eat slowly  
Avoid fad diets  
Fruits  
Use seat belts  
Use a designated driver  
Don't drive too close to the car in front of you  
Practice safe sex  
Practice makes perfect  
Have mammograms  
Do breast self-exam or testicular self-exam...your choice  
Don't smoke in bed  
Don't smoke out of bed  
It's ok to seek help or advice  
Be honest with anyone trying to help you  
Having a bad run in life?...call the Whale Foundation  
hot line 866-773-0773  
Exercise is a good anti-depressant  
Run with a friend...two legged or four  
You're never too old to exercise  
Cross training is good  
Rest days at least once a week are good  
Run or hike in new places  
Don't wear ear-phones running alone  
If you go to New York, run in Central Park  
Upper body conditioning helps you run or hike more  
efficiently when tired  
When it concerns the brain or the body, use it or lose it

Cultivate an optimistic approach  
Be open to non-traditional theories  
Be open to traditional theories  
Find a doctor or other practitioner who will listen to you  
Avoid road rage  
Avoid river rage  
Wear a life jacket on the water  
Don't camp in streambeds or desert washes  
Don't hike slot canyons in monsoon season  
Filter your water  
Tell someone your route and plans when hiking alone  
Watch out for rattlesnakes  
And scorpions  
Get a tetanus booster shot every ten years  
Have dental cleanings regularly  
Brush teeth after each meal  
Floss  
See your dentist if you grind your teeth  
Whole grain foods are good  
Olive oil or canola oil is better for your arteries than  
butter  
Soy is a good source of protein  
Cranberries, oranges, apples and green leafy vegetables  
are good anti-oxidants  
One can of soda daily adds up to fifteen pounds in a  
year  
Support locally grown organic produce  
Read food labels  
Compost  
Get into shape slowly  
Run or hike in beautiful places  
Stretch after a workout, too  
Have at least two pairs of running shoes  
Have a stress test before a major change in exercise  
intensity if you're over 45 or have a bad cardiovas-  
cular family history  
Walk, run or bike at least once to raise money for a  
good cause...such as Team in Training  
Be careful running downhill  
Make sure you have comfortable shoes  
Buy new shoes late in the day  
Don't use running shoes over 500 miles  
Do back exercises daily  
Bend knees when lifting  
Lift close to your body  
Be especially careful rigging and de-rigging  
Don't overdo it with machines at health clubs  
No "ballistic" stretching  
Kayakers can benefit from physical therapy advice on  
proper shoulder strengthening

Don't wrestle with Dan  
Any black mole or skin lesion needs to be checked  
Don't try to run with a stress fracture  
If you have tendonitis or some other overuse injury, do  
less stretching—instead have deep massage above  
and below the affected areas  
Rest during or between long runs is beneficial  
Avoid high impact activities if you have back or neck  
problems  
There's always a reason for an injury; learn from it  
Learn to recognize poison ivy or oak  
Practice using a throw bag  
Watch your feet on travertine  
Keep a clean kitchen  
Wash hands; you know when  
Use lotion or goop on your feet to protect them  
Know how to call for help—on and off the water  
Talk to old timers  
Listen to old timers

Talk to kids  
Listen to kids  
Keep your passport current  
If you're traveling abroad to work or play, check with  
the CDC or doctor or health department on malaria  
prevention, recommended vaccines or med's to  
take  
Know what you're allergic to and wear a bracelet if it's  
a dangerous reaction  
If you're asthmatic, know your med's and have them  
available  
The same with diabetes  
The same with seizure disorders  
Get shots to prevent hepatitis  
Travel light  
Never stop learning  
Appreciate every day on the river

*Walt Taylor, M.D.*



Tour to Hopi Point, West Rim Drive, Grand Canyon, ca. early 1900s  
NAU.PH.95.44.57.16

# Letters From Grand Canyon—

## Piracy and Capture Carve the Grand Canyon: Part A

**I**N THE PREVIOUS *Letter*, “Reversal” (BQR 14:3), we saw how the ancient stream pattern on the southern Colorado Plateau may have changed—by means that we don’t understand very well—from flowing northward into the sump lakes in Utah to something resembling the present southerly and south-westerly course of the Colorado River. Now it is time to focus on the area—northern Arizona—and the subject—the age and formation of the Grand Canyon—that hold so much interest for us. This is a complicated story with many theories and counter-theories, so we will have to divide this *Letter* into three parts, to be published sequentially.

### EARLY VIEWS: A SIMPLE SCHEME

Early geologists like Powell, and Clarence Dutton who wrote the wonderful *Tertiary History of the Grand Canyon Region*, were greatly impressed by the erosion they saw everywhere on the Colorado Plateau. So much erosion, they reasoned, must have taken long time and must have started early in the Tertiary Period, maybe some sixty million years ago. Since the erosion clearly is caused by the Colorado River and its tributaries, the river and its Grand Canyon must be that old also. What’s more, uplift of the Colorado Plateau, into which the Grand Canyon is cut, must be equally old. The reason is simple: You can only cut a deep canyon if the land surface is high above sea level, because rivers cannot cut below the level of the sea.

### CONFLICT

These views held sway for many years, but trouble started brewing in the 1930s and ’40s, when geologists working in the Basin and Range country west of the Colorado Plateau pointed out that basins in that region are filled with material deposited locally in closed depressions. This material contains no evidence for a major through-flowing river such as the Colorado. Along the course of today’s lower Colorado River, some of these deposits of interior drainage are as young as six million years or so, but in much of the Great Basin they are being laid down even today. Particularly troubling are young beds indicative of interior drainage that are laid down across what is now the course of the Colorado River at the mouth of the Grand Canyon: no Colorado River could have flowed through the mouth of the Grand Canyon as recently as six million years ago.

The grand simplicity of the early views was now disrupted by a grand dilemma: we knew that the

Colorado Plateau contains evidence of a south-flowing river system that is tens of millions of years old, but we had also just learned that the Basin and Range country, downstream along the same river system, contains evidence that the river is at most a few million years old. This contradiction was highly disturbing, the more so because most people thought—and many still do today—that the course of a river is more or less immutable once established. This implies that all parts of a river are basically of the same age, and that what is true of a part of the river must be true of the whole. Such notions are in stark contrast to the view (to which I subscribe) that river systems can, and in fact are likely to, change with time, evolving into new configurations by interconnecting in new ways, all brought about by some external stimulus such as uplift or warping of the land. Implicit in this is the possibility that different parts of a river can have different histories and be of different ages.

### CONFLICT RESOLUTION: ATTEMPTS

The last several statements should wake up the astute reader with a start. Wouldn’t this be a way of getting around the grand dilemma? Maybe the upper part of the Colorado River, on the Plateau, is older than the lower part in the Basin and Range province?

“Too novel”, said those who supported the notion of “One river, indivisible and old”. To avoid the unpleasantness at the mouth of the Canyon, they tried several tacks. The colorful geologist Charlie Hunt not only held fast to the notion of an ancient Colorado on the Plateau, but even gave this river its present course through the Grand Canyon. The river would then have escaped the immovable object at the Canyon’s mouth by means of a remarkable pirouette: the notion was that the Colorado exited the Grand Canyon southward by way of Peach Spring Canyon, an ancient valley a good part of which is now buried by younger deposits. Problem solved, thought Hunt. Unfortunately, it wasn’t, because my good friend Dick Young came to show that even the oldest deposits in Peach Springs Canyon point to streams flowing north into the Canyon, and not south, away from it as Charlie would have it. Besides, avoiding the mouth of the Grand Canyon does not solve the problem, which is a pervasive one: as we now know, any possible continuation of the hypothetical river downstream from Peach Springs Canyon towards the sea is just as plugged up by deposits of interior drainage as the area near the mouth of the Canyon.



Another notion that has been widely circulated is that the Grand Canyon and the river through it are in fact very old, but the river ceased to function temporarily at the time of the interior deposits in the basin and range country because it either ceased to flow or became so overloaded that it could no longer carry material through the Canyon into the country downstream from it. The result was that the Canyon became filled with debris, much of which consisted of “rim gravels”, deposits carried by the ancient northward drainage system and best exposed along the Mogollon Rim. This would make the canyon as old as the rim gravels, maybe even older.

There are many problems with this concept. One is that the Grand Canyon, all steep rugged walls and short stubby tributaries, has the characteristics of a young landscape. In the terminology of geomorphologists—people who study landscape—he canyon is “immature” and “youthful”, not thirty, forty, fifty million years old. Then, the rim gravels are much older than the interior-drainage deposits, so can hardly be used to explain away the great dilemma. A third problem is that the gravel terraces at Lees Ferry, held up as being part of the ancient fill of the Grand Canyon derived from the rim gravels, in reality are no more than a few hundred thousand years old, not tens of millions, and contain much material derived from the San Juan Mountains country to the north, rather than material derived from the south. But the biggest problem has to do with how rivers work: depositing hundreds or thousands of feet of fill into a large previously-carved canyon requires very unusual, and probably unrealistic changes in circumstances. The Colorado River has an enormous drainage basin that contains many mountain ranges, so is unlikely to run dry, as proposed. In any case, the large basin would ensure a high probability of floods, which are extremely efficient at carrying debris, and in fact do nearly all the work even in “normal” rivers, those with permanent flow. Desert washes seldom carry water, yet the occasional floods they experience are entirely adequate to transport whatever debris is dumped into them.

#### CONFLICT RESOLUTION: A NEW CONCEPT

The geologist Eddie McKee studied the Canyon so long and so well that many of us consider him a sort of patron saint of that remarkable place. In the early '60s, he decided it was time to do something about the great dilemma. He knew the Canyon as well as anybody, and this knowledge enabled him to identify two areas where important information was likely to be found. One was the Hualapai Plateau, including Peach Springs Canyon, where it should be possible to test Hunt's fluvial pirouette. The other was the Pierce

Ferry area, just west of the mouth of the Grand Canyon, where the infamous interior-basin deposits were alleged to lie. He then did three things to achieve his aim: he persuaded the Museum of Northern Arizona to establish small grants for the study of these areas; then, he found two enthusiastic and foolish graduate students (Dick Young for the Hualapai Plateau, and me for Pierce Ferry) to do the studying; finally, he set up a symposium for 1964 when Dick and I would present our results and the handful of people who knew anything about the Grand Canyon would get together to try to come up with some coherent—maybe even sensible—story on *How It All Happened*.

At this point, a little reminiscing seems appropriate. In the early '60s, the West was still the West, quite innocent of the current hordes of Californians, Texans and people from everywhere else. There was little in the way of retirement colonies or trophy-home settlements. St. George was a tiny Mormon town; Mesquite consisted of a couple of barns and maybe a farmhouse; Las Vegas occupied a few blocks; the north boundary of Phoenix was not far from Camelback; Flagstaff did not reach the Museum of Northern Arizona at one end, while the other Museum (the Club) was out in the boonies at the other. US 66 was the only east-west highway because no Interstates existed yet; Highway 164 to the Four Corners was a very long dirt road; you drove to Phoenix by going down Oak Creek Canyon, passing through a Sedona limited to Uptown and basically devoid of tourists and vortices alike. Verde Valley was almost empty. Glen Canyon Dam was being built and the concrete was coming by truck from Clarkdale through the Oak Creek road. Just a little later, Lake Powell started being filled and upper Lake Mead shriveled to a collection of puddles. No private individual had a four wheel drive vehicle; the plague of SUV's had not yet descended upon the land, and ATV's and dirt bikes happily had not yet been invented.

When Dick and I set forth on our respective missions, we went into a silent, empty, and untracked land. We got around mostly by shank's mare, and considered ourselves fortunate to have a few fifteen minute topographic maps. Mostly, we had no maps at all. There were no other geologists around to speak of—this stuff was just too remote. Nevertheless, in due course we did manage to get our work done, the symposium was convened, the arguing concluded, and the results published by the Museum of Northern Arizona.

The symposium proceeded largely by elimination: the river could not have done this, gone there. This is a sensible approach because you have a much better chance of proving that something isn't than that it is. So, yes, an ancient river did make it as far as the

Kaibab Plateau, but no, it did not leave the Grand Canyon near its western end. In fact, we felt, the river did not even cross the Kaibab Plateau, which seemed a formidable barrier. So, what did the river do, assuming it did not go underground or just vanish into thin air? Driven to some extent by a notable lack of alternatives, we proposed that the river followed the course of what is now the Little Colorado river but flowed in the opposite direction, that is, southeast. Eventually, the river joined the Rio Grande and emptied into the Gulf of Mexico.

To those outraged by such a notion, let me say that reversals in the flow direction of rivers are not that uncommon in geology. In most cases, the mechanism causing the reversal goes by the swashbuckling name of “piracy and capture”, whereby some vigorous stream extends itself through headward erosion far enough to tap some less-vigorous stream in mid course, suddenly stealing and diverting the unfortunate victim's water. Rivers and washes extend themselves this way when they have a steeper gradient, so more erosive power, than their neighbors. This—piracy and capture—was the big conceptual novelty introduced at the symposium, a novelty that suddenly had a chance of solving the grand dilemma by making it possible for different parts of the river to have different histories and ages. And this is just what we proposed.

The old, sluggish ancestral Colorado river had been flowing peacefully south then southeast into the Gulf of Mexico for perhaps tens of millions of years when strange events happened southwest of the Colorado Plateau: here, the restless movements of the great plates into which the earth's crust is broken produced a linear depression, the Gulf of California, which opened five to six million years ago where no gulf existed before. The narrow northern end of this gulf extended up to north of Bullhead City, well into what is now the lower Colorado River corridor and less than a hundred miles from the edge of the Colorado Plateau. And now we had the makings of great change. Having the Colorado Plateau, standing 5,000 feet or more above sea level, so close to the sea means that any stream developing into the western edge of the Plateau and draining into the Gulf would have a very steep gradient indeed, at least fifty feet per mile. The course of the present Colorado River in the lake Mead area and western Grand Canyon would have been especially favored: in the Pierce Ferry area, the river developed in the low spot of the pre-river basin; on the Hualapai Plateau, it followed the valley at the foot of the Upper Grand Wash Cliffs, enriching itself with waters draining northward from the Hualapai Plateau; farther upstream, the Hurricane fault provided a belt of shattered rock that was easy to erode. With such advantages, and the steep gradient that was its

birthright, the new river extended itself vigorously into the western Colorado Plateau, creating in the process the beginnings of the western Grand Canyon. In due course, the river reached and breached the Kaibab Plateau. This done, the new river was positioned to tap the old and sluggish ancestral Colorado, capturing and diverting its waters. Invigorated by increased flow and still made powerful by a steep gradient, the now-integrated river cut down like a buzz saw, carving out the Grand Canyon in just a few million years.

## CONFLICT PART II

This was a reasonable proposition that did not violate facts known at the time. But it had an Achilles' heel, which lurked in the country of the low divide separating the drainage basin of the Little Colorado River from that of the Rio Grande somewhere near the present Interstate 40. If the ancestral Colorado River indeed went where we proposed it did before capture, it should have passed through this area. But experts in the geology of the region were quick to point out that no known evidence documents the former passage through here of a river like the ancestral Colorado. This by itself was not necessarily a fatal flaw, because river deposits that could once have been there may later have been removed by erosion. But this problem became serious when combined with an additional one, which is that deposits and ancient surfaces buried by the Bidahochi Formation (in the Hopi Buttes country) seem more consistent with streams flowing generally northwest, as does the little Colorado River, than with the easterly flow direction required by our hypothesis. Since the Bidahochi is Pliocene and started being deposited perhaps six million years ago, the erosion surface on which it deposited must be older, which places it squarely in the time when the ancestral Colorado should have been flowing eastward through this region. Regrettably, the hypothesis advanced by McKee and colleagues did not stand the test of known evidence; it was necessary to abandon it, at least in part.

*Ivo Lucchitta*

*This is the seventh in a series of “Letters from Grand Canyon by Ivo Lucchitta that will appear in future issues of the BQR. This particular “Letter” will be divided into three parts.*

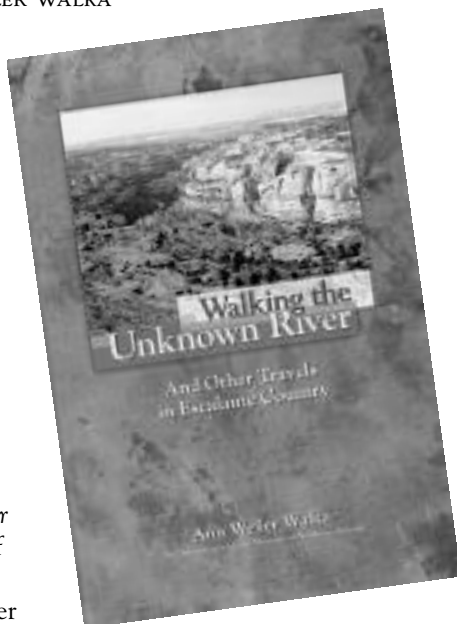
## Book News!

*Walking the Unknown River: And Other Travels in Escalante Country* BY ANN WEILER WALKA

THIS BEAUTIFULLY WRITTEN collection of poetry and prose recalls a wild and lovely place. John Wesley Powell's survey crew called this last river to be charted on the maps of the contiguous 48 states the Unknown River. The little stream, later named the Escalante, flowed into Glen Canyon of the Colorado across from Navajo Mountain and just above the mouth of the San Juan. *Walking the Unknown River* investigates this hidden heart of the Colorado Plateau

Walka's prose takes the reader on a walk down the Escalante in the rain, on an early mapping expedition of the Colorado Plateau, a trek around Navajo Mountain, and into a hidden glen in the Navajo Sandstone.

As a poet, naturalist, and guide, Ann Walka trains her curiosity and imagination on a landscape's weave of geologic processes, life stories, ecological relationships—all pattern and surprise which make up the world. This is a wonderful book to take along on any journey around the Colorado Plateau.



Climbing at Night at Scorpion Butte

Surely I dreamed myself into this world  
where stone hills gleam like upturned  
bowls. Climbing I press my palms  
on dented pewter, wedge bare  
feet into shadow.

There is a pool curved into a crevice  
between the hills, a sliver  
of white shell shimmering  
on its sleek black skin

The moon sighs as delicately  
as a petal falling on yellow grass,  
a cloud passing.

A man I knew claimed he carried the moon  
in his pocket. I see now  
she is her own person.

Blowing away the dust I drink her light  
which keeps wrinkling  
on the water.

*Walking the Unknown River* is 105 pages and costs \$13. It is available at local bookstores and online through Vishnu Temple Press at [visnutemplepress.com](http://visnutemplepress.com). ISBN 0-9718892-0-1

*Tertiary History of the Grand Cañon District*  
BY CLARENCE E. DUTTON

CLARENCE E. DUTTON'S classic account of the Grand Canyon is now available in a new edition. Originally commissioned as a study of the region's geology and issued in 1882 by the fledgling U.S. Geological Survey, Dutton's *Tertiary History of the Grand Cañon District* remains beloved as the most beautiful and evocative early description of the Grand Canyon. The new edition was reprinted by The University of Arizona Press, in November 2001 and makes Dutton's work once again available to Canyon lovers.

This seminal work offers an unsurpassed literary and scientific view of the layered stone walls and sinuous side canyons of the Grand Canyon, through

Dutton's eloquent text and stunning illustrations by Thomas Moran and William Henry Holmes.

The book is available from The University of Arizona Press at 520-621-1441 or [www.uapress.arizona.edu](http://www.uapress.arizona.edu). The clothbound *Tertiary History of the Grand Cañon District* is 368 pages and costs \$75, ISBN 0-8165-2181-6.

*Day Hikes from the River, Second Edition: A Guide to 100 Hikes from Camps on the Colorado* BY TOM MARTIN

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# The CRMP, Redux

PURSUANT TO THE RESUMPTION of the Colorado River Management Plan (CRMP) process, the Officers and Board of Directors of Grand Canyon River Guides met several times and exchanged many ideas about our “position” for this go-round. Unsure of what form the public scoping sessions would take (or what the timetable would be), we commenced our analysis with a re-examination of GCRG’s original CRMP statement (“The CRMP Marches On”, BQR Winter 1997–1998, Vol 11 #1, pages 22-30), to determine its longevity and remaining applicability.

Three new GCRG board members and a new president-elect will take office before the final deadline for comments on September 20, 2002, and it is important that they be able to provide their input. What follows will evolve further before final comments are submitted to the park, but may nevertheless supply you with food for thought. By the time you read this, the five public meetings will have concluded in mid-August. If you have not done so already, it is imperative that you weigh in with your own comments to let the Park know how you feel. The Park wants you to describe your vision for future management by giving them your ideas on resource conditions, visitor experiences and recreational opportunities. You can do so through a variety of methods (email to [grca\\_crmp@nps.gov](mailto:grca_crmp@nps.gov); write to the CRMP Team, Grand Canyon National Park, PO Box 129, Grand Canyon, AZ 86023; or hand deliver). Their website ([www.nps.gov/grca/crmp](http://www.nps.gov/grca/crmp)) will give you all the information you need to respond and be a part of this important process.

## ISSUE: CONTINUING PUBLIC INPUT

The CRMP must be treated as an evolving document, one that allows for continued public input and comment for changes as needs arise. In order to make a document such as the CRMP truly representative of the needs of the community of users on the river, the Park needs to hear from all of those groups. While the current scoping process does consider all the various viewpoints, this process must not end with the creation of the new CRMP. As economic, social, environmental, or political necessity demands, the CRMP may need to change. This kind of flexibility and communication must be built into the process.

## SOLUTION: CONTINUING PUBLIC INPUT

Create a Federal Advisory Committee (FAC) consisting of representatives from all constituencies to actively help the Park obtain feedback on the CRMP

throughout the life of the current document and in preparation for the next revision. This panel could be modeled on the Adaptive Management Work Group currently in place for the monitoring of releases from Glen Canyon Dam. This committee would be charged with providing recommendations for changes to the CRMP to the National Park Service as situations and demands continue to evolve. Possible members for the FAC might include representatives from: Guides; Private boaters; Outfitters; Adaptive Management Work Group (AMWG); Indian tribes; Environmentalists; Educators; and National Park Service (NPS).

## ISSUE: CROWDING AND CONGESTION ON THE RIVER

At certain times of the year, particularly during the peak primary season, there are noticeable crowding problems at major attraction sites in the Canyon and competition for campsites in critical reaches of the river corridor. Exchanges on river trips often serve to increase congestion in certain reaches of the Canyon, especially above Phantom Ranch and in the Muav Gorge. Often these problems have repercussions far upstream in terms of attraction and campsites, clearly detrimental to the quality of the visitor experience.

We do know that many crowding and congestion problems can be dealt with effectively on the river, using information, education, and communication between trips and guides. We do not support the concept of campsite scheduling to alleviate this problem.

## SOLUTION: SUGGESTIONS TO REDUCE CROWDING

1. Allow and encourage companies to launch at least a portion of their trips on days other than weekends and at different times of the day to reduce congestion at key attraction sites.
2. Specify a minimum trip length of four days to Phantom Ranch, seven days to the Whitmore pad, eight days to Diamond Creek or Lake Mead. This adds one day to many motor trips, increasing flexibility and allowing for scheduling to avoid crowding at key sites.
3. Encourage outfitters to make less use of the exchange system to help reduce crowding and congestion above exchange points.
4. Encourage companies to make more of their offerings non-interchange, and stagger the interchanges from company to company in the summer.
5. Allow only one exchange per trip.
6. Further encourage companies and guides to make use of any and all available launch information, in order that trips may be modified on-river to reduce



contacts and congestion. The launch calendar portion of the NPS website (currently a secure website only accessible by outfitters) should be available and accessible to everyone.

7. Open up more campsites between Cremation and Horn Creek to reduce summer crowding in the Inner Gorge for those exchanging at Pipe Creek. Examine opening some restricted campsites to limited use (with no layovers and restricted hours). Some campsites, like Roy's Beach could be mandatory for science trips.
8. Take advantage of motorized-trips efficiency by extending the motor season to September 30th and make the non-motor season October 1 through March 31.
9. Increase educational efforts to all those who may be using river campsites. Revamp and re-issue the "Grand Canyon Courtesy Flyer" that was initially developed by private and commercial boaters and other canyon lovers in cooperation with the National Park Service as a means of encouraging positive encounters among river users. The flyer addresses double-camping, etiquette when encountering other groups, how to work with schedules to reduce conflicts, and many other useful topics.
10. Evenly spread summer allocation equitably month to month during the six-month primary season so that approximately one-sixth of all trips are used per month (with a maximum of 20%, or one-fifth, used in any one month).
11. A computer simulation model has been developed that uses existing and new river trip data to simulate river traffic to study the relationship between river use and distribution given resource management goals at camps and attraction sites. Urge its use in order to determine if any improvements can be made through the examination of different launch scenarios. This model should not be intended as an answer, but used as a guideline to develop more flexibility in our present planning.

#### ISSUE: WHITMORE EXCHANGES

Any decision on the helicopter exchanges at Whitmore Wash will be made nation to nation between the Park and the Hualapai Tribe as per the memorandum of agreement. Flying people in and out of the Canyon by helicopter at Whitmore Wash encompasses and impacts so many important concerns: the "wilderness experience", noise levels, the overflights issue, crowding and congestion in the river corridor, and safety.

#### SOLUTION: WHITMORE EXCHANGES

The CRMP must investigate alternatives to the current level of Whitmore exchanges that do not exacerbate

crowding and congestion at other exchange points further downriver. Many ideas put forth in our "SUGGESTIONS TO REDUCE CROWDING" section are applicable here. The computer simulation model may be of particular assistance in combination with some of our other suggestions.

#### ISSUE: COLORADO RIVER ECOSYSTEM MONITORING

The CRMP is responsible for management of the Colorado River ecosystem in Grand Canyon and of the surrounding largely pristine tributaries and desert habitats. It is imperative that a substantial biological component is built into this and all future management plans. A healthy ecosystem is inseparable from the social and economic concerns of Colorado River running.

This CRMP must build into its structure adaptive management concerns of the Colorado River ecosystem. Adaptive ecosystem management requires: 1) clear definition of goals and objectives; 2) an understanding of existing ecosystem components and processes; and 3) a proactive management coupled with monitoring and research. Scientifically credible information is required for these management elements. Additional data and information synthesis are needed through interactions with the Bureau of Reclamation and the Grand Canyon Monitoring and Research Center.

Continued sediment loss on Grand Canyon beaches, preservation of natural and cultural resources, and protection of endangered species such as the imperiled humpback chub are often inextricably directly linked to dam flows. While not directly under the purview of the CRMP, effective ecosystem management is impossible without linking the CRMP directly to the Adaptive Management Program governing the operation of Glen Canyon Dam. This becomes increasingly evident when those resources are severely threatened by flow regimes, as is the case with the precipitous decline of humpback chub populations. The future of the Colorado River through Grand Canyon should encompass all of what makes it unique today, with continued protection of its biodiversity and resources for subsequent generations to enjoy over the long term. Allowing a completely separate process to so greatly affect and in many cases, hinder, the Park's ability to wisely and effectively manage its own resource must be addressed and rectified.

Lest we forget, activities on the rim itself may also engender negative repercussions on habitats below it. The potential impacts of groundwater development in gateway communities on the rim must therefore be addressed by the CRMP. Undiminished groundwater flow from the aquifer into the seeps and springs below the rim is crucial for supporting these fragile habitats

and microenvironments, while maintaining their biodiversity. The continued viability and sustainability of these desert oases is also profoundly important to river visitors and to the visitor experience.

Lastly, a broad-scale economic evaluation of the less “tangible” resources contained within the Colorado River ecosystem is an additional tool for guiding its scientific management to achieve the greatest ecological and economic integrity. The question of values as perceived by stakeholders should be asked of all resources connected with the Colorado River’s aquatic and riparian components, including endangered species, pre-dam resident species protected by the National Park Organic Act, exotic invaders, as well as non-living elements such as beaches, banks, water flows, temperatures, sediment loads, and river chemistry. Based on well-designed research, and by placing specific numerical evaluations on all of these “non-use values,” their importance can no longer be minimized.

#### ISSUE: COLORADO RIVER ECOSYSTEM MONITORING

- Urge the completion of a comprehensive, scientifically credible biological inventory and monitoring program.
- Protect existing populations of species of special concern (endangered, endemic, and native indicator species) as well as promote studies and projects to control non-native species, especially noxious or threatening ones.
- Link the Adaptive Management Program (AMP) to ecosystem management in Grand Canyon to amplify protection efforts and jointly meet the spirit of the Grand Canyon Protection Act. Work in concert with the AMP on research, monitoring, and management needs and priorities. Enhance the technical and scientific credibility of the CRMP through the solicitation of input or review from the AMP.
- Create accountability to the public through an annual state-of-the-river resources report.
- Address any groundwater development in gateway communities along the rim as it pertains to impacting resources below the rim.
- Create and conduct a research program to reliably evaluate among all groups of stakeholders their specific valuations of the various resources, living and non-living, which together characterize the Colorado River in Grand Canyon, historically and at present.

#### ISSUE: USE LEVELS (TOTAL)

The Colorado River may have reached carrying capacity in terms of the total number of people currently using the river corridor. In the past, the

trend has been to increase the allocation in order to accommodate increasing demand, which should not be the driving force behind this decision. Appropriate research must be done to determine the carrying capacity of the river corridor, both environmentally and socially within the definition of the “limits of acceptable change.” Until such a study is completed, simply increasing allocation to satisfy demand may have negative and lasting repercussions for both the canyon resources and the visitor experience. It is imperative that any increase in allocation be justified in terms of compliance with both carrying capacities.

#### SHORT TERM SOLUTION: USE LEVELS (TOTAL)

Evenly spread summer allocation equitably month to month during the primary season so that approximately one-sixth of all trips are used per month (with a maximum of 20%, or one-fifth, used in any one month).

Make full use of the computer simulation model previously discussed under “Suggestions to Reduce Crowding.” Utilizing the model to study changes in distribution patterns through the manipulation of differing launch scenarios should be done to determine where we can gain in efficiency while maintaining flexibility.

A program should be developed to educate all trip leaders on how to run a low-impact trip. Building stewardship and strengthening the “Leave No Trace” ethic will go far to reduce overall impacts to the physical resource.

#### LONG TERM SOLUTION: USE LEVELS (TOTAL)

Research must be done to establish both the physical and social carrying capacity of the river corridor. All forms of use must be considered in the overall picture: commercial, private, research, and administrative use. It is entirely possible that the river corridor may reach socially perceived limits before the physical ramifications manifest themselves. The “Limits of Acceptable Change” might also be re-evaluated for their continued validity.

Social research should include a thorough examination of the interplay between congestion, crowding, and social interactions. “Social” carrying capacity must take into consideration, but must not be limited to, the following points:

- Without proper launch scenarios, continually increasing the numbers of visitors is detrimental to the wilderness experience and infringes upon the opportunities for solitude and reflection that the Grand Canyon uniquely affords.
- Increasing numbers means increasing visitor contacts, congestion, and crowding at attraction sites and in regions of critical campsites.

- The perception of acceptable limits for social contact is entirely subjective and can change drastically from person to person (i.e. someone coming from a crowded urban environment may perceive the acceptable number of contacts to be greater).
- The physical impacts discussed below can affect the visitor experience and therefore social perceptions.

The physical carrying capacity of the Colorado River Corridor must take into consideration, but must not be limited to, the following points:

- Impacts to the environment (including old high-water zone, trails, campsites, wildlife, water sources such as springs, seeps and tributaries, and side canyon vegetation)
- Impacts on cultural resources
- Impacts to the campable area of Grand Canyon beaches by flow regimes from Glen Canyon Dam, which directly affect carrying capacity, especially in critical reaches where camps are sparse, small, and/or in high demand

#### ISSUE: REGULATIONS, BUREAUCRACY, TECHNOLOGY, AND THE VISITOR EXPERIENCE

Increasing regulations and the number of outside regulatory agencies are diminishing the flexibility and quality of Grand Canyon river trips. Many of the current issues being discussed as part of this CRMP process can be dealt with without adding another set of regulations to the CRMP. Communication, education, information, and flexibility are the most important and effective means for resolving many on-river conflicts.

#### SOLUTION: REGULATIONS, BUREAUCRACY, TECHNOLOGY, AND THE VISITOR EXPERIENCE

1. No one has more consistent contact with the visitor to the Colorado River than commercial guides. It is important that the Park Service continue to support the role the river guides play in carrying out the Park's mission.
2. Any science, Park Service, or resource management trip should use the minimum tools necessary to complete their work, and the trips should be run as to have minimum impact on other users of the river corridor.
3. The Park needs to retain their lead role in keeping outside agencies out of regulating the river.
4. Wherever possible, the CRMP should be structured so that the idea or ultimate goal is stated without a new rule or regulation being designed to address that problem. Flexibility is a critical tenet to maximize or enhance the quality of any river trip and wilderness experience. Additional rules and regulations cannot realistically be created for each situation

as it arises. Educational and informational efforts should be increased for all trip leaders, private and commercial, so that goals can be achieved without new rules.

#### ISSUE: THE PRIVATE WAITING LIST

The wait to obtain a private permit is very lengthy. Grand Canyon River Guides recognizes that a greater than ten-year wait for a permit to run the river is unrealistic and should be shortened to some reasonable term of five years or less.

It is possible to shorten this waiting time to a reasonable period without changing allocation. Raising allocation just to accommodate the numbers of private boaters who wish to go downriver is only a temporary solution and a dangerous precedent to set. Instead, the permit system should be examined and modified. The Park Service has made some definite improvements (for example, in how cancellations and their resultant openings are handled), however, the fact remains that the system is unworkable in its current form.

#### SOLUTION: THE PRIVATE WAITING LIST

1. In that the waiting list may be too "broken" to fix, all alternative systems – for example, lotteries, weighted lotteries, bidding systems, or a combination – should be seriously examined to replace or alter the waiting list process for distributing private permits. An examination of systems currently in use by federal agencies on other rivers around the United States would be the most logical starting point.
2. If the existing waiting process were to be retained, then the following should be considered:
  - Turn the private system into a user-day system instead of a launch-based system, where several smaller trips could leave Lees Ferry in a day, as long as the number of user days didn't exceed the limit. This would get some people off of the list more rapidly.
  - A non-refundable deposit (excepting emergencies) would be payable within 30–45 days after launch dates are assigned. (Note: launch dates are assigned a year in advance at this time).
3. When commercial companies go up for sale, the Park could obtain the user days by purchasing them at fair market value and transfer them to the private sector. This would increase private allocation without increasing overall allocation.

#### ISSUE: WILDERNESS DESIGNATION

While the Wilderness issue is not directly addressed in the CRMP, direction on this complex issue may flow out of the public input that the CRMP fosters. Indeed the decision to pursue (or not to pursue) Wilderness design-

nation will affect most, if not all other issues encompassed within the Colorado River Management Plan. Resolution is therefore imperative to dispel the ambiguity and contentious political maneuvering that has plagued the park for years.

#### SOLUTION: WILDERNESS DESIGNATION

We encourage Grand Canyon National Park to:

- Formulate, at their earliest opportunity, a Wilderness recommendation firmly based on public opinion during this scoping process.
- Promote their position to Congress and petition Congress to act upon the recommendation in an expeditious manner.
- Directly and consistently tie their Wilderness recommendation to the management of the Colorado River until such a time as Congress acts upon that recommendation.
- Manage for a wilderness experience in the spirit of the Wilderness Act by preserving the ecological characteristics of wilderness and keeping the level of use within the visitor's expectations of a wilderness experience.

#### ISSUE: DIVERSITY OF OFFERINGS WITHIN THE OUTFITTER SPECTRUM

Compliance with the National Environmental Policy Act (NEPA) requires a systematic analysis of "all reasonable alternatives" including an examination of the appropriate level of motorized and non-motorized (oar powered) use. NEPA compliance also necessitates the inclusion of an alternative wherein motorized watercraft are not permitted on the Colorado River within Grand Canyon National Park.

Lastly, over the years, there has been some consolidation in the number of commercial outfitters offering trips in Grand Canyon. Such consolidation and the reduction of the number of independently operated companies is detrimental to diversity and consumer choice.

#### SOLUTION: DIVERSITY OF OFFERINGS WITHIN THE OUTFITTER SPECTRUM

GCRG would like to see the spectrum of offerings for river trips as diverse as it is now and encourages competition and choice. The park should also not hinder any voluntary change to more oar powered/non-motorized use within the current allocation, appropriate season, number of people, etc...

Furthermore, Grand Canyon River Guides, Inc. has always acknowledged motors as a historic, viable way to run the river. The Canyon can and should be shared by a broad range of people, underscoring the intrinsic value of diversity in type and length of trips. The advent of four-stroke motors has further

enhanced the river experience with quieter technology and less pollution.

While encouraging diversity, GCRG also believes it has its limits. Some confines must be placed on the variety of offerings to the public. The ugly result of trying to expand diversity too far would be one-day jet boat trips down the river. Up-running of the river should also be disallowed for obvious safety reasons.

Additionally, no fewer than the current number of independently operated commercial outfitters should be maintained in order to preserve diversity.







*Seasoned Guide* — This Havasupai Indian boy aged 4, with his brother aged 6, was sent by his parents to guide a party of white visitors up the nine mile trail out of the Grand Canyon. Neither boy spoke English and neither could mount his horse without leading it to a ledge or rock for a step. After leaving their 'passengers' at the trail head, the two children expertly herded four unladen animals back down the canyon trail to the Havasupai reservation, 1941.

Photo by Bill Belknap.

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## A Report from the Adaptive Management Trenches

**P**LANNING FOR THE FLOW and trout removal experiments, bickering over information needs in the strategic plan, science updates, budget details—these are just a few of the issues we’ve been dealing with lately in the Adaptive Management program. The flow and trout removal experiments are definitely the most pressing topic because they’re scheduled to begin in September (Maybe?).

As described in the last *bqr*, the AMWG recommended a two-year program of experimental flows combined with trout removal in the vicinity of the Little Colorado River (see our article in the last *bqr*, Summer 2002, Vol. 15 #2). The recommendation also called for developing a long-term program of experimentation. So, the present experiment lasts for two years, while the later years are based on what we’ve hopefully learned. The whole plan is awaiting approval by the Secretary of Interior. Remember, the adaptive management program only recommends actions to the Secretary of Interior. The Secretary has to make the call. Inside sources have assured us that the experimental program will be approved. We’re waiting for word from on high. In the meantime, it’s full-speed ahead to plan the experiment. GCMRC has a fourth draft version of the science plan that form the basis for what is sure to be a lively discussion at the upcoming August 17-18 TWG meetings. Details are still being worked out on what exactly are the criteria for going ahead with a Beach Habitat Building Flow (BHBF), how much sediment needs to be input, what gets studied, etc.

Here’s how the first year stands right now. Each year of the experiment was designed in two parts: one part dirt, one part fish. Just add water, then puree. Yummy.

Year 1 (September 2002 to September 2003): Dirt (sand, silt and clay)—the sediment part of the experiment is dependent on the Paria River kicking in a significant amount of sediment between September and December—significant being at least 500,000 metric tons of sediment after July 1. Beginning as early as September 1, the dam would release alternate two-week periods of constant 8,000 cfs and fluctuating 6,500 cfs to 9,000 cfs until January 2003. The sediment transport will be monitored to see if there is a difference between the low-level fluctuations and the constant flows. If there is no detectable difference in sediment transport, fluctuations will be continued to make some hydropower cash. If there is a detectable difference in the sediment transport, the flow with the lowest sediment transport will be continued. On January 6, 2003 a “flood” of approximately 41,000 cfs

will be released for 3 days with an upramp rate of 4,000 cfs/hr. One of the turbines is undergoing maintenance, therefore the powerplant cannot run at 100% and 41,000 cfs is the max flow possible. Personally, I’d like to see 60,000 or 80,000. The total water “spilled” will be approximately 94,000 acre feet. In order for the flood to happen, at least 1,000,000 (+/- 20%, for measurement uncertainty) metric tons of sand needs to be retained in the reach above the Little Colorado River. All of the dirt part of the experiment is based on Paria River inputs. If nothing happens on the Paria this year, the dirt part of the experiment will not be implemented. Fish—regardless of dirt, the fish part of the flow experiment starts ASAP. The fish part has both flow and non-flow related stuff. Mechanical removal of trout from the Little Colorado River area (a couple miles either direction) will start as soon as an Environmental assessment is completed—like maybe sometime this month. Mechanical removal is a nice, dorky, scientific term that means trout will be caught by electro shocking, then destroyed. The plan was to run the remains through a “chipper” and back into the river. Yuk! or Cool! depending on your perspective. There is still some good arguing/debate over this means of disposing the carcasses and its effect on the environment—hence the Environmental Assessment (EA). The flow-related aspect of the fish part starts in early January, perhaps following a “flood”. Following the BHBF and several days of constant 8,000 cfs to collect post-BHBF measurements, high experimental fluctuations with a daily range of 5,000 cfs to 20,000 cfs will be released from January through March. This is the main part of the non-native spawning and emergent/juvenile season and the flows are intended to “disadvantage” the trout by messing with the baby trout by keeping the preferred, near-shore habitat moving up and down the bank and perhaps stranding and killing some of the roe. From April through September operations would follow monthly volumes under the current Record of Decision criteria until year two of the experiment starts. More on year two later...

Implementing this experiment will mean that there’s going to be a whole lot of science trips on the water this fall, winter and spring. Good luck Fritz! A whole lot of science means a whole lot of money. GCMRC estimates that the experiments will cost an additional 4.2 million dollars for year one and 3.6 million dollars for year two. These are seemingly staggering numbers. However, trying to figure out an entire ecosystem at this scale costs money. In our opinion, we should be spending as much as it takes to meet our programs goals and the intent of the Grand

Canyon protection act. We have argued in the past that the program is under-funded and the additional dollars needed to address the hypotheses being tested in the experiment only reinforce our opinion. Other players in the game think way too much is being spent. What do you think? Give us a call, email or write. Come to a board meeting or a TWG/AMWG meeting. Write in. Your opinions are important and we want to hear them.

*Matt Kaplinski*  
TECHNICAL WORK GROUP

*Andre Potochnik*  
ADAPTIVE MANAGEMENT  
WORK GROUP



Havasus Creek, 1899. Phot by F.H. Maude  
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# Wilderness, Motorized Rafts, and the Grand Canyon

FOR THE PAST THREE DECADES, an intractable controversy has simmered and sometimes boiled over regarding the use of low-powered outboard motors on pontoon rafts running the rapids of the Colorado River within Grand Canyon National Park. Today, three out of four professionally-outfitted river trip passengers, and a number of self-outfitted river trippers, choose to utilize motorized rafts powered by low-emission, low-noise, environmentally-friendly motors.

Despite the significant contribution that such motorized use offers by making a Grand Canyon river trip accessible to a substantially greater portion of the American public than would otherwise be the case, some continue to call for the elimination of such motorized trips. These efforts are linked to obtaining “wilderness” designation for the Colorado River corridor within the Park. It is believed, erroneously, that such a designation would necessarily prohibit the National Park Service from continuing to authorize motorized river trips.

## WILDERNESS AND THE GRAND CANYON

The Grand Canyon is, indeed, a national treasure. It is a World Heritage Site, which signifies its international standing as one of the planet’s most unique and valued places. Whether by hiking in the backcountry or rafting down the Colorado River, visiting the Grand Canyon is one of the world’s special experiences. Unfortunately, this “crown jewel” in the National Park System has sometimes become mired in a debate, not about proper ecological stewardship, but over whether five decades of motorized use along the river should end. This issue has long polarized groups and individuals that otherwise share a common, deeply held goal of preserving and enhancing the Grand Canyon and its unique river experience.

The Grand Canyon River Outfitters Association (GCROA) suggests that Congress should designate most of the Grand Canyon’s backcountry, but not the river corridor, as wilderness. We believe the river corridor itself should be excluded in the same fashion that the National Park Service has suggested the heavily used cross canyon corridor hiking trails be excluded, in light of their function as main access routes into and through the greater backcountry.

One common misunderstanding is that the Grand Canyon is a designated wilderness area. The Grand Canyon is not a wilderness area nor does it contain any wilderness areas. Nor is the National Park Service required to manage the river corridor as “de facto wilderness.” In fact, no areas within Grand Canyon National Park have ever been formally recommended, either by the Secretary of the Interior or the President of the United

States, for inclusion into the wilderness system.

Congress passed the Wilderness Act in 1964, establishing the National Wilderness Preservation System, to close off certain areas of federal land and preserve their wilderness character. The Act defines wilderness, “in contrast with those areas where man and his own works dominate the landscape...as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain.” It specifies that a wilderness area comprises undeveloped Federal land

*...retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.*

The Wilderness Act established a specific process for adding areas to the Wilderness Preservation System. Pursuant to this process, a land management agency (i.e., National Park Service, Bureau of Land Management, or United States Forest Service) can recommend areas meeting the statutory definition of wilderness to the Secretary of the Interior and the President. After receiving the Secretary’s recommendation, a formal process exists by which the President makes a recommendation to Congress with respect to his determination regarding whether an area should be designated as wilderness. A Presidential wilderness recommendation becomes effective only if so provided by an Act of Congress. Thus, under the Wilderness Act, only Congress can designate federally managed areas as part of the National Wilderness Preservation System.

The Wilderness Act also directed the Secretary of the Interior to review all roadless areas of five thousand contiguous acres or more in the national parks and, within ten years, to report to the President on the suitability of each area for possible preservation as wilderness. In the Grand Canyon Enlargement Act of 1975, which provided for the further protection of the Grand Canyon and doubled the size of the Park, Congress modified the deadline for wilderness suitability review by the Executive Branch first set forth in the Wilderness Act in 1964. The 1975 Act specifically required the Secretary of the Interior



to report to the President, within two years, his or her recommendation on the suitability or non-suitability of any area within Grand Canyon National Park for potential wilderness designation.

In 1980, Grand Canyon National Park produced a proposed wilderness recommendation, in which the Park Service (but not the Secretary of the Interior or the President) recommended that almost the entire backcountry area of the Park—approximately 1,000,000 acres—with the exception of the cross canyon corridor hiking trails be designated as wilderness by Congress. This recommendation included the Colorado River corridor, consisting of approximately 12,190 acres (or one percent of the total area) as “potential wilderness,” pending the elimination of motorized rafts from the river, which had been proposed by the Park as part of its then on-going river management planning process.

The “potential wilderness” designation, only if enacted into law by Congress, would mean that motorized use eventually would be eliminated and, once eliminated, the river corridor would become part of the Wilderness Preservation System automatically without any further action by Congress. (In 1993, the Park updated the 1980 recommendation, largely to reflect the acquisition of federal title to various lands within the Park’s boundaries.) The Park’s proposed recommendation, never formally transmitted to the Secretary of the Interior, together with the Park’s attempt to eliminate motorized river trips through the river management planning process that was ongoing in the late 1970s, created substantial controversy.

Congress responded to the agency’s proposal by passing an amendment offered by Senator Orrin Hatch (R-Utah) to the 1981 Department of the Interior appropriations bill that prevented the National Park Service from moving forward with its proposed phase-out of motorized river trips. In response, the National Park Service implemented a Colorado River Management Plan and subsequently issued river running concession contracts that continue to require motorized trips on the river. So was born the dichotomy involving the agency’s proposed wilderness recommendation that attempts to classify the river corridor as “potential wilderness” (with an assumed eventual phase-out of motorized trips) and the agency’s requirement that the Park’s river concessioners continue to provide motorized river trips. It remains to this day.

Since 1981, no Secretary of the Interior or President has ever officially received or forwarded on a formal recommendation on the suitability or non-suitability of any areas within Grand Canyon National Park for possible inclusion into the Wilderness Preservation System. Congress has yet to consider whether or not any areas within the Grand Canyon should be designated as wilderness.

All interested parties should acknowledge the fact that absent further congressional action, the Wilderness Act

does not require the termination of motorized use on the Colorado River in the Grand Canyon. The question is whether the National Park Service, as a matter of agency policy, should manage Grand Canyon National Park and its Colorado River corridor in such a manner as to not impair its suitability for possible inclusion into the Wilderness Preservation System at some future point.

National Park Service policies presently suggest that the river corridor should be so managed. But this does not require the removal of motorized watercraft. This is because such use is not diminishing the river corridor’s future suitability for potential inclusion into the National Wilderness Preservation System. Motorized use is transitory in nature and does not harm or negatively impact the resource. If such use did impair the area’s suitability for wilderness designation, after five decades of such use, certainly the Colorado River corridor within the Park would no longer be suitable for possible wilderness designation. Yet wilderness advocates maintain that the Colorado River corridor within the Grand Canyon does remain suitable for possible inclusion. If this is true, it can only be so because motorized use has not diminished the river corridor’s wilderness character.

It is widely recognized, even by those advocating wilderness designation, that the river corridor through the Grand Canyon has been noticeably and almost certainly irreversibly modified as a result of the construction and operation of Glen Canyon Dam, just upstream from the Park. The Colorado River corridor downstream from the dam is no longer an “unimpaired natural area,” a fact amply illustrated by the available scientific literature. That humankind has left an imprint on the Colorado River corridor within the Park is beyond dispute. The impacts caused by Glen Canyon Dam were not considered during the original formulation of the National Park Service’s proposed Grand Canyon wilderness recommendation 22 years ago, and are a principal reason why today, that recommendation may not remain valid.

#### MOTORS AND WILDERNESS

Given the exceedingly high demand for recreational whitewater trips through the Grand Canyon, motorized access is essential in order to provide the current level of public access for all types of visitors while continuing to meet strict resource and visitor protection mandates. Without such motorized use, the number of participants able to enjoy a professionally-outfitted trip could be reduced from 19,000 to as little as perhaps 8,000 or 9,000 annually. This is simply not what the American people want. Many wilderness advocates, however, see such a dramatic decrease in public visitation as a positive outcome.

The continued use of motorized rafts neither affects any ultimate judgment by Congress nor would it likely be inconsistent with any action that Congress would take if

it were to consider a wilderness recommendation for Grand Canyon National Park. Congress, both in the Wilderness Act and in statutes establishing specific wilderness areas, has recognized that motorized use and wilderness are not necessarily incompatible, especially when that use is already well established. Under the Wilderness Act, wilderness areas are to be “devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use” and managed so as to preserve the wilderness character of the area.

Section 4(c) of the Act generally prohibits activities such as timber harvesting, as well as roads, structures, and facilities, in wilderness areas. Although public use of motorized vehicles generally is prohibited in wilderness areas, section 4(d)(1) of the Act includes an exception specifically allowing for the continuation of motorboat or aircraft use if those uses were established prior to an area’s designation as wilderness by Congress.

In addition to provisions like section 4(d)(1), Congress, in a variety of wilderness designations, has authorized uses that might otherwise be restricted under the Wilderness Act. For instance, Congress has authorized use of motorized watercraft, motorized land access, aircraft use, and water infrastructure projects, among other activities, while designating specific wilderness areas. As a result, wilderness designation does not mean the same thing in every designated area.

Consequently, the continued use of motorized rafts is fully consistent with the requirements of the Wilderness Act and with all current National Park Service management requirements applicable to Grand Canyon National Park. The existing level and type of motorized use does not harm the resource and does not adversely affect the suitability of any area of Grand Canyon National Park for possible future congressional designation as wilderness. In any case, section 4(d)(1) of the Wilderness Act itself expressly contemplates the continued use of motorboats in wilderness areas where such use was “established” prior to designation of the area.

Motorized rafts are very much an established institution in Grand Canyon National Park. They have been used on the Colorado River within the Grand Canyon to run professionally-outfitted river trips for the public for the past five decades. They are a part of the Park’s history, even assisting in its preservation. It was on motorized trips that large numbers of citizens in the late fifties and sixties, including many prominent, public figures, were first introduced to the Grand Canyon. This public exposure helped turn the tide away from the day’s dam building proposals and helped build the public understanding that the Grand Canyon should remain protected.

Today, motorized trips are a principal reason why Grand Canyon river trips are accessible to a very broad range of the general public, from young children to the elderly, to those with even severe disabilities, to those who are spending the first night of their lives sleeping

outdoors on their Grand Canyon river adventure.

Five years ago, members of the Grand Canyon River Outfitters Association demonstrated their ongoing commitment to the conservation of the Grand Canyon by voluntarily undertaking a wholesale transition from two-stroke outboard motors to cleaner, quieter four-stroke outboard motors. We did this because these new motors dramatically reduce emissions, including a ninety percent reduction in released hydrocarbons, and they are substantially quieter than the two-stroke motors they replaced. The Association and its members, moreover, have since initiated an electric motorboat technology research project, with the goal of developing a silent, zero-emissions alternative to the low-impact four-stroke motors now in use. Within the next six to eight years, we hope to begin implementing an alternative motorboat propulsion system suitable for Grand Canyon whitewater operations. Wilderness advocates object even to the idea of a zero emission, silent motorboat, however, because the propulsion system would still be mechanized.

### THE FUTURE

The principal benefit motors provide along the Colorado River within the Grand Canyon is greater and broader public access. The level of visitation along the Colorado River within the Park, while meeting today’s high standards for resource protection and visitor experience quality, simply would not be possible without the use of pontoon boats powered by low-emission, low-noise outboard motors. That segment of the American public able today to experience the Grand Canyon by river would be dramatically narrowed as a consequence of the elimination of this type of use.

Some have recently called on both wilderness advocates and the Grand Canyon’s professional river outfitters to work constructively together to find a solution to the thirty-year-old wilderness and motors controversy. The Grand Canyon River Outfitters Association is ready to do just that. There are many creative ideas for how to improve management of the Colorado River within the Grand Canyon, in order to enhance what is already one of the world’s truly special experiences. The river outfitters seek to contribute to this search for solutions by offering a variety of proposals, and by continuing to pursue practices and technologies that will help even further to reduce the impacts of human visitation along the river in the Grand Canyon.

*Mark Grisham*

*Mark Grisham is the executive director of the Grand Canyon River Outfitters Association, a non-profit trade group that represents each of the licensed river running concessioners that operate in Grand Canyon National Park.*

## Editors Comment to “Wilderness, Motorized Rafts, and the Grand Canyon”

**W**ILDERNESS DESIGNATION is a confusing and often poorly understood concept, as well as an extremely contentious one. There are many sides to the debate. For additional viewpoints on Wilderness, GCRG’s questionnaire results, and other information, please refer to the following articles that have been published in the *boatman’s quarterly review*. Get informed!

- *Managing the Wilderness Experience*—Vol 11 #1
- *Wilderness: It’s Already the Law*—Vol 11 #3

- *Into the Fire: A Clarification of Sorts*—Vol 11 #4
- *Frequently Asked Questions About the “W” Word*—Volume 11 #4
- *Where the Wild Things Are*—Volume 11 #4
- *A Very Important Questionnaire*—Volume 11 #4
- *And Another Thing*—Volume 12 #1
- *The Word Wilderness*—Volume 12 #1
- *The Questionnaire*—Volume 12 #1
- *Wilderness and the End of Guiding?*—Volume 13 #1



### Rendezvous With Intrepid Lizard

**O**UR ADVENTURE FOR THE DAY is nearly complete. It was a hike into Surprise Valley, beginning at the base of Deer Creek Falls, up into the Narrows, with final destination being Dutton Springs, that huge gush of water spewing from the vertical face of a far canyon wall, then tracing our footsteps back to the falls. It’s another day designed by the Deity, canyon blue sky, canyon itself brought to brilliance, compliments of “Ole Sol”, a day of comfortable warmth, a bringer of high spirits and bounding enthusiasm.

We have managed the semi treacherous descent to the pool at the base of the falls, and having a bit of leisure, I climb up to the nearly level surface of one of the house-sized rock which serve as portals on each side of the cascade, my purpose being to bask in the afternoon sun and be bathed in the total peace which this place revives in one’s being.

I am sitting near the edge, my bare legs partly drawn up. Two flies land just above my ankle. Are flies attracted to unsavory sites? As in manure, or dead rotting flesh? They are perched on my lower leg and I’m wondering —maybe I should grab my bar of soap and get in the river more often.

All this profound thought is suddenly brought to a halt by the abrupt appearance of our intrepid lizard. He spots the flies on my leg and the dinner bell rings. His hunger pangs render him totally fearless and he moves in very closely, a creature preying on his victims. He then, (I’m bestowing masculinity upon him because this is one cool dude!) folds his tail over his back and rapidly whips it side to side. I don’t know

whether it’s in excitement at the prospect of a meal or a means of mesmerizing the fly into an hypnotic trance. But hey, who can fathom the mind of a lizard?

It is all quite fascinating to behold. I’m also mesmerized by this bizarre going on, when, *zap!* With a full body lunge my lizard captures his fly. He backs away ever so slightly and relishes his treat, rolling it around in his mouth. Do I detect a smile on his tiny face? Yes! But wait! Another fly, in poor judgement, takes the place of our first victim. With a renewed sense of purpose, my (there’s a growing hint of ownership here) lizard dispatches fly number one into a far abdominal abyss, and sets his sights on fly number two. Isn’t one fly enough to satisfy? Do I sense a mild case of gluttony here?

The same ritual is replayed, eyes fixed on quarry, tail over back, whipping side to side, though not so rapidly this time. Then *glom!* Another catch! He moves with such speed both times that these aging eyes can scarcely see the quickness of his attack. Then again, the same savoring of his meal, and same “smile”. Fly number two then joins fly number one in roiling digestive juices and my lizard retreats over the edge to become a creature of memory.

And I ponder: how wonderful it is, that in 280 miles of unsurpassed majesty that is the Grand Canyon, it is my great privilege to witness this one fleeting moment of minute magic.

*Joe Kutter*

## The Changing Rapids of the Colorado River— Suturing of Boulders

**A**T CERTAIN PLACES in Grand Canyon, where debris flows have not recently occurred, one can catch a glimpse of the net effect of an important process that stabilizes rapids. *Suturing* results when rocks grind against one another under water, resulting in an array of particles that appear to fit together, much like the pieces of a jigsaw puzzle (Webb, 1996). *Sutured rocks* resemble flagstone paving, as if constructed by a master mason. As such, sutured boulders form large, seemingly immobile masses of rock impervious to the power of the river. This process mostly occurs in rapids and is especially noticeable in Cataract Canyon, where debris flows are less frequent than in Grand Canyon and the rocks are softer. Suturing also is apparent along the margins of the more stable rapids in Grand Canyon (e.g., 217-Mile Rapid, 232-Mile Rapid, Ruby Rapid) as well as at other nondescript places (Fig. 1).

The crew members of the second Powell Expedition were the first to notice suturing. Frederick Dellen-

baugh described it at the Big Drops, possibly at Big Drop 2:

An interesting feature of this canyon was the manner in which huge masses of rock lying in the river had been ground into each other by the force of the current. One block of sandstone, weighing not less than six hundred tons, being thirty or forty feet long by twenty feet square, had been oscillated till the limestone boulders on which it rested had ground into it at slowly and regular rocking as the furious current beat upon it, and one could feel the movement distinctly (Dellenbaugh, 1908).

As Dellenbaugh notes, suturing results from vibration induced by strong currents impinging on rocks. Flow in a rapid pulsates, as manifested by breaking waves and swirling eddy fences, and the pulses are of sufficient amplitude and frequency to cause boulders to vibrate in place. What is remarkable is how quickly

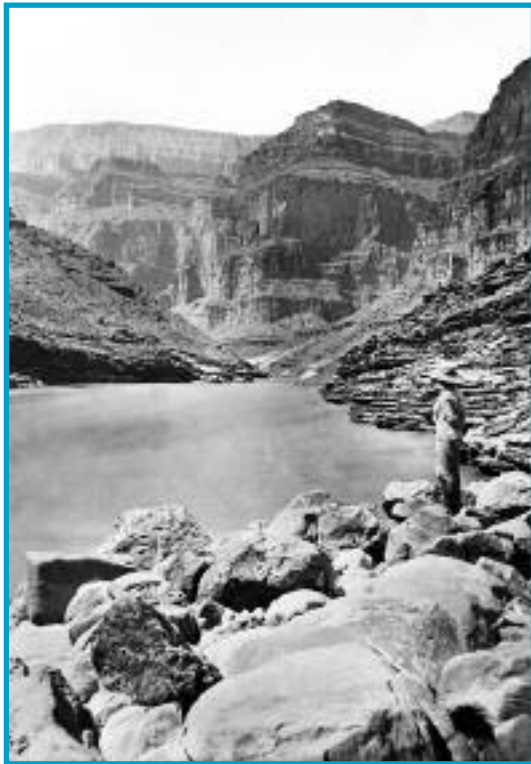


Figure 1 A—Below Fossil Rapid (mile 125.6, L). September 5, 1872. This photograph, from near the top of a little debris fan on river left at mile 125.6, shows sutured rocks in the foreground. Particularly note the triangular facet in the sutured rocks at far right. (J.K. Hillers, courtesy of the National Archives).

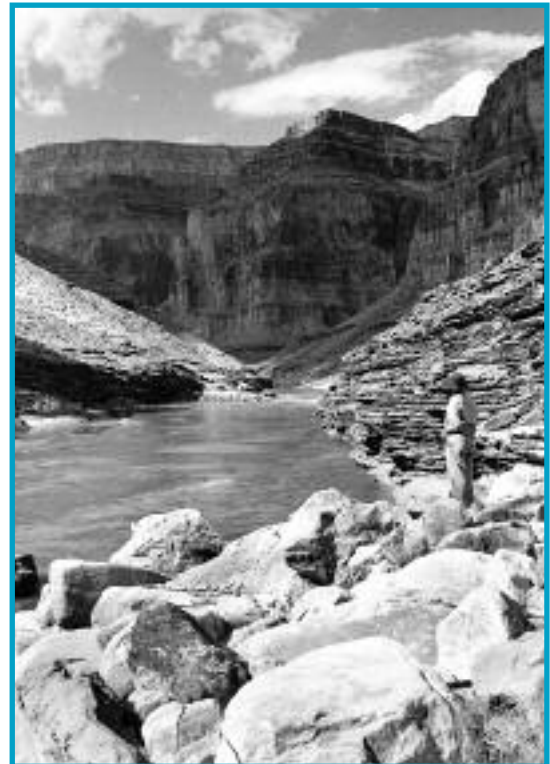


Figure 1 B—Below Fossil Rapid (mile 125.6, L). September 19, 1968. The water is considerably lower in 1968, underscoring the little-known fact that the second Powell Expedition boated on floodwaters of about 80,000 cfs. (Hal Stephens).



this process occurs (Webb *et al.*, 1999); recently, we observed a lower unit and a whiskey bottle sutured into rocks in Cataract Canyon (Figs. 2 and 3).

Once a debris flow pushes boulders into a rapid, the river works constantly to move them downstream or erode them in place. *Entrainment* occurs when boulders are plucked from the bed and swept downstream; this mostly happens shortly after a debris flow occurs, when the river reaches a high enough stage and has sufficient power to start a particle in motion. It may be difficult to imagine, but large boulders are bounced downstream, moved along by the force of river water at flood stage. Boulders accumulate in an orderly fashion downstream, creating secondary rapids and debris bars that usually alternate from one side of the river to the other. The classic example of this is at Fossil Rapid, where the primary debris fan is on river left, the first debris bar is on river right, and the river moves through an S-turn at low water. Granite Rapid provides another example.

Most new debris fans have extremely loose rocks, making walking on them hazardous, and in some cases large air voids can be seen among the particles. When a new debris flow is inundated by the Colorado River, some particles are moved short distances and

rearranged. Particles are rotated by the current, and the air voids may be packed with smaller particles. This simple rearrangement makes entrainment of individual particles much more difficult. Once dropped in place, these boulders then sit and are subject to the other forces in the river's bag of tricks.

The sediment load of the unregulated Colorado River is (was) high, both in Cataract Canyon and in Grand Canyon before Glen Canyon Dam was built. The load consists of considerable amounts of sand and gravel, particularly at flood stage. These particles collide with boulders in a process termed *corrasion*, pitting them much like sand hitting a windshield. Because most of the rocks along the river contain soluble calcium carbonate or other salts, the rocks also *dissolve*, albeit slowly, as water circulates among them. Dissolution is most effective in removing the cement between the grains in sandstone, but dissolution can also occur in massive limestones or granite. It is difficult to determine how effective these processes are or how quickly they operate, but they may be the ultimate means by which the river eliminates obstructions in its path.

In the process of entraining boulders, the force of the river flow vibrates boulders in place, much in the



Figure 1 C—Below Fossil Rapid (mile 125.6, L), September 15, 1994. Little has changed here beyond some new vegetation. (R.H. Webb, Stake 2868).



Figure 2—2002—Lower unit of an outboard motor sutured into a rock at Rapid 7, Cataract Canyon. The propeller blades have sliced into two boulders, and the drive shaft, free to rotate, has cut a horizontal slot into another boulder.

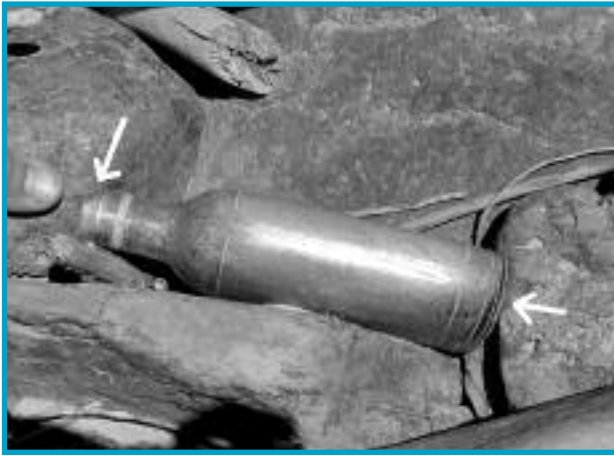


Figure 3—2002—Whiskey bottle of unknown age (but mid-20th century) sutured into a rock at Rapid 7, Cataract Canyon. The bottle mouth is inserted about half an inch into the rock.

same way as a telephone wire vibrates in a wind. Vibration affects the rock matrix in two ways. At contact points, each boulder rubs its neighbors, removing material on each particle. If a soft particle, such as a sandstone, rubs against a harder particle, such as a solid limestone, the softer rock loses more mass in the process. Because of their weight, particles apply forces to their neighbors, but in the act of vibrating, these forces increase to include not only the weight of the boulder but also dynamic lateral forces created by pulsating water flowing past the rock. Dissolution of some minerals, particularly those containing calcium carbonate, increases with pressure, leading to the second mechanism of suturing. Dissolution is

expected to occur more quickly at the contact points, where forces are high, than at other places exposed only to water.

Because suturing occurs relatively quickly, it is an important concern related to management of Glen Canyon Dam. If removal of aggraded debris fans is a management priority, floods like or larger than the one released in 1996 must be scheduled relatively frequently. In the absence of frequent floods, low flows in the Colorado River, which have insufficient power to entrain boulders, can vibrate them in place, resulting in suturing and a debris fan more resistant to particle entrainment. The next time you walk along the right bank at Crystal Rapid, notice how some of the Supai boulders have been shaped at their contact points with other boulders. Relatively young rapids such as Crystal can quickly become immobile masses of sutured boulders, much like Hance Rapid already has.

Bob Webb, Chris Magirl, & Diane Boyer

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## The Fate of Powell's Three Missing Men

**T**HE MYSTERY DEEPENS about Major John Wesley Powell's three missing men who departed his 1869 expedition down the Colorado River. My own interest in what happened to them was piqued after spending some ten years researching and writing a biography of Jacob Hamblin published in 1996.

All that we know for sure is that the three men, William Dunn and brothers O.G. and Seneca Howland, departed Powell's company at Separation Rapid in the Grand Canyon. They were never seen alive again. Nor have their bones ever been positively identified.

The story penned by Major Powell that he went with Jacob Hamblin to the north rim area near Mt. Trumbull

in 1870 to learn the trio was killed by Shivwits Indians was for years the accepted account. That story rested solely on Hamblin's interpretation of what the Shivwits told him, i.e. the natives fed and helped the three defectors until hearing they had abused a squaw(s) and thereupon, set upon the men and killed them.

Then, an article appeared in the *Canyon Legacy*, a quarterly publication of the Dan O' Laurie Museum in Moab, Utah inferring that Hamblin lied. A letter unearthed in Toquerville, Utah in 1993 alleges that three men were killed there in 1869 after being mistaken for federal authorities possibly searching for John D. Lee, a known participant in the Mountain

Meadows Massacre of 1857. Or it could be they were mistaken for federal marshals hunting “co-habs,” even though the search for Mormon polygamists didn’t heighten for another decade.

The source of this story was a letter located in a trunk written by a William Leany to John Steele which came into the possession of Prof. William P. Larsen of Cedar City. The letter refers to a day when...“those three were murdered in our ward (a Mormon church unit) and the murderer killed to stop the shedding of more blood.”

The latter story now seems, in some quarters, to be replacing the original Powell account (which from his writings the major never seemed to doubt). Interest in the matter increased after a story by Edward Dolnick in *Down the Great Unknown* (“The Vanishing”) appeared to resurrect the Leany account.

There are questions:

- The “Vanishing” story has one paragraph about a “long threatened invasion of Utah by gentiles.” What is meant here? Did it infer a war hysteria in 1869 which might have contributed to the murders? There was such trauma in 1857 with the coming of Johnston’s Army, but none of note in 1869.
- Did historian Juanita Brooks have hard evidence when she wrote on p. 110 of her *Jacob Hamblin* that Old Toab, a Shivwits chief, “was seen with a five dollar bill pasted across his head for decoration?” And a “young fellow with a watch suspended around his neck on a rawhide string?” Another with a “pocket knife”? There are no footnotes. But Brooks was known for pulling no punches.
- Did Eli N. Pace, Lee’s son-in-law, commit the murder to prevent the three (mistaking them for “nosy” feds) from finding and arresting John D.? Kerry Bate, a Steele descendent, says it is highly unlikely. There is no question the letter was written by Leany, he told the Associated Press in 1994. But Bate believes the letter “can’t be trusted because Leany suffered a severe head fracture and was just not of sound mind to know what he was doing.”
- The question must also be asked how three half-starved men crawling up Separation Canyon, then making their way over nearly one hundred miles of rugged desert terrain to the Toquerville area (even with an incredible tale to tell) could resemble federal marshals, or anyone for that matter to be feared. Years earlier, John C. Fremont’s starving men were rescued at Parowan and prevented from dying, according to Fremont. Why fear powerless men?
- Wayne Hinton, a Southern Utah University historian, doubts the Leany account. He was quoted in the Associate Press story as saying that the Mormons “are such a talking people. The fact no

one mentions it is very curious.” (Even when trying to hush the Mountain Meadows Massacre, it spilled over in many directions.)

- At the same time, the story of two Shivwits Indians trekking off the desert to report murders of whitemen in 1869 is suspicious. The story was conveyed in a telegram to Salt Lake City. (There was a telegraph office in Toquerville). It could have been that the Indians had a guilty conscience. But if reporting this to whitemen, it seems most likely they would seek out Hamblin.
- In 1995 David Whittaker, Brigham Young University, Lee Library in Provo, Utah, acquired letters written to Steele about southern Utah’s late 1800 period; there was nothing more conclusive on the murders of Powell’s men than already given.
- Would Hamblin have lied to implicate the Indians? Possibly to protect Mormon peers, or John D. Lee? Nigh to impossible. Hamblin protected the local Indians almost to a fault, often angering his peers by giving the Indians irrigation water rights and taking their side in almost any argument. He spent years around their campfires to learn their point of view and presented it fearlessly.
- Hamblin also had a solid reputation for telling the truth, even angering John D. Lee at his second trial when his testimony helped convict Lee and send him to the firing squad. Hamblin and Lee had differences going back to 1854.

Where does this leave us? For me, there are still questions; but until someone comes along with more conclusive evidence to refute Hamblin’s account, I will go with Kerry Bate that Leany was too deranged to think rationally. And Hinton...that if something as heinous happened in any setting with people around, it would surface before 1993. Just as did the story of the Mountain Meadows Massacre, despite a secret pact to say the Indians did it all.

In addition, Major Powell, for all his faults and ego, was a rather astute judge of men. He placed absolute confidence in Jacob Hamblin and never doubted his integrity through many difficult encounters with the Indians. I am prone to do the same thing until better proof comes along to the contrary.

Hart Wixom

## So Where Did All The Dirt Go?

VISITORS TO THE GRAND CANYON invariably marvel at the enormity and sheer beauty of the place while a few even go so far as to wonder where all the excavated dirt went. The few that pose that intriguing question seldom realize that they are concerned with just an infinitesimal portion of a much larger problem with a most interesting solution.

For many years various writers have described the Colorado River as “too thin to plow and too thick to drink” and it seem to be a widely accepted aphorism that the river carries off one million tons of silt every day. It is obvious that there is a lot of behind-the-scene activity, that much ground is being moved each and every day and that its ultimate disposal site must be somewhere downriver.

Through the geologic eons, the Colorado River has carried away, down and through what would eventually enlarge to become the Grand Canyon, several thousands of vertical feet of rock and soil that once covered an area of many thousands of square miles of land all west of the present Rocky Mountains, including a quarter of Colorado, much of Wyoming and New Mexico, and far into Utah. That is a lot of dirt and it is still being moved just as it has been for many millennia, moved from where it was originally located to a large and most interesting depository, an inexorable movement only slightly delayed by man’s very recent introduction of relatively minuscule concrete barriers (dams forming small, local, temporary silt depositories) in the river’s ages-old channel.

Back when all this movement of earth and rock was just getting started, the place on a modern map we

now call Yuma, Arizona, was at the mouth of a very young river. Yuma-to-be was on a seashore, facing west across what we now call the Gulf of California (or the Sea of Cortez, if you prefer) which extended at that time far northward, far past Yuma, at least as far as present day Palm Springs, California, a long, wide, deep arm of a prehistoric sea. The new river at Yuma cut down into the land and ended up trapped in the

canyons of its own making, unable to escape, forced to cut deeper and deeper as the whole land rose beneath it, eventually excavating the Grand Canyon as we see it today.

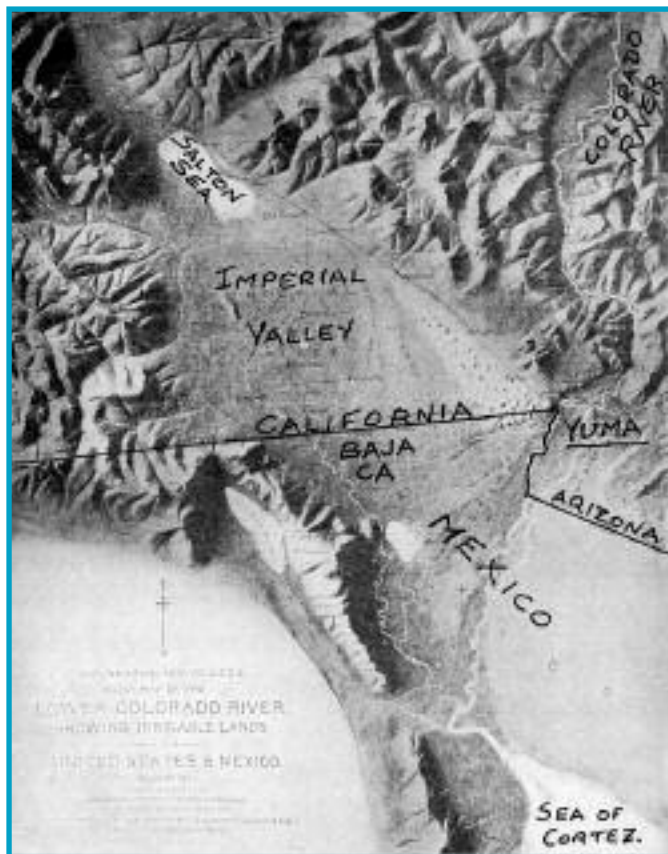
For eons, from its very beginning, the Colorado River dumped its ever present load of silt and soil into the blue waters of the Sea of Cortez. A typical river delta appeared and grew. It grew until it reached the far western shore of the Sea of Cortez, eventually to become the wide, flat, wholly natural dam that exists today blocking off the northern reaches of that ancient sea from the open water to the south.

Through the years the river continues to

transport cubic miles of material, strengthening the dam, making it permanent.

The river-borne dirt continued to arrive. The new land built out north and south solid across the now truncated Sea of Cortez, mostly to the south toward the open ocean, but often to the north into a new landlocked basin forever isolated from its ocean origin.

When the river flowed north, a great freshwater lake appeared (modern geologists have named it Ancient Lake Cahuilla) which overflowed at the ever growing delta’s lowest point back southward into what



Map reprinted from *The Salton Sea* by George Kennan, New York 1917, page 19.



remained of the Sea of Cortez. When the great river flowed south, the abandoned freshwater lake dried into a salty pond far below sea level on the almost dry bottom of the ancient sea, leaving an agricultural paradise of rich, fine soil now called Imperial Valley on the gently north slopes of the giant river delta.

In 1905, the great river which historically flowed southward below Yuma again switched directions and started to flow northward, an international disaster of epic proportions in the making, one only averted by the obstinate determination of E. H. Harriman, the much maligned president of the Southern Pacific Railroad. But that is another fascinating story.

No vestige remains of the triangular shape of the river delta's Greek Alphabet namesake. The built-up silt depository is now best described as an ill-defined quadrilateral limited on two sides by roughly parallel mountain ranges approximately fifty miles apart, both canted to conform to the distinctive northwest to southeast geography of the southern half of the state of California. The southern limit is the southern shore of California's sub-sea level Salton Sea, a distance of, very roughly, one hundred miles.

This otherwise featureless ex-delta has one distinctive characteristic, however, in its vertical elevation. Its highest point is at Yuma, Arizona, elevation 160 feet above sea level where the Colorado River escapes its confining canyons and the land falls fan-shaped in every possible direction from there. This typical river

delta pattern allows gravity delivery of irrigation water from Yuma to Imperial Valley and everywhere else on the ancient river outfall plain.

The delta soil is rich and the land is essentially dead flat with a slope of less than five feet per mile. Actually, the land is so flat that a destructive tidal bore was a regular feature of the Colorado River below Yuma until the man-made dams upstream limited the river flow and silted the channels thus putting an end to that exciting hydraulic phenomenon.

The accompanying picture of an early (1905) three-dimensional map of the area in question, with a much exaggerated vertical scale, distinctly shows the typical delta construction of almost 5000 square miles of dry land, the final resting place of an awesome amount of Colorado, Wyoming, Utah and Arizona dirt.

*John Southworth*



Edith Bass guiding party into Grand Canyon on Bright Angel trail at 1st tunnel, ca. 1915. At that time the only tunnel it is now the 2nd tunnel. The other was built by CCC nearer to trail head in 1930s

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## 2002 Ballot Comments

**E**ACH YEAR WE POLL the guide membership of GCRG, asking them what we're doing right, wrong, or if we're simply not doing what we should. Many of the questionnaires come back blank. A sampling of the rest are printed here. For the sake of tact, we have left out any that were of a personal (negative) nature.

As usual, responses tend to vary widely, oftentimes with a strong voice pushing one way, and an equally strong voice pushing the opposite. We may never get consensus on some tough issues (unionizing, dam decommissioning, BQR content, etc...). What we can do is keep on airing the issues in an open forum. Since all the questionnaires are anonymous, if you'd like to follow up your comments with specifics, please contact us and we can talk things over in depth. We'd love to hear from you.

### GOOD THINGS GCRG IS DOING

A lot! Thank you!

BQR.

Everything & anything. There are talkers and there are doers. Thank you for being the doers.

Publishing BQR and providing a forum for the Grand Canyon community of guides.

BQR.

Keep the GCRG money coming. More shortly!

Continue being involved in the CRMP.

River issues.

BQR. Adaptive Management Program. Adopt-a-Beach. CRMP.

Keep up the good work. Love the history and current information.

BQR. Keeping us abreast of issues. Being high minded on issues and goals. Great Job! Whale Foundation is wonderful! *(We couldn't agree more about the Whale Foundation. They were initially formed under the GCRG "umbrella" but are now a separate 501(c)(3) organization with an impressive board, mission and goals. Look for a regular Whale Foundation column called "From the Back of the Boat" in each issue of the BQR.)*

GTS land and river sessions. BQR. Involvement in AMWG/TWG/CRMP.

Give Lynn H. a raise!

BQR. Staying alive.

Keeping water flows more constant.

BQR.

Pushing people to give a bit more. Demanding action.

BQR. Keep it going. It's wonderful.

Publishing the BQR. Whale Foundation. Adopt-a-Beach. GTS. Not setting itself against private boaters.

Being honest. Doing something to engage support for a good CRMP.

The Spring and Fall Meetings. BQR (beautiful layout, but I'm not so crazy about the articles).

Publishing the BQR.

Adopt-a-Beach. Book reviews. Printing history such as the recently unearthed Sumner letter. Staying active in southwest river issues.

Spring GTS.

Looking into decommissioning Glen Canyon Dam!

BQR. Involved with the CRMP.

Staying alive!

Like to see the GCRG stand on the CRMP. *(You want it, you got it! See the article in this issue. Grand Canyon National Park will be accepting written public comments until September 20th, so weigh in with your own views! All of our voices count! Visit [www.nps.gov/grca/crmp](http://www.nps.gov/grca/crmp) to learn more about the crmp project.)*

GTS. BQR.

Being great. BQR.

Keeping the old timer's tradition alive and vital.

Newsletter! "Go wid' da flow".

The BQR. Making Lynn the Executive Director.

Helping guides get WFR. Arguing with the park over increasing regulations that are unnecessary.

Guide training.

BQR.

Spring and fall meetings. Coordinating with CPRG last fall. *(The joint GCRG/CPRG meeting was productive and informative for both groups and served to bring northern and southern guides together to discuss issues that affect us all. We'll be doing this again in the future.)*

Everything.

### MISGUIDED THINGS GCRG IS DOING

Unrealistic position on aircraft.

Not attempting to get all guides involved. Resting on past accomplishments rather than opening up to younger guides. *(GCRG is making a concerted effort right now to broaden and strengthen our guide membership by drawing in more working guides of diverse ages and backgrounds. They'll be hearing from us soon!)*

You people at the BQR use a lot of abbreviations. Some of us don't understand them all. Could you please explain them in your articles? Thanks.

Nothing to my knowledge.

Not making certain that outfitters are following United States labor laws. This can be done quietly. Recently for example, an outfitter said it would not pay Workman's Compensation if a working guide caught an endemic disease while working in the Grand Canyon. The law states otherwise.

Workman's Comp is for us. Let's see it acted upon fairly. (*According to State Fund, a Worker's Compensation provider established by the Arizona Legislature, claims are always a judgement call. However, should guides find themselves in this situation while working on the river, there are two factors that make a claim more likely to be accepted:*

- 1) *If you get sick or injured while on the river, you must see a doctor immediately upon your return.*
- 2) *The doctor must determine that the illness or injury happened while working on the river and make that notation. Witnesses help!*

*In other words, if you don't see a doctor, or if you wait to see one, your claim will most likely be denied. The Industrial Commission of Arizona is the regulatory state agency that administers workers' compensation law, hears disputed claims and regulates benefits by all workers' compensation insurance carriers. Employees covered by Workman's Compensation may contact them with questions or disputes by calling (602) 542-5768.) We'll do some more research, so look for an article in the next issue.*

Supporting science in Grand Canyon. Supporting regulations that cause stricter rules for boatmen and cause more duties.

Losing momentum.

Fighting drug testing for guides. I hate drug users.

Hmmm—can't think of any offhand.

Forget about taking down the dam. Getting too involved in politics—I mean, are we here to protect the canyon, or the guides/boatmen?

Remaining silent about bad guide behavior.

BQR has become a "people magazine" focusing on personalities rather than issues. (*Send us an article! We'll print it.*)

I wish the BQR would stop doing "old timer profiles" once in a while. The BQR needs editors who have political opinions and who aren't afraid to write and express them. (*The BQR is an open forum for everyone's viewpoints, not the political opinions of the editors. It is a compilation of individuals voluntary submissions. The opinions of the GCRG membership are vast and wide. When the editors wish to express a personal, political opinion, we submit an article as individuals, not as editorial staff. You should do the same. No one is paid to research and write any article for the BQR. As the editors, our role is making editorial decisions about each issue and putting the issue together. If you have a personal opinion you wish to express, political or otherwise, please write an article and submit it to us. We would be happy to print it. The next deadline is November 1.*)

Printing Steiger interviews in their entirety. (*If you only knew...oral histories in their entirety often run over a hundred pages and are severely edited before*

*publication in the BQR.*) Staying focused on an inner clique of guides. Overlooking stars in resource agency roles who can help.

None I know of.

Not jumping into decommissioning Glen Canyon Dam with full heart and soul!

Seem good now.

Having no impact on AMWG—not speaking up or being a leader on Glen Canyon flows. Need new representation. (*The Adaptive Management Program is a stakeholder process. The intrinsic nature of the process means that change is far slower than we'd prefer. Our representatives, Andre Potochnik and Matt Kaplinski are extremely vocal and active, often working in coalition with other environmental stakeholders such as Southwest Rivers and the Grand Canyon Trust to stave off the considerable weight of water and power interests in this complex and time-consuming process. If you have questions or concerns, Matt and Andre have always encouraged your participation and involvement. We're even working on developing an Adaptive Management website to make this easier. So call the GCRG office and we can put you in contact with the guys in the trenches.*)

Need more humor in the BQR! (*Send us something humorous.*) GCRG are guides, not gods.

Being wimpy about taking on issues to protect the Colorado River through Grand Canyon.

We should be collecting more data from our passengers—what they want and need. Soliciting them to help us be a voice.

Riding the fence on the dam while supporting the Flagstaff science subculture.

Nothing.

#### THINGS GCRG SHOULD BE DOING

How about returning the first aid training to the Albright Training Center at the South Rim?

As an oar guide, I am concerned about the schism between oar and motor members of GCRG. Many motor guides are feeling unrepresented because of the wilderness issue. There is a perception that GCRG advocates no motors in Grand Canyon. I believe a large number of your constituency is, in fact, motor guides. Please address. (*We're aware of that misconception and want to dispel it. GCRG has always acknowledged motors as a historic, viable way to run the river. The Canyon can and should be shared by a broad range of folks, underscoring the value of diversity in type and length of trips. The advent of four stoke motors has also provided a much quieter technology while lessening pollution. Over the years, the GCRG board of directors has been roughly configured a third each of motor, oar and "both". We try to remain balanced in our views and realize that the diversity of*

*our membership is also our strength. We're here for the entire guiding community, not just a particular segment. Motor, oar, northern contingent, southern contingent, you name it—we want you all to be members and feel represented in your views.)*

Stay strong and thank you!!

Trying to get a wider membership. This is fast becoming a historical based membership. Let's have shorter articles on the old timers and more on the current guides to develop newer membership.

*(Widening and enlivening our guide membership was discussed earlier as a current priority of GCRG.*

*However, we feel that the old-timer interviews serve to firmly ground all of us in the collective history of our profession. The BQR is the most widely available repository of that history and one we can be justifiably proud of. Over the next few years, GCRG will be working towards raising funds to conduct additional interviews to keep the oral history project going. There are so many folks we'd love to get to—many of them more contemporary, more female guides, etc.... Send your suggestions our way!)*

It is time to poll the active guide membership on the wilderness/motor issue, and then take a position on the membership's, not the Board's opinion. *(GCRG polled our members with a Wilderness questionnaire and found that there was no clear majority position, making it impossible for us to support any one of the positions of the Wilderness debate. We therefore did not take a stand on the Wilderness issue, although many folks thought we did. It was very important to us to receive input from our membership (and specifically our guide membership) to assist in the formulation of any policy pertaining to this complex and often misunderstood issue, rather than relying solely on Board opinion. The "wilderness experience" of being in the Canyon is something we all enjoy. But Wilderness (with the big "W"), as it pertains to federal mandates on how we run the river is much trickier. We do, however, support a dialogue that will take us away from a polarizing stance and towards productive discussions on the most prudent management of this resource. Refer to Volume 12, #1 of the BQR for questionnaire results and details.)*

Fundraising—pay someone to really go after the dollars we need. Membership drive—get serious about extending our reach. We owe it to the many river/canyon lovers out there who don't presently have a connected community to be a part of. Spruce up the BQR—it needs a facelift. Quaint images may send us to the dustbin of history.

Raise money for a permanent building for GCRG and a river runner's museum.

Moving away from politics and political issues. Review BQR articles more thoroughly and edit out misleading and erroneous propaganda.

Get forceful with the CRMP process. User day allocations are being overrun by private boaters.

Expand guide membership. Make website more useful—update it more often.

Focus on protecting boatmen. May have to confront park and outfitters to do so.

Keep up the good work of informing people.

Getting the Fair Labor Standards Act to apply to guides. Looking outside the Canyon for inspiration and education.

Issues/Issues/Issues. More Wilderness, less motors, no dams, remove Glen Canyon Dam.

Get a union organized. Address the issue of stagnate wages and the profits the outfitters are making.

Consider limiting the size of the BQR to save money. *(You'll notice that we're trying to keep the length to 48 pages. In the printing world, this is a cost-wise and efficient size, as well as one that we have no trouble filling!)*

Building more bridges to agencies so policy can be affected. Interviewing early women after Georgie for living history (as well as men who haven't been featured).

Giving full support to decommissioning Glen Canyon Dam!

Raising pay for boat jockeys. Since the outfitters are a spineless bunch with regard to the NPS, get involved at that level to keep the NPS cut to size.

Add something new and creative to the BQR—feature local authors or artists, or excerpts on historical writings.

Rebuilding guides support for the group.

Taking a stand on issues directly affecting the resources in Grand Canyon.

Help NPS write and enforce rules to protect our natural ecosystem with no trace guidelines.

Establishing a group health plan for guides, so that their hundred percent contribution can benefit from the group rate. Some of us work for outfitters who will never establish such a plan. Take an unequivocal stance on decommissioning the dam.

#### BETTER WAYS FOR YOU TO BE INVOLVED IN GCRG

I would be willing to help in the polling process (on the wilderness/motor issue).

Send me articles for review before printing in the BQR. *(We have a handful of volunteer proofreaders who donate their time to reviewing the BQR. If you are interested in becoming a part of this, let us know. We'll be happy to include you.)*

Get everyone's email addresses and send us something in between BQR's. More GCRG stuff in BQR.

I dunno.

It's hard to be involved from Salt Lake City sometimes!



Writing for the BQR.  
 Have a meeting up north sometime.  
 Donate time to GCRG. Form a damn union myself.  
 Write some articles.  
 As a friend, supporter, sometimes visitor, and occasional contributor, keep the faith!  
 Learn how to expedite the decommissioning of Glen Canyon Dam!  
 Coming to meetings. More writing for BQR.  
 Good question!  
 Come to board meetings.  
 More guide mentors. Let's pass on the past. Bring down the old timers on more trips with senior

guides who can appreciate and learn new stories. So there you have it. Keep in mind that GCRG is primarily a volunteer organization (officers and directors included!) We work very hard towards our goals, but we cannot be all things to all people, nor can we cover all the bases however hard we try. That's where you come in. If you have opinions, or if you see something that needs doing, *please* jump in with both feet—run for the board, contact us, come to board meetings, get involved, write an article, undertake a project. We need you to be part of the solution.



## What Are All Those Numbers?

ONCE A YEAR, Grand Canyon River Guides' financial statements are published in our newsletter for review by our members. We realize that looking at columns of numbers often results in eyes glazing over and an immediate onset of a headache, so we're offering a narrative to fill you in on where we've been financially, what the picture looks like now and the measures we've been taking to ensure our long-term health. We certainly owe that to you after this particularly difficult year.

### THE PROBLEM

The BQR is our single largest program expense, approaching \$38,000 each year including editorial costs, negatives, color separations, printing, bindery, and mailing charges as well as posting issues on our website in a searchable format (and that's without paying contributors for their outstanding articles and artwork!) This means that every BQR you receive costs the organization approximately \$5 or \$20 per year per member, when annual dues are only \$25! GCRG experienced a sixty percent drop in BQR funding in Fiscal Year (FY) 2001/2002 from the previous year's level—certainly incredibly significant in its own right. However, when coupled with a reduction in general contributions, it resulted quite suddenly in a serious strain on our general operating funds. It was unfortunate too, that half of our fiscal year was over before it was clear that our financial health was not what it should be (our fiscal year runs from July 1 to June 30). Recovery in terms of finding new funders, sending proposals and actually being awarded funds simply takes time. However, we've been working furiously to rectify the situation in the interim. We remain deeply grateful to the Ruth H. Brown Foundation for their

continued support of our newsletter and to our many members who have assisted us enormously through their dues and generous contributions. Five years of past support from Newman's Own Organics was incredibly valuable as well and we hope to gain their support yet again in the future.

### OUR PLAN

With rapidly dwindling unrestricted funds, immediate action was deemed necessary to turn the situation around before it became too dire. Rectifying the situation entailed a two-fold approach to address both short term and long term needs. It took the form of asking for immediate assistance from our members, as well as a blitzkrieg of funding proposals, phone calls and meetings with potential sources.

### THE REBOUND

The financial statements you see here look vastly different than they would have without the rapid response from members and funders alike.

- Amazingly enough, our May "help" letter generated over \$16,000 in additional income plus another \$1,500 from Teva, all within the last month of FY 2001/2002. We simply had no idea of what to expect, and the overwhelming support from our members was humbling in terms of the depth of your commitment to GCRG and our programs. It gave a financial infusion to the BQR, serving to stabilize us in our time of need. It also demonstrates a shared commitment to maintaining the quality of the BQR that has become our hallmark. With the Colorado River Management Plan in full swing once again, potential changes in dam opera-

tions, and other current issues of great import, the BQR is our best way to keep our members continually involved and informed.

- On the grant front, two new foundations have responded positively to the proposals we've sent and we have more proposals pending. This past fiscal year has taught us that a greater "mix" of funders should serve as an additional degree of protection from future vicissitudes.

#### ADDITIONAL MEASURES

GCRG's Board of Directors has been addressing further strategies for protecting our financial health and long term needs. While ebbs and flows in the financial life of non-profits are bound to occur, we must do what is necessary to lessen the possibility of finding ourselves in this situation again. Some of these measures are:

- Dues Increase—Since our inception in 1988, GCRG has only raised dues once—in winter of 1995, in fact. Over the last seven years, the BQR has virtually doubled in size and expenses have naturally grown. Postage rates went up yet again at the end of June and seem to spiral upwards continually. It has become evident that another slight dues increase is in order. Therefore, annual dues will be increased to \$30 and the five-year membership to \$125, with lifetime membership remaining at \$277. But hey, if you go for the five-year membership (now \$125), you'll still be at a \$25 per year level. We'd never be able to do what we do without your support—your membership dues are vital to our success and serve as the largest single source of our yearly income. Despite the slight increase in dues, you'll still get a tremendous amount of "bang for your buck" while qualifying for a tax deduction!
- Revamping membership flyers and cards—Membership development in terms of gaining new members and maintaining the membership we have is crucial to our health as an organization. Our membership is our strength. Revising our membership flyers and membership cards must not only indicate our new membership levels, but must more accurately reflect GCRG's current programs and accomplishments.
- Building our guide membership—GCRG is actively working on drawing more working guides into the organization. We want to strengthen our roots and urge all guides to get involved.
- Strengthen our financial reserves—Our business savings account must be built up to approximately a

hundred percent of our total annual budget for further protection over the long term.

We thank each and every one of you for your kind words of encouragement, your concern and your firm commitment to Grand Canyon River Guides and our programs. It means the world to us, and it demonstrates the considerable strength of the river community and all those who love Grand Canyon and the Colorado River. In the big picture, our problems don't mean a hill of beans when you look at what our nation has had to endure this past year. The world seems to be a very scary place with an uncertain future. Yet somehow, preserving and protecting our fragile environment for future generations takes on new meaning, value and urgency.... You have made a difference and we will continue to strive together towards our goals.

If you have any questions, comments or suggestions, please contact us. You've been here for us, and we want to be there for you to help as we can. This is your organization, so stay in touch and get involved. Onwards and upwards!

*Lynn Hamilton*  
EXECUTIVE DIRECTOR



Group of unidentified people, probably tourists, on trail.  
Possibly Bass trail ca. 1900  
NAU.PH.96.24.14.3

# GCRG Financial Statements

## PROFIT AND LOSS STATEMENT FISCAL YEAR 2002

### INCOME

Membership income	\$49,054.00
General contributions*	32,255.04
GTS income & grants	22,660.00
First aid class income	18,667.50
Adopt-a-Beach grants/contributions	13,946.00
AMWG/TWG grants	10,000.00
Sales (t-shirts, hats, etc.)	8,370.06
BQR grants	5,500.00
GTS overhead reimbursement	2,196.00
Interest income	331.99
<b>TOTAL INCOME</b>	<b>\$162,980.59</b>

### EXPENSE

BQR (production, printing, postage)	\$38,048.32
Payroll expenses	30,770.58
GTS expenses	23,861.01
First aid class expenses	16,124.85
Adopt-a-Beach	8,460.70
AMWG/TWG	8,359.60
Cost of sales	7,276.42
Rent	7,200.00
Postage	4,395.41
Printing	3,834.78
Office supplies	1,659.59
Telephone	1,615.11
Depreciation expense	1,588.00
Meeting expense	1,592.38
Utilities	1,059.39
Other (bank charges, etc.)	500.97
Internet	435.92
Insurance	356.30
Repairs	327.00
<b>TOTAL EXPENSE</b>	<b>\$157,466.33</b>

**NET INCOME** **\$5,514.26**

\* Includes memorial contributions, year-end fundraising, May 2002 "help" letter contributions, and general (un-restricted) contributions.

NOTE: Profit & Loss Statement does not reflect hundreds of hours of donated services for oral history preparation, BQR proofreading, IRS annual report, Guides Training Seminar, website maintenance, clerical support, donated equipment and more...

## BALANCE SHEET AS OF JUNE 30, 2002

### ASSETS

Cash in checking/savings	\$48,633.78
Postage & security deposits	2,149.07
<b>TOTAL CURRENT ASSETS</b>	<b>\$50,782.85</b>

### FIXED ASSETS

Computer & office equipment	\$38,510.84
Less depreciation	35,797.19
<b>NET FIXED ASSETS</b>	<b>\$2,713.65</b>

### LIABILITIES & EQUITY

Payroll liabilities	\$735.92
Restricted funds	1,323.83
Equity	51,436.75
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<b>\$53,496.50</b>

General Members 1,068  
Guide Members 815  
Circulation 1,969

# Major Contributors—

## July 1, 2001 through June 30, 2002

**T**HE BOARD AND OFFICERS of GCRG wants to sincerely thank all of our members whose generous donations during this past fiscal year (July 1, 2001 to June 30, 2002) have enabled us to continue our work. Space considerations make it impossible for us to list all of you who contributed during this period (much less, those who have contributed in past years). All those names would probably fill an entire BQR! We have extended the list beyond its normal parameters to include contributors of \$100–\$499 (this does not include the innumerable five-year memberships).

Our plea for help in May brought in over \$16,000 in contributions and an extra BQR contribution of \$1,500 from Teva before the end of the fiscal year. It certainly was an amazing response that helped us to get back on our feet. The list of contributors from that letter alone totals over 300 worthy folks, which prohibits us from printing all of them here, although we've extended personal thank you's. When the BQR shows up in your mailbox, you can feel good knowing that you helped to make it happen! Contributions, whether large or small, have made a tremendous difference. Many of you said, "I hope this helps". Well it did—enormously! Your overwhelming support and words of encouragement have kept us going in this particularly trying time.

And finally, thanks to each and every one of our members for being part of the GCRG family! We wouldn't be here without your belief in our organization and our goals.

We apologize to anyone we may have inadvertently missed in the lists below. Please let us know.

### FOUNDATION AND CORPORATE SUPPORT

Arizona Humanities Council  
Chehalis Fund of the Tides Foundation  
Ruth H. Brown Foundation  
Grand Canyon Conservation Fund  
Grand Canyon Monitoring & Research Center  
Tides Foundation (River Runners film proceeds)  
Teva  
Walton Family Foundation

### MEMORIAL CONTRIBUTIONS

In memory of David Kemp  
In memory of Chet Kosinsky

### PATRONS (GUIDES)

Annette & Nathan Avery  
Bill Crane & David Rockwood  
Noel Eberz

### PATRONS (GENERAL)

Michael Wehrle

### BENEFACTORS (GUIDES)

Alan Arnold  
Steve Asadorian  
Doug Stuart  
Ken Wright

### BENEFACTORS (GENERAL)

Barbara & Phil Albright  
Luke Bradford (in honor of Benji Howard's baby)  
Judy Clapp  
KC DenDooven  
Ronald Pennington  
Ann Raffel

### LIFE MEMBERS (GUIDES)

Nancy Carroll  
Dan Dierker  
Steve Dupuis  
Kent Erskine  
Dan Fredrickson  
Bego Gerhart  
Michael Ghiglieri  
Larry Hopkins  
Roobie Johnson  
Bill Liebfried  
Walter Mackay  
Scott Mosiman  
Karl Ochsner  
Mark Peck  
Nigel Pilling  
Richard Quartaroli  
Mary Lynn Quartaroli  
Pete Reznick  
Nicholas Reznick, Jr.  
Marty Schlein  
Garrett Schniewind  
Jeffrey Scroggins  
Art Thevenin  
Mike Timmons  
Stephanie Trimmer  
Greg Woodall

### LIFE MEMBERS (GENERAL)

Caroline Anderson  
David & Beth Baars  
Aaron Blynn  
Judith Ditz  
Edward Ercoline  
Anne Fine-Jacobs



Curt Fransen  
Mary Ann & John Harris  
Clyde Helms  
Jim Heumann  
Anonymous  
Timothy Hunter  
David Kreamer  
Bob Martin  
Tom Myers  
Linda O'Donnel  
Kevin Porter  
Paula Ryan  
Lulu Santamaria  
Sara Jane Savage  
Beth & Gary Schwarzman  
Mitchell Sendrowitz  
Jeffrey Siegel  
Steven Siegelbaum  
Terry Snyder  
Jo Ann Stephenson  
Jean Taylor  
Deborah Taylor  
Jim Thompson  
Stuart Walthall  
Richard Weiss

CONTRIBUTORS (\$100-\$499)

Steve Anderson  
Bruce Andrews  
Lloyd Babler  
Ric Bailey  
Sally Ballinger  
Will Barrett  
Owen & Patty Baynham  
Tim Begue  
Frank Bender  
Carl Bergren  
Bill Bishop  
Guy Blynn  
Carl Boyer  
George Campbell  
Art Christiansen  
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Pat & Owen Connell  
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Stephen Fickett  
Kent Frost  
Sharon Galbreath  
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Annie Thomas  
Ellen Tibbetts  
Richard Turner  
Tom Vail  
Ellen Voorhees  
Gretchen & Daniel Walsh  
Dick Warner  
Nat White  
John Whittlesey  
Greg Woodall  
Robert Young  
Bruce Zuidema

# Businesses Offering Support

Thanks to the businesses that like to show their support for GCRG by offering varying discounts to members.

- Canyon Supply**—Boating gear 928/779-0624  
**The Summit**—Boating equipment 928/774-0724  
**Chums/Hellowear**—Chums & Hello clothing 800/323-3707  
**Mountain Sports** 928/779-5156  
**Aspen Sports**—Outdoor gear 928/779-1935  
**Teva** 928/779-5938  
**Sunrise Leather**—Birkenstock sandals 800/999-2575  
**River Rat Raft and Bike**—Bikes and boats 916/966-6777  
**Professional River Outfitters**—Equip. rentals 928/779-1512  
**Canyon R.E.O.**—River equipment rental 928/774-3377  
**The Dory Connection**—Dory rental 928/773-1008  
**Winter Sun**—Indian art & herbal medicine 928/774-2884  
**Mountain Angels Trading Co.**—River jewelry 800/808-9787  
**Terri Merz, MFT**—Counselling 702/892-0511  
**Dr. Jim Marzolf, DDS**—Dentist 928/779-2393  
**Snook's Chiropractic** 928/779-4344  
**Fran Sarena, NCMT**—Body work 928/773-1072  
**Five Quail Books**—Canyon and River books 928/776-9955  
**Canyon Books**—Canyon and River books 928/779-0105  
**River Gardens Rare Books**—First editions 435/648-2688  
**Patrick Conley**—Realtor 928/779-4596  
**Design and Sales Publishing Company** 520/774-2147  
**River Art & Mud Gallery**—River folk art 435/648-2688  
**Fretwater Press** 928/774-8853  
**Marble Canyon Lodge** 928/355-2225  
**Cliff Dwellers Lodge, AZ** 928/355-2228  
**Mary Ellen Arndorfer, CPA**—Taxes 928/525-2585  
**Trebon & Fine**—Attorneys at law 928/779-1713  
**Laughing Bird Adventures**—Sea kayak tours 503/621-1167  
**North Star Adventures**—Alaska & Baja trips 800/258-8434  
**Chimneys Southwest**—Chimney sweeping 801/644-5705  
**Rescue Specialists**—Rescue & 1st Aid 509/548-7875  
**Wilderness Medical Associates** 888/945-3633  
**Rubicon Adventures**—Mobile CPR & 1st Aid 707/887-2452  
**Vertical Relief Climbing Center** 928/556-9909  
**Randy Rohrig**—Rocky Point Casitas rentals 928/522-9064  
**Dr. Mark Falcon**—Chiropractor 928/779-2742  
**Willow Creek Books**—Coffee & Outdoor gear 435/644-8884  
**KC Publications**—Books on National Parks 800/626-9673  
**Roberta Motter, CPA** 928/774-8078  
**Flagstaff Native Plant & Seed** 928/773-9406  
**High Desert Boatworks**—Dories & Repairs 970/259-5595  
**Hell's Backbone Grill**—Restaurant & catering 435/335-7464  
**Boulder Mountain Lodge** 800/556-3446  
**Marble Canyon Metal Works** 928/355-2253  
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Bridge Canyon Dam Site from rim, 1949.  
 Photo by Bill Belknap  
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Grand Canyon tourists rubbing their feet, 1942.

Photo by Fronske Studio

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