

Boatman's Quarterly Review

The Journal of the Grand Canyon River Guide's, Inc. • Volume 35 Number 4 • Winter 2022-2023



**BECCA
LAWTON**

boatman's quarterly review

Published 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, emailed to GCRG. Include postpaid return envelope if you want your submission returned.

Deadlines for submissions are the 1st of February, May, August and November. Thanks!

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Cover: Becca Lawton in Horn Creek Rapid, Grand Canyon, 1978. Photo: David Lowry



Prez Blurp

It was only 6 a.m. when the sun popped over the sand bank that we were sheltering behind, blasting us with an unbearable desert heat. I let out a groan as I scanned the dry wasteland that surrounded us. Besides the lake, which looked more like a canal, I could see nothing but dead tamarisks laying atop silt banks that seemed to go on for miles in all directions. Our boats were tied to the cement boat ramp that just barely reached the water. Far in the distance the Grand Wash Cliffs were a reminder of why we were here, but usually by this time, our two S-Rigs would be loaded onto the trailers, and we would be on our way back to Flag for the cleanup. So, what was going on today?

I peered at the tiny screen of my Garmin device, "Pearce Ferry Road is washed out, no ETA on a grader yet. Sorry..." said the text from my boss. Looks like we were going to be sitting here for a long time.

I'm not sure now whose idea it was, but after a few hours of covering under umbrellas and sucking on ice cubes, we decided to start walking towards food and air conditioning. **Have you ever hiked out Pearce Ferry Road? I hadn't either. I don't suggest it.** But, as we like tell our passengers, there comes a point where you must participate in your own rescue. So, we packed a few things and started walking across a small section of the Mojave. We wanted to get to the trucks and food as fast as we could, so we started cutting corners. Stepping off the road I found myself on a very flat expanse of mud, covered in dead plants and a scattering of cows, miles away from the river...lake...whatever, when, I was suddenly overwhelmed with a memory from my childhood. It was the year 2000, last time I was

walking in this spot, but back then it was very different.

Lake Mead used to be a fantastically huge reservoir, covering the desert with over thirty million acre feet of water, which was used as storage for the millions of people that depended on it to support life in the Western states. The small dry valley my crew and I were walking across now used to be a bay filled with warm blue water, with a boat ramp that was surprisingly busy with boats coming in and out of the reservoir. As a child, I remember a dark morning when our motorboats were denied access to the Pearce Ferry ramp. After hours of the crew attempting to push the boats across recently exposed sand bars, I was sent as a scout to find a deep channel. With two headlamps on my head, one facing forward and another with a red bandana on it, facing backwards, I trekked out across the bay wearing a life jacket and a thick, black line drawn horizontally, in Sharpie, across my thigh.

"If the water ever goes above this line, then stop where you are, and signal us." I was instructed.

It never did. I walked all the way across the bay watching the line carefully, but it stayed stubbornly dry. When I returned with the disappointing news, the TL made the call, it was officially too low for us to make it to the Pearce Ferry boat ramp. We got out the sat phone, and the boss told us we were going to South Cove for the first time. "Uhhh, where's that?" I hopped back onto the boat and took off my headlamps and lifejacket, excited for the adventure of something different. I was much too young to understand the significance of that moment. The lake was dropping, and it would continue to drop for the next twenty years.

I don't know when the appropriate time to act was, but over the last twenty years my colleagues and I have been watching the lake drop and expose sand cliffs that seem to be as high as the canyon walls themselves sometimes. What happens now? I don't know. I do know that there are many amazing people out there who are stepping up and taking action.

These people have a remarkably hard job making the decisions needed to keep the overdeveloped West from suddenly having no power or water.

My name is Riley Burch, I did my first Grand Canyon river trip in 1998 at the age of ten. From that time on I wanted nothing more than to become a river guide. After years of volunteering, I finally got hired by Arizona River Runners in 2006 and have been doing full seasons ever since.

As president, I am replacing an amazing member of our community, Billie Prosser. Billie has been my hero since I first watched her row across the Duck Pond in Hance like it was nothing. And again, this year when she single-handedly rowed an upside-down boat to shore after it flipped in Lava Falls. She exemplified the same calm, powerful ability in each board meeting I have attended with her. I hope to channel some of that grace and strength as we navigate the seasons ahead of us. I am proud to be a part of an organization that is here to support the Grand Canyon River Guides, and the many entities that work for, affect, and manage, one of the most amazing natural wonders of the world, and not to mention, our home. My plan is to keep myself as informed as possible so that I can support the guides, the canyon and the hard choices that need to be made. Thanks for having me.

Riley Burch

Changing of the Guard, Key Successes, and Other News

The autumn leaves are golden outside my window and somehow another year has flown past in the blink of an eye. So much great work has been done by GCRG and the amazing stewards who volunteer their time to keep our boat afloat! We extend our deepest debt of gratitude to GCRG's outstanding officers (President Billie Prosser and VP Riley Burch) and our amazing directors (Erica Fareio, Shonie Hardeen, Jay Healy, Jake Skeen, Rachel Unger, and Shyanne Yazzie) who steered the ship so capably from September 1, 2021 to September 1, 2022. What an enthusiastic and engaged group, with tons of fantastic ideas and a passion that runs deep for the Grand Canyon and the Colorado River experience. Their successes include:

- 1) In our meeting with Superintendent Keable in December of 2021, we learned more about the Superintendent's plans and priorities, and we impressed upon him GCRG's desire for being a good partner, with an emphasis on active stewardship. We also delved into our concerns regarding crowding and congestion at key points along the river corridor. That important discussion led to a number of key developments:
 - A new five-year Philanthropic Support Agreement that provides the legal and policy framework supporting our mutual goals at Grand Canyon National Park. Specifically, the agreement outlines the pro bono contribution of resource stewardship projects performed in the river corridor by active members of GCRG, through our annual Guides Training Seminar river trip, in conjunction with NPS staff.
 - The aforementioned agreement includes an Annual Work Plan to outline the goals and

objectives, the methods used, and the desired outcome for specific stewardship projects to be conducted during the GTS river trip. Those projects will be in alignment with the desired outcomes for vegetation management as outlined in the Glen Canyon Dam Long Term Experimental and Management Plan (LTEMP).

- GCRG officers and directors developed a spreadsheet of our on-river observations and specific suggestions for mitigation of problematic crowding and congestion along the river corridor. To accompany this spreadsheet for our NPS partners, we also submitted a narrative to provide broader context and a clearer picture of some of the interrelated factors that exacerbate the problems that Colorado River users are now experiencing in Grand Canyon. This board-generated information will help the park develop Annual Work Plans while informing future LTEMP experimental vegetation treatments.
 - A successful stewardship project was conducted on the 2022 GTS river trip, and lessons learned will feed into the planning of future endeavors.
- 2) In FY 22, GCRG continued and expanded our indigenous scholarship programs to facilitate and encourage much needed diversity, equity, and inclusion in the outdoor industry workforce, by eliminating some of the initial hurdles faced by individuals from the eleven Grand Canyon tribes. The board and officers from the last two board cycles have been instrumental in developing these indigenous scholarship programs and securing funding. Our special thanks to outgoing GCRG president, Billie Prosser

for her leadership and initiative in this regard, and to former GCRG president, Al Neill as well! In the last fiscal year:

- Nine individuals received Indigenous Wilderness First Responder scholarships,
 - Two individuals received Indigenous Swiftwater Rescue Training assistance, and
 - Four individuals received NRS gift certificates for river gear through our Indigenous Gear Stipend Program.
- 3) GCRG director, Rachel Unger, took initiative by recognizing that the GCRG website needed a facelift and greater usability across devices. She subsequently dove in with her extensive technical expertise and created an outstanding new and improved website for GCRG! Thank you, Rachel, for taking GCRG's online presence to a whole new level! You can check us out at www.gcr.org. We know you'll love it too!

This is but a glimpse into the ongoing work of the GCRG board throughout the year, as we discussed advocacy issues, river management, Guides Training Seminar planning, policy development, and much more.

As we commence a new board cycle, you will see some new names on the masthead! We are very excited that Riley Burch is now at the helm of GCRG, and former director, Jay Healy is our new Vice President. Additionally, please join me in welcoming our new directors—Carter Mills, Tess McEnroe, and Glade Zarn who took office on September 1st, plus our new Secretary/Treasurer, Chantal Mosman. We're positively thrilled to have such a strong officer and director line-up, and we've already hit the ground running in a number of ways, including:

- Meeting with our Technical Work

Group representative about the extreme challenges facing the Colorado River and Glen Canyon Dam.

- Brainstorming about the 2023 Guides Training Seminar. Yes indeed, we're planning on an in-person GTS land session! See details in this issue. We could not be more excited to bring our river community together at Hatchland this spring, providing much needed cohesion, woven together with outstanding learning

opportunities and a whole lot of fun.

- Scheduling a meeting with Superintendent Keable and key staff for early December.
- Finalizing our annual IRS Form 990, which will be available for review upon request and online at GuideStar, www.guidestar.org.

Next time you see any of the current or past GCRG officers or directors, please thank them for their passionate stewardship of our

organization and the iconic river that we all love. They give back with their time and energy because they care deeply. We are beyond grateful to have them working on our behalf, and their efforts really make a difference. Outstanding humans, all. If you are a guide member who would be interested in running for the board in the future, please let us know! We'd be honored.

Lynn Hamilton
Executive Director

Back of the Boat- **The Whale Foundation News Bulletin**

Uncertainty. Sometimes it feels like that's the only thing I'm sure of.

- How much water are we going to be boating on this year?
- What is year number four of living with Covid going to be like?
- What other special new challenges are headed our way?

But there are a few things I do know for sure: I'm going to give it my best shot. My friends and loved ones are giving it their best, too. There's this great Grand Canyon community that I'm lucky to be a part of. And we're going to work together to sort it all out, get through, and do some laughing along the way.

And I know this: it always feels good to be out there in the beauty of the world.

Some great new board members have joined the Whale Foundation's stalwart veterans. They're working hard to make the organization stronger and more helpful than ever before. Things are happening:

- The best winter party of the year, Wing Ding 2023, will be February 18th. We hope to see you there!
- We'll see you at the GTS this April. Very excited! We're working on having the Whale Foundation Health Fair up and running once again.
- The Kenton Grua Memorial Scholarship is open for applications. If you're a guide who's going back to school, we'd like to help out if we can. The deadline is May 15. Check our website for details.
- The application for Health Insurance stipends is also open. If you're a guide and are paying for your own insurance, we'd like to help. The info is on our website. It's easy to apply. The deadline is May 15.

Thank you all for continuing to support the Whale Foundation. Take care, and keep enjoying!

Sam Jansen

DEAR EDDY

In reference to the article “How Low Can They Go” in BQR Volume 35, Number 2, Summer 2022.

The authors do a good job of outlining some of the issues associated with the continual dropping of Lake Powell elevations. The 2022 April through July runoff into Lake Powell came in at less than sixty percent of normal and as a result the Bureau of Reclamation had to cutback by 0.48 million acre-feet (maf) the deliveries to the Lower Colorado River Basin and bring down an extra 500,000 acre-feet water from Flaming Gorge reservoir. This water is propping up Lake Powell so that the Bureau can continue to generate electricity. However, the most recent BOR 24-month study shows that the climate driven trend for future levels of Lake Powell continues to drop to levels near or below the ability to release water from the generators. Once the water drops below 3,470 feet, moving water downstream requires the use of the much smaller four bypass pipes that protrude near the left spillway at the base of Glen Canyon Dam.

A correction needs to be made on the use of the bypass tubes, or more correctly, the River Outlet Works. First some context. There are two intake areas on the upstream face of the dam. The first are the penstocks that feed the eight generators. These penstocks are located at a centerline elevation 3,470 feet. The second are the two intakes for the river outlets at elevation 3,374 feet, which is 96 feet below the penstock intakes.

The River Outlet Works consist of four 96-inch-diameter steel pipes with cast iron bellmouth intakes, hollow-jet valves for regulation and ring-follower gates for emergency closure. Each outlet pipe is designed to release up to 3,750 cfs for a total release capacity of 15,000

cfs when the reservoir is at 3,490 feet. According to BOR reports, the elevation of the River Outlet Works is thirty feet above the estimated 100-year silt level in the reservoir.

The article stated that the River Outlet Works (River Bypass tubes) had never been used before. This is incorrect. Since the dam was completed, the BOR has periodically tested the operation of the River Outlet Works by exercising (opening and closing) to ensure their functioning. In addition, in 1983 the River Outlet Works was used to evacuate water from Lake Powell in addition to that water released through the powerplant and the spillways. The River Outlet Works were used for many months in 1983 until Lake Powell was reduced to a level that allowed operators to enter the spillway tunnels to begin the repair work and provided reservoir operators with enough storage capacity to not have to use the damaged spillways in 1984.

The River Outlet Works were vital to increasing the flow of water from Glen Canyon Dam in March 1996 when we initiated the first experimental flood flow. The GCES scientists determined that a flow of more than 40,000 cfs was needed to mobilize the sediments in the bed of the Colorado River channel. Former Secretary of the Interior Bruce Babbitt was captured on national media turning the valve to open the River Outlet Works to initiate the first experimental flood. Since 1996 the River Outlet Works have been used to augment generator releases to achieve the high flow levels for additional experiments.

The River Outlet Works are designed to be operated in emergencies and for short periods of time when the generators cannot be used or when full reservoir conditions exist in Lake Powell. Their use for science or providing continuous water supply operations were not part of the original design criteria. While the safety of the 96-inch steel pipes is likely not a concern,

the continuous use of the hollow-jet valves and ring-follower gates could lead to mechanical failure and reduced ability to control releases.

One of the benefits of having worked with and for Reclamation since the early 1970s is that you see a lot. I began my career at Reclamation studying the filling of the reservoir, then studying the operation of the reservoir system and finally to lead a group of scientists and engineers studying the impact of the operations of the dam to Grand Canyon and Lake Powell. I was at Glen Canyon Dam in the fall of 1981 and 1982 and during those weeks beginning in May 1983 when operations became more challenged. The River Outlet Works were a critical safety valve for the dam, especially when both the left and right spillways were compromised by erosion. As I type this, I am looking at a chunk of the left spillway that was ejected into the Colorado River. It now serves as a paperweight for the ever-increasing pile of research and history on climate change and hydrology. The dam is entering a new chapter in its life. It will be interesting to see where this one leads.

Dave Wegner

Former GCES Program Manager

In reference to every issue of the BQR and in appreciation of the BQR editors.

My pal Billie called the other day hoping for suggestions to honor and appreciate the contributions Mary Williams and Kat Spillman have made to the BQR.

Seriously, both these gals have served decades being the editors, sizing pictures and arranging the submissions into a flowing interesting document, wow. I look forward to receiving my BQR, each one a masterpiece, and read it cover to cover within a few days.

My recollections from the early GCRG days...a huge undertaking to gather enough material twice a year for a four page newsletter. Formatting articles on the OARS office computer with almost no computer literacy (many thanks to Mike Walker), delivering these pages to Kinkos to make a hundred or so copies. It seems we did have stick on address labels, although I had to purchase rolls of stamps then dampen (lick) each one to mail. Eventually we acquired a USPS bulk mail permit, the postage cost reduced and licking stamps became a humorous distant memory.

Quite a journey from 1988 to our current well oiled program. Many hands and contributors along the way. All the while steadfast editors and consistency. Every few months I for one am grateful to appreciate the results.

Denice Napoletano

Important Dates

Hey River Community—please mark your calendars for these important dates and trainings!

- **Whale Foundation Wing Ding—February 18, 2023**
- WFR Recert (Sponsored by GCRG—**February 17-19, 2023** at O.A.R.S. in Flagstaff
- Point Positive Workshop—**March 31, 2023** at the Hatch Warehouse, Marble Canyon, AZ.
- Guides Training Seminar—**April 1-2, 2023** at Hatch Warehouse, Marble Canyon, AZ. Yes, for real!
- GTS River Trip—**April 3-9** (upper half, Lees Ferry to Phantom Ranch) and **April 9-18** (lower half, Phantom Ranch to Pearce Ferry).

And how can you find out more and stay dialed in as we get closer? Two ways!

- Make sure to subscribe to our e-newsletter, Boatman's Beta for the latest info. You can do that by going to our website, www.gcrg.org (Go to "Get Involved" and then "Subscribe") or send an email request to Lynn at info@gcrg.org.
- Information and registration info will available on our website for GCRG's WFR recert, the Point Positive Workshop, and GTS trainings. Look under Guide Resources at: www.gcrg.org.

Please note that there will be no Backcountry Food Manager's Class the day before the GTS as in past years, however, do not despair! This certification is now available online. Go to: www.gcrg.org/food-manager for instructions and the link to the online course.



RIVER WORK

THE DAY OF A THOUSAND WATER

FALLS

When I launched with Tour West in late September, after a summer of nervously watching viral flash flood videos from afar, I thought I was avoiding monsoon season in Grand Canyon. But the unusually high temperatures we encountered, especially in early October, were accompanied by sudden, violent monsoon-pattern storms.

One hit us early one evening at Stone Creek, with high winds that kept changing direction, weaponizing the umbrellas we'd popped to protect our meal prep, and enough rain to cause a dozen spontaneous gullies through our camp. Fortunately our guests were a group of Alaskans, mostly Kodiak islanders, who scoffed cheerily at this "wild" weather and our mainlander reactions to it, and the storm was relatively short and localized. Parties camped nearby, upstream and down, were hardly touched.

Two days later in the Muav Gorge, a heavy, prolonged downpour hit us right after we pulled away from camp in the morning. The timing could not have been better: our gear was all stowed away dry and we got to watch the ensuing marvels from the only safe vantage point in the river corridor, when there's that much water coming down—our rafts, in the middle of the current. We hurried past the darkness at the mouth of Matkat like there was no such notion as hiking in side-canyons. I've seen waterfalls spout in the Canyon, but not thousands of them all at once, a coat of many colors billowing out and sideways to form an almost continuous skein of water chundering down the terraced walls.

The air temperature remained remarkably balmy for October, but the rain broke the heat wave we'd been experiencing so far. And when we got to Upset we were in for a

surprise I still can't get over, after running this river for two-thirds of my life: pushing into that top left lateral and a wall of warm water hitting my face. With Lake Powell a ghost of its former self, that pale bathtub ring widening at the same rate our margin of plausible climate denial shrinks, the Colorado in the Grand Canyon is lower and warmer this year than anybody in several generations of river runners has known it. No more full-body ice cream headache to enhance the Bronner's tingle of taking a bath in Marble Canyon, and even more soberingly: thanks to evaporative cooling, beers from your hatch crates are now colder than beers from your drag-bag. That day in the Muav Gorge, water running everywhere over rock still holding summer heat, the temperature of the river rose even more while the ambient temperature dropped. That slap in the face felt good. I thought of Beer and Dagget's prelapsarian swim down the Colorado, and of Georgie White and Harry Aleson's raftless wallow too. Amidst all my anxiety about deregulated weather patterns and a drought of historic proportions, this warm, muddy river was showing me a glimpse of its true old self.

It was one of the most outrageously beautiful days I've spent on the Colorado and I think everyone in our party felt the same way—the Alaskans were as slack-jawed as us guides, and at the end several of them named those hours of rowing through the rain as their favorite moment of the trip. Water in the desert is a terrifying blessing and our awareness of how lucky we were took our breath away. What a time to be alive—so much change and tumult and uncertainty, and so much destruction around and ahead of us. But so much beauty, too.

Louisa Bennion





guide profile

Astrid Thomas, Age 37

Where were you born & where did you grow up? I was born in Berkeley, California, to a Danish mom and American dad. I lived in the US until I was ten years old, when my parents split up, and I went to live in Denmark with my mom.

Who do you work for currently (and in the past)? I work for AZRA. I've done a couple of trips for Oars, GCY and Fort Tuthill.

How long have you been guiding? The past seven to eight years.

What kind of boat(s) do you run? Oar boats.

What other rivers have you worked on? I've mostly worked in Grand Canyon. I did a couple of San Juans, and a trip on the Main Salmon. I would love to boat other rivers in the future though!

What are your hobbies/passions/dreams? Hiking, snowshoeing, backcountry skiing and CrossFit.

Married/family/pets? I am lucky to have great groups of friends, family and chosen family, in a lot of wonderful places, as well as an amazing significant other/adventure buddy.

School/area of study/degrees? I went to medical school in Copenhagen, Denmark.

What brought you here? I came down as a guest nine years ago, with AZRA. I remember few details of the trip: Hiking up to Thunder River and wondering how the guides made cake! Mostly I remember feeling calmer than ever. My mind went

quiet. I still feel that same feeling most of the time. Rowing, being in camp—it's all very meditative.

Who have been your mentors and/or role models? Too many to mention here, but I am so grateful to them all. Lots of great and patient guides,



who shared their knowledge, taught me the ropes (literally) and talked me through whitewater and being a guide. A huge thanks to Kevin Greif (AZRA) who was a guide on my first trip and gave me just enough of a nudge to make me go to a guide school and pursue this very alternate path. And a thanks to AZRA for taking a chance on me.

What do you do in the winter? The past few years I've worked as a doctor in Greenland.

Is this your primary way of earning a living or do you combine it with something else? I combine it with working as a doctor. It's a really good balance for me. River guide Astrid wouldn't be the same without Doctor Astrid, and the other way around.

What's the most memorable moment in your guiding career? Being stuck on a rock at the top, and center of Hance for thirty minutes. I had just begun to think that Hance "wasn't so bad." It was really windy and I amped up in the pull into the duckpond, without looking where the boat actually was. I got solidly stuck with four guests in the boat. I was so grateful for Swiftwater training, and Liam O'Neil's voice in my head telling me to "change the shape of the boat." I eventually got the boat off the rock and made it through the rapid. I was so embarrassed, and it was a great lesson in humility, being present, and reading water.

What's the craziest question you've ever been asked about the canyon/river? Where do I plug in my hair dryer??

What do you think your future holds? I'm hoping to complete my medical specialty training in either Norway or Greenland. I'm going to keep guiding as much as I can manage.

What keeps you here? The place, the guests, and the camaraderie with my co-guides.

Imbalance of Power in the Grand Canyon

As a Grand Canyon river guide since 1984, one of my favorite daily quotes I share prior to our morning launches is from J. B. Priestley's book that was written in 1937, *Midnight on the Desert*. Part of what I quote follows.

"Even to remember that the Grand Canyon is still there lifts up the heart. If I were an American I should make my remembrance of it the final test of men, art and politics. I should ask myself: Is this good enough to exist in the same country as the Canyon? How would I feel about this man, this kind of art, these political measures, if I were near that rim? Every member or officer of the Federal Government ought to remind himself, with triumphant pride, that he is on the staff of the Grand Canyon..."

In 2016, when reports of a history of sexual harassment on the river led to the release of a report by the Department of the Interior's Inspector General, I was heartened by the corrective action taken by GCNP. Coupled with the "Me Too" movement's wake washing over our country, it seemed to me that those issues were being adequately addressed on the river. I now question that adequacy based on the incident that occurred on my last trip this year when the "trip of a lifetime" of a person very close to me became an ongoing nightmare due to the inappropriate behavior of a Grand Canyon guide.

Recently, NPR's *All Things Considered* reported the findings of The National Science Foundation

(NSF), who commissioned a report bringing to light their problems with sexual harassment and assault in remote facilities. Their findings mirror many experiences in our river community. In Antarctica, the NSF conducted eighty anonymous interviews and collected 880 surveys. Seventy-two percent of females agreed that sexual harassment is a problem, and just under fifty percent agreed that sexual assault is a problem. Meredith Nash, an Australian researcher who did not participate in the NSF report said, "You're so isolated and so detached from the normal roles in society that often it makes it, for lack of a better word, easier to get away with inappropriate behavior."

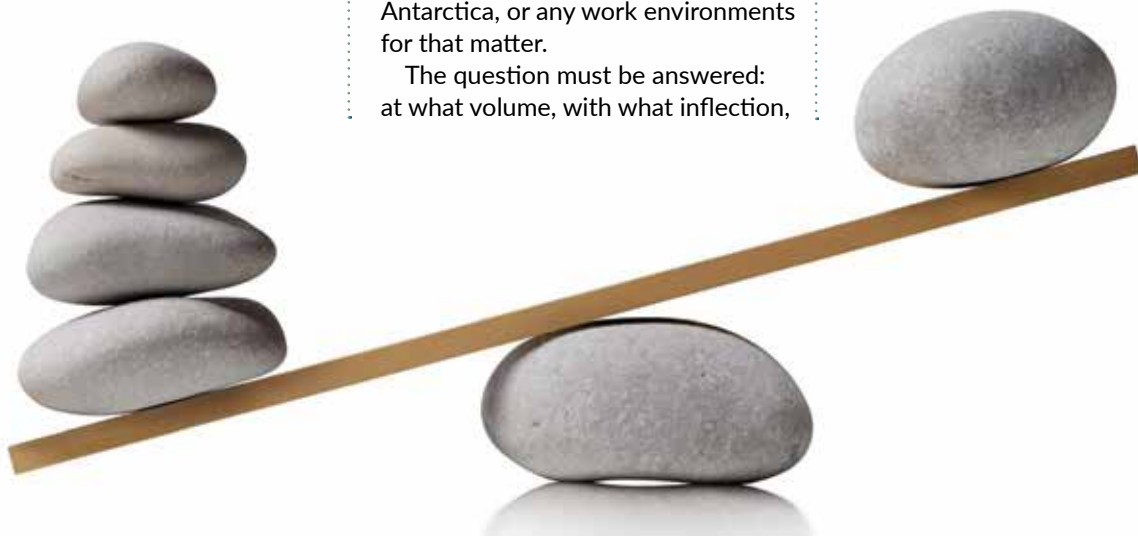
This is uncanny in its similarity to what a great female friend of mine recently shared with me, concerning her encounter with inappropriate guide behavior in 2017 when she participated as a work-your-way on her first Grand Canyon river trip. Even as an avid boater and an accomplished outdoor enthusiast, she was surprised by this particular "river life" behavior. She stated to me in an email that the "isolated environment and laissez faire vibe on the river can (also) intensify power structures between individuals and... take on a gendered tone in which males in positions of power may be emboldened to test accepted societal rules of conduct." The inappropriate behaviors that she experienced and that I witnessed cannot pass J.B. Priestley's "litmus test" and do not belong in the Grand Canyon, Antarctica, or any work environments for that matter.

The question must be answered: at what volume, with what inflection,

and how many times does "no" have to be said in order for the behavior to stop? Nearly three-quarters of females agree that sexual harassment and sexual assault is occurring in Antarctica. These numbers tell a tale that cannot be ignored. What might a survey of women in the Grand Canyon say about sexual assault and sexual harassment? Would the numbers align with Antarctica respondents or might it be higher? We, as a river community, need to take responsibility, get informed and take action to ensure that we are giving the best experience to all who travel the canyon.

Living in a society where there is much muddied gray area in relation to sex in the workplace, legal and procedural lines are sometimes blurry. Our river workplace is unique; however, in that it is geographically isolated as well as being detached from normal roles in society. The expertise imbalance and power structure often makes it easier to get away with inappropriate behaviors. This will continue when people or institutions are not held accountable. Women and the Grand Canyon deserve better. And it is the role of those in power, particularly males, to join their voices to that 72 percent (and probably more who have not reported incidents) in creating environments that are safe for all who wish to enjoy the grandeur of the Canyon, our home.

Martin Borges



HOW WE GOT INTO THIS MESS ON THE COLORADO RIVER

This article was originally published on the blog "Jfleck at Inkstain" (www.inkstain.net) on August 14, 2022. Reprinted with permission by John Fleck and Jack Schmidt.

On the eve of the release of the US Bureau of Reclamation's August Colorado River reservoir forecasts—freighted with meaning this month because of Reclamation's ultimatum to the states about the need to cut water use—we look back at the last four decades of water-supply management to pose the central question:

How did we get into this mess? Our answer in brief:

- When the Colorado's flow was up, we used it all.
- When it was down, we drained the reservoirs.
- The river's natural flows have been down for a long time.
- *And during the few stretches of somewhat higher flows, we did not significantly refill the reservoirs.*

A Failure to Set Water Aside for the Future

Operating year to year, it is easy to get lost in the river's annual ups and

downs, and the immediate desire to get water to farm fields and cities—**THIS YEAR! NOW!**

But the longer view, based on the best available data, makes clear our mistakes during the past twenty years. Since the year 2000, the blue line in the graph below has spent little or no time above the red line. That is water use outpacing supply.

The result—the most recent three consecutive dry years have left us with headline-clear problems:

- Reservoir storage is 66 percent less than it was in 2000.
- Reclamation is concerned about the structural integrity of the river outlets at Glen Canyon Dam that will be continuously needed if Lake Powell falls below the minimum power pool elevation.
- Las Vegas's old water supply intakes—and dead bodies!—are emerging from the Lake Mead mud.

21st Century Colorado River Water Use Has Exceeded Supply by 1.2 Million Acre Feet Per Year

The graph's nuances are worth noting.

Blue dots represent each year's total natural water supply—the sum of the

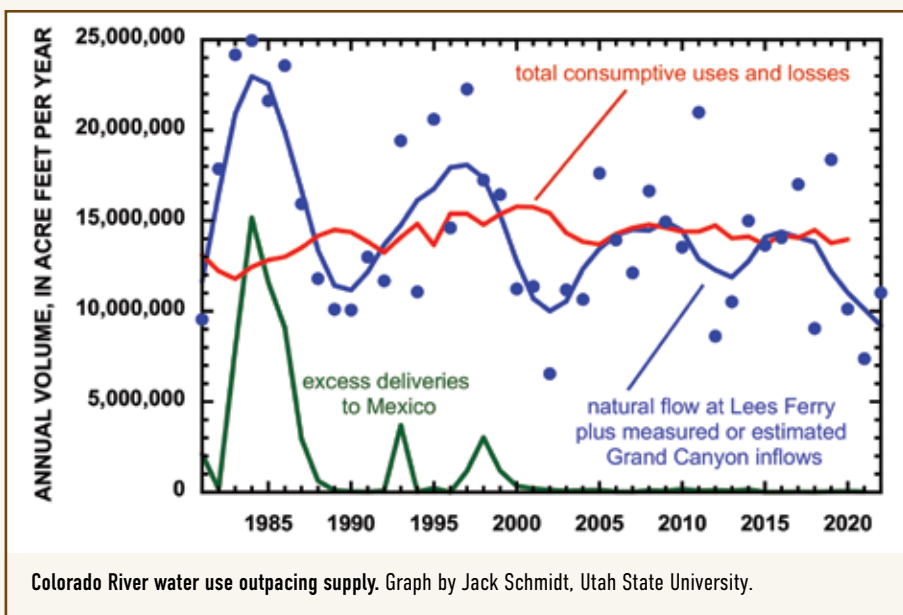
natural water yield of the entire Upper Basin and of the many springs and tributaries that flow into the Colorado River in the Grand Canyon. This natural supply, not considering the Gila, Bill Williams, or Virgin Rivers, averaged 12.8 maf/yr (million acre feet per year) in the 21st century, 23 percent less than the average between 1981 and 1999.

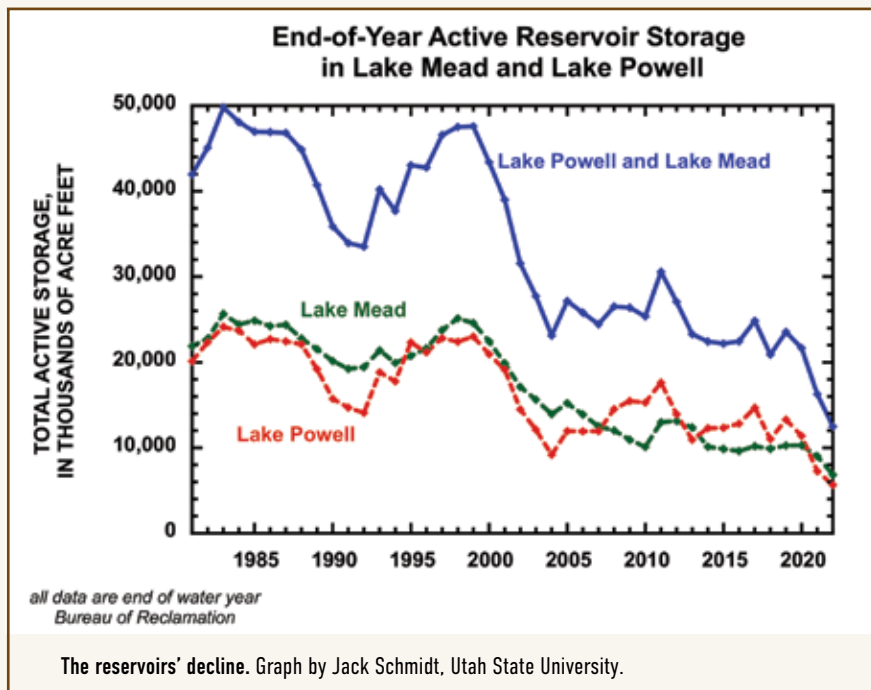
To help visualize longer-term trends and cycles, we statistically smoothed the data to create the blue line, which more clearly shows the longer-term ups and downs of the Colorado River's flow. The smooth line makes clear the wet periods of the 1980s and 1990s, and the deep droughts of the early 2000s and of today. Importantly for our current mess—the "wets" of the 21st century were not as wet, and the "drys" were drier, than those of the late 20th century.

The red line—total basin water use and reservoir evaporation loss (not including uses and losses in the Gila, Bill Williams, Virgin, or Little Colorado watersheds)—crept up through 2000 as the Central Arizona Project finally grew into the paper water allocations of the 20th century Law of the River.

Total consumptive uses and losses, including treaty deliveries to Mexico, peaked in 2000 at approximately 15.8 maf and were reduced during the next two years. Thereafter, average basin-wide consumptive uses and losses remained approximately 14.2 maf/yr between 2003 and 2020, and individual years were consistently within four percent of the average of that period. Throughout the 21st century, total Upper Basin uses and losses were approximately thirty percent of the basin-wide total.

Sustained consumptive uses and losses that exceed the natural supply can only be sustained by draining the reservoirs—but only so long as there is available water in the reservoirs. Thus, it is no surprise that the 21-year average (2000–2020) rate of water





consumption and losses that exceeded the natural supply by approximately 1.2 maf/yr led to today's crisis.

There were a few opportunities to rebuild reservoir storage, especially in 2005, 2008, 2009, 2011, 2017, and 2019, but a decades' long water consumption rate that exceeds natural supply is unsustainable. The reservoirs are now mostly drained.

The Failure to Refill

The history of water storage, described in the two graphs, has gone like this:

- The reservoirs were brim full in the mid-1980s and lots of water passed through the delta to the Gulf of California.
- Reservoirs were somewhat depleted in the late 1980s and early 1990s when basin-wide consumption exceeded natural supply, but the reservoirs refilled in the late 1990s due to three years when supply greatly exceeded consumption (1993, 1995, and 1997). Thus, the reservoirs were relatively full in 2000 when the Millennium Drought began.
- Reservoir storage greatly decreased thereafter when the natural supply was never greater than

11.7 maf/yr (2001) and was as low as 6.39 maf/yr (2002).

- Reservoir storage stabilized at a new lower level thereafter when there were a few wetter years between 2006 and 2011. The last relatively wet year was 2019, but our continued use of large quantities of water was such that this sequence of somewhat wetter years was not used to rebuild reservoir storage.
- Natural supply has been especially low between 2020 to 2022, averaging 9.4 maf/yr, which is far less than the basin-wide consumptive uses and losses that are approximately 14 maf/yr (we note that basin-wide consumptive use data are not available for 2021.)

Thus, today's crisis—two decades of low natural supply, including some short, very dry periods, cannot sustain consumption and losses that exceed the natural supply and that have not significantly changed since 2003.

Policy Implications

What are the policy implications of this analysis?

- There has been a natural cyclicity of somewhat wetter and some-

what drier years, but the recent wet periods, when the reservoirs might have been refilled, have not been as wet as in the 1980s and 1990s.

- The recent dry period that we are experiencing today since 2020 is comparable to the dry period of 2000–2005.
- Reductions in consumptive water use and losses mandated by Commissioner Touton will need to remain in place through the end of the present very dry cycle and well into any future wetter cycle in order to rebuild reservoir storage.
- The call for an immediate reduction of 2–4 maf/yr in consumptive uses and losses is an unprecedented reduction in relation to the pattern of use in the watershed since 2003.
- Anything less than sustained reductions of the scale demanded by Touton's ultimatum risks crashing the system—certainly if we get another year or two of very low runoff from the Rocky Mountains.

An Explanation of Our Methodology

The present water-supply crisis is a simple mass balance problem and we sought to describe this mass balance in the simplest way—averaging for the entire watershed.

How did we consider inflows?

- We used Reclamation's estimates of natural flow at Lees Ferry, including the provisional data that are available for 2022. We used approximately forty years of data.
- We estimated inflows downstream from Lees Ferry that flow into Lake Mead based on the difference between USGS measurements made at Lees Ferry at the upstream end of the Grand Canyon and near Peach Springs, just upstream from Diamond Creek at the downstream end of the Grand Canyon. These data are available for 1990–2021, and we used the average for the 1990s as the estimated inflows of the 1990s. We used the average for the 2010s as the inflow in

2022. These data include inflows from the Paria and Little Colorado Rivers.

- We added these two data sets as the available natural supply available for water users. We did not consider the natural inflow of the Virgin, Bill Williams, or Gila River because these rivers, with only rare exceptions like year 2005, are fully depleted and considered the sole domain for use by the Lower Basin states. Note that 2001–2005, Lower Basin use of these three tributaries was 2.2 maf/yr (the last years for which these data are available).

How did we estimate consumptive uses and losses?

- We used Reclamation’s Consumptive Uses and Losses reports and Water Accounting reports

* For the Upper Basin, we used revised and peer reviewed data prior to 1995 and provisional data 1996 to 2020. Data for 2021 are not available.

* For the Lower Basin, we used Colorado River system summaries prior to 2005.

* For the Lower Basin, we used Water Accounting reports 2006–2021.

* We assumed that Lower Basin mainstem reservoir evaporation 2006–present was same as the average for 2001–2005 (1.1 maf/yr).

* We only considered Treaty deliveries to Mexico as a use, and large surplus flows of the 1980s and 1990s were assumed to have passed to the sea.

We assumed that the uncertainty of all values was two or three significant digits and rounded off our calculations accordingly.

Jack Schmidt, John Fleck & Eric Kuhn

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John Wesley Powell: Plucky or Lucky?

Every once in a while, it’s good to revisit some of the older publications concerning river running on the Green and Colorado rivers. My interests are piqued with some off-handed mention online or in a journal article, something that sends me off on a tangential course. A remark about Major John Wesley Powell and his 1869 river expedition from Green River, Wyoming, through the Grand Canyon to the mouth of the Virgin River, Nevada, is a latest foray. A 1979 article by colleague Marty Anderson stated: “Twenty years after the voyage, when a reporter asked the major how he was able to make it safely, Powell replied, ‘I was lucky.’” Anderson cited the *New York Tribune*, August 18, 1889, with no author credited.¹

“I was lucky” has been oft-repeated, without much further information. Edward Dolnick in his 2001 *Down the Great Unknown* adds some context: “In 1889, after the Brown-

Stanton expedition lost three men by drowning, [including the trip leader, Frank Mason Brown,] the *New York Tribune* came to Powell for comment. How was it, the reporter asked, that Powell had not only succeeded in making it through the canyons but had succeeded on his first try? ‘I was lucky,’ Powell replied.”² Also in 2001, in his *A River Running West*, Donald Worster repeated, “A reporter for the *New York Tribune* asked Major Powell why Brown had failed. ‘He underestimated the perils to be encountered,’ was the reply; ‘nobody has ever successfully traversed the Colorado Canon but my parties.’ But Powell did it without an arm. ‘I was lucky,’ he said with a smile.”³

As they should, all of these authors used Powell’s biographers, William Culp Darrah and Wallace Stegner, as major sources. Stegner in *Beyond the Hundredth Meridian* makes no mention of the “I was lucky” comment and sparse note of Frank Mason Brown

or Robert Brewster Stanton and their 1889–1890 explorations to survey for a river-level railroad. Darrah, however, in *Powell of the Colorado*, does extensively. In a lengthy summary of almost 150 words, Darrah ended with, “At the close of the interview the reporter asked Powell how he was able to conquer the canyons on his first attempt and the Major smiled and said, ‘I was lucky.’”⁴

I was curious as to the reporter’s name and the full content of the article. With today’s internet, many newspapers are now online. Through their “Chronicling America” website, the Library of Congress (LOC) has available what turns out to be the *New-York Daily Tribune*. The Sunday, August 18, 1889, article in question is on page 15 (of 18), column 3. It is titled “In the Deadly Gorge” and subtitled “The Great Colorado Canon,” with no attributed author.⁵ It begins:



Inscription marking the location where Frank Mason Brown drowned on July 10, 1889. George Billingsley, 1971, courtesy NAU Cline Library Special Collections and Archives, NAU.PH.2000.54.2.17.12.

Washington, Aug. 14.—The great attempt by Frank M. Brown to survey the Colorado River to ascertain the feasibility of a railroad between its high banks, and the end of the enterprise in the death of Brown and two members of his party in the canons, induced me to make some inquiries of Major J. W. Powell, director of the Geological Survey, the only man whose parties have ever succeeded in traversing the deadly gorge.

The reporter went on to ask Powell a series of questions. I won't go over the entire 650-plus-word question and answer exchange, with Powell's somewhat disparaging remarks, as those can be found online through the LOC website. But I will focus on the last three of seven questions that I think are of particular interest.

1) "Was his boat a suitable one?"

Powell's Response:

"I would not have gone in it, by any means. I was anxious about it even before he started. It did not seem to me adapted to canon waters. **It seemed too flat-bottomed, and must have been at the mercy of the swirling currents.**" [emphasis added]

This is an unusual statement, given

the evolution of inflatable rafts and hard-hulled river boats towards becoming, as with the Grand Canyon dory, more flat-bottomed side-to-side, with rocker end-to-end and flaring sides for increased maneuverability and less affected by currents. Powell's boats were classic Whitehalls, "round-sided boats rising from a full-length keelboard," with some modifications ordered by Powell. Brown's boats were "somewhere in the Whitehall-to-canoe world," perhaps designed by him.⁶

2) Major Powell was asked about the stories that various parties had succeeded in descending the Grand Canon at different times:

Powell's Response:

"Nobody has ever successfully traversed the Colorado Canon but my parties. **The story that a raft once lived to get through is preposterous and was long since exploded. Invariably all attempts have been suspended or have met with disaster. The boat to go down the Colorado Canon must be sturdily built on a pattern which experience has proved the strongest and should have three air-tight compartments; the men should wear life-preservers at all places of danger; and all tools, clothing, and rations should be carried in air-tight**

ocean mail sacks, so that they will float. If these conditions are fulfilled, if the boats are tough enough, and the men at once **plucky**,⁷ intelligent and prudent enough, and at the maximum of their health and strength the canon may yet be run again." [emphasis added]

Powell's allusion to the raft referred to James White's controversial log raft "drift for life"⁸ trip of 1867, two years before Powell. In 1869, Powell was the only one of the river expedition to wear a life preserver, which was inflatable. He gave it to Billy Hawkins at the end of the trip, who donated it in 1908 to the Smithsonian Institution, which still holds the item. The 1871-'72 Powell river trip carried inflatable life preservers for all crew. They may not have had them for the Grand Canyon portion, as on May 14, 1872, Powell's cousin Clem noted them stolen by miners from "caches at the mouth of the Pahlia...The greedy grabbers took our life preservers." However, Powell had his on when the *Emma Dean* swamped on September 3rd.⁹ Powell was occasionally plucky, but, in general, both of his crews certainly were.

3) *I could not forbear saying "You do not seem to have been quite up to the mark, for you first attacked the canon long after you had lost an arm at Shiloh."*

Powell's Response:

Major Powell smiled whimsically and said, "I was lucky."

It may seem that the reporter perhaps was referring only to Powell's previous statement as to the men "at the maximum of their health and strength," not being such after he "had lost an arm at Shiloh." Plucky though he may have been, Powell was definitely lucky in that he relied so much on his crew members for the completion of the river trip under harrowing conditions.¹⁰

C. V. Abyssus

Footnotes:

1. Martin J. Anderson, "First Through the Grand Canyon: Powell's Lucky Voyage in 1869," *Journal of Arizona History* 20(4)(Winter 1979):391-408, quote 391.
2. Edward Dolnick, *Down the Great Unknown: John Wesley Powell's 1869 Journey of Discovery and Tragedy Through the Grand Canyon* (New York: HarperCollins, 2001), 292. Dolnick notes *New York Herald Tribune*, Aug. 18, 1889.
3. Donald Worster, *A River Running West: The Life of John Wesley Powell* (New York: Oxford University Press, 2001), 467. Worster notes *New York Tribune*, 18 Aug. 1889.
4. Wallace Stegner, *Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West* (Boston: Houghton Mifflin Company, 1954), 92. William Culp Darrah, *Powell of the Colorado* (Princeton: Princeton University Press, 1951), 330. Darrah stated the interview was August 14th, but the article date is "Aug. 14." He noted *New York Tribune*, Aug. 18, 1889.
5. Library of Congress, "Chronicling America," <https://www.loc.gov/resource/sn83030214/1889-08-18/ed-1/?sp=15&st=pdf>, accessed August 20, 2022.
6. Brad Dimock, personal communication, August 25, 2022. See also Brad Dimock, "Hard Hulls, Hard Knocks, Hard Heads: The Evolution of Hard-Hulled Rowboats in the Grand Canyon," in Michael F. Anderson, ed., *A Gathering of Grand Canyon Historians: Ideas, Arguments, and First-Person Accounts: Proceedings of the Inaugural Grand Canyon History Symposium, January 2002* (Grand Canyon, Ariz.: Grand Canyon Association, 2005), 149-154. Robert Brewster Stanton took charge after trip leader Frank Mason Brown drowned on July 10, 1889. Stanton made an interesting comment about the boat Brown obtained for Frank C. Kendrick, surveyor for the railroad route down the Grand (now Colorado) River from Grand Junction, Colorado, to the Confluence of the Green and the Grand rivers, then upstream to Green River, Utah: "After purchasing a boat, an ordinary flat-bottomed dory...", Robert Brewster Stanton, *Down the Colorado*, ed. Dwight L. Smith (Norman, OK: University of Oklahoma Press, 1965), 30.
7. Plucky: having or showing determined courage in the face of difficulties.
8. The phrase "drift for life" had been used more than a handful of times to title articles about James White's 1867 voyage, *vide* Earle E. Spamer.
9. Tim Cahill, "How the West Was Drawn: Explorer John Wesley Powell filled in 'great blank spaces

on the map"—at times buoyed by a life preserver," *Smithsonian Magazine*, <https://www.smithsonianmag.com/history/how-the-west-was-drawn-3623876/>, accessed August 24, 2022. "Journal of Walter Clement Powell," *The Exploration of the Colorado River and the High Plateaus of Utah, by the Second Powell Expedition of 1871-72*, edited by Herbert

E. Gregory, William Culp Darrah, and Charles Kelly (Salt Lake City, Utah: Utah State Historical Society, 1948 and 1949), 414, 446.

10. The conditions are well-known for Powell's 1869 river expedition—lost boat, supplies, and equipment; four men leaving the trip; meager rations; etc.—facts that don't need explanation here.

AT THE BOTTOM OF THE CANYON

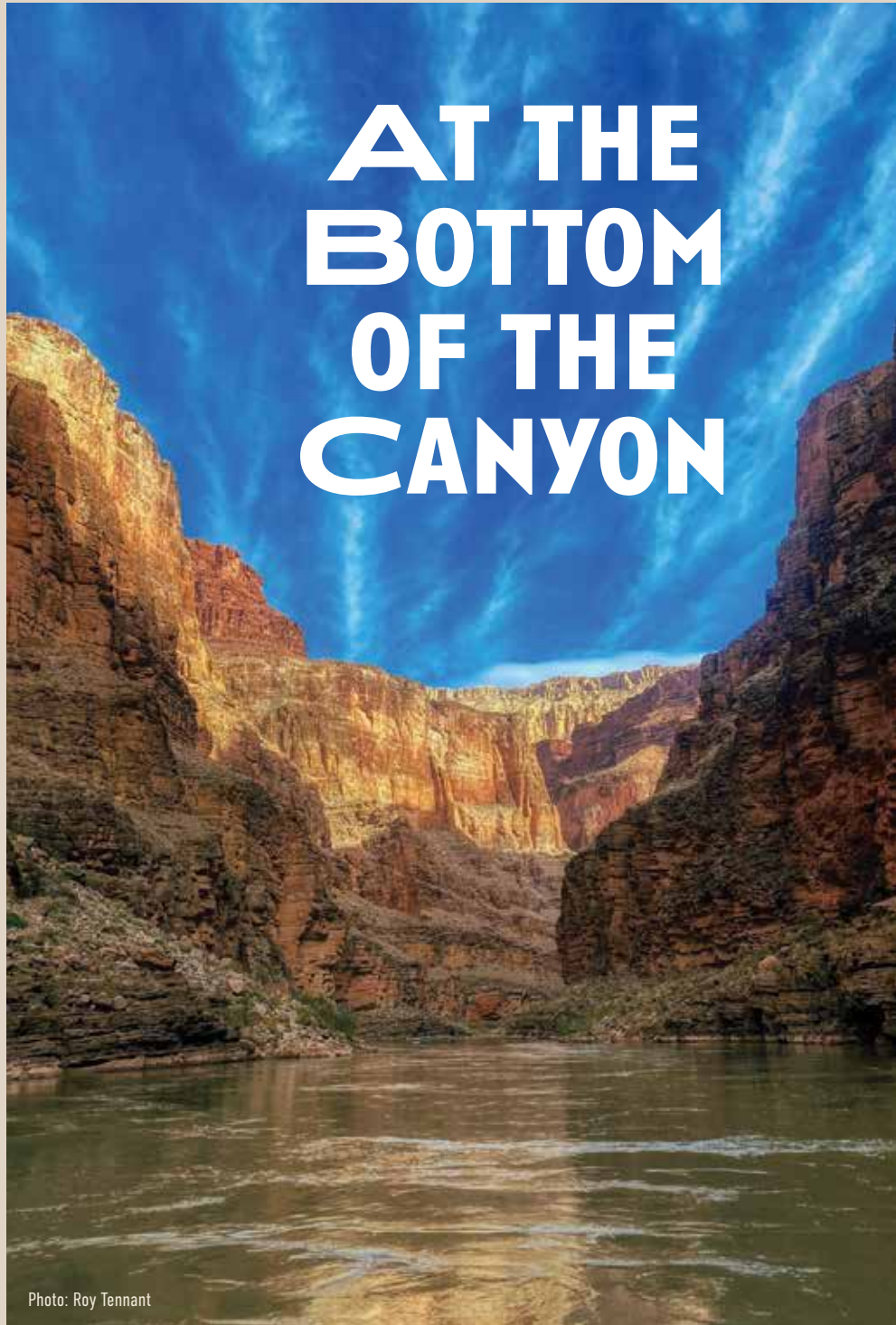



Photo: Roy Tennant



I peek out of my sleeping bag, which I've pulled over my head in the early morning chill of a mid-October morning, and I see the sky getting lighter in the east—but still barely penetrating the darkness in the west. I know that it's time. Reluctant to leave the warmth, but eager for what this day will bring, I unzip my bag and quickly pull wraps on top of my shorts and t-shirt against the cold. Waking up in the Grand Canyon like this is a double-edged sword—I may be reluctant to leave my bed, but I also realize where I am. It is a truly amazing place that I'm always eager to explore. The anticipation of the day's wonders is a powerful incentive to leave my warm cocoon.

My sore, overworked muscles are not yet limbered up, so I make my way stiffly down to the Colorado River to pee into it as we are told to do. On a whitewater rafting trip in the Grand Canyon, we carry absolutely every bit of trash and waste out except for one thing—urine. This is put directly into the river, as instructed by the National Park Service. While following strict park service protocol, I give thanks for being here. It's been 35 years since I was at the bottom of this canyon, and so much has happened since then. I essentially had my entire professional career during that time, and my wife and I raised two children. I've missed having the lessons and perspective about life and our place in it that come to me at the bottom of this magnificent canyon.

At the same time, I wondered, at 64 years old, whether I still had what it takes. Although I am a frequent hiker in retirement, I began months of upper body resistance training to make sure I had the strength for rowing a fully-loaded 18-foot boat. In the end, I shouldn't have worried. Between much lower water levels (6–10,000 cubic feet per second rather than 25–40,000 CFS that I had experienced in the '70s–'80s), light boats (on this trip for the first time I usually had no passengers and not as much gear as I was expecting), and my decades of experience, my runs in the

big rapids were spot-on and smooth. I was completely calm for the first time in seven trips, and my runs were acknowledged to be among the best of all six boats.

After my morning communion with the river, I make my way to our camp kitchen on the beach. Making coffee is Job One. There was that awful morning when our rotating kitchen crew called "Breakfast!" without coffee. No one died, but we didn't let that happen again. River coffee consists of a boiled pot of water that you drop a net bag of coffee into and let it sit for about 12 minutes. Then you ladle it out into your mug, cup, whatever you have, and doctor it up as you see fit. I add half-and-half (a luxury denied those who backpack into the canyon) and look up.

On the river, you are only ever a glance away from being awestruck—at dawn, in the middle of the day, or in the glorious star-filled nights. Just look up. This knowledge follows you through all the hard work demanded of you nearly every day; the dried and cracked feet, the sore muscles, and the craving for ice cream. The beauty sustains you like nothing else can, and for me, like nothing else ever will.

I'm grinning like an idiot every day down here. I can't get enough. Rafting the Grand Canyon as a river guide who rows the usual 18-foot rafts, I'm living my best life. I'm in touch with the river, the canyon, the weather, the wildlife, the plant life—everything. I'm hyper-aware of everything around me—partly from not entirely believing I'm here, but also because at least some of it has the potential to harm or even kill me.

Although dangers such as the big rapids, rattlesnakes, and scorpions get more attention than they deserve, the more likely dangers include such things as falling on some of the rocky and steep trails, slipping on mud or moss covered rocks, or doing something very stupid (and that includes more options than I care to list). Plus, as you drift below cliffs that climb hundreds and thousands of feet above you, you quickly realize

that any random boulder that chooses that moment to fall could take you out. The fact that these things happen very rarely on a human time scale can be cold comfort when staring up at a precarious house-sized chunk of sandstone as you float under it. Trust me on that.

I still struggle with how to explain this trip to anyone. Perhaps I can start with how completely enveloping it is. My entire world condenses down to what I'm doing that day, with no awareness about anything else going on in the world outside. At the same time I feel my consciousness expand into the Milky Way at night and into rocks that are billions of years old during the day. I feel both shrunk down to nothing by the span of time I'm confronted with, and at the same time challenged to step up and give my all just to get through the day—even as a tiny, inconsequential person. It's a contrast that is both astonishing and fulfilling. I can't get enough of it.

Take any random day. I get out of bed and look up to the cliffs above me. Full sun hasn't yet touched them, but I can already make them out. As the morning progresses, I can see the different layers of rock, and the colors begin to be better defined. There's the layer of limestone—perhaps a thousand feet thick—that rests above another layer hundreds of feet thick, of a craggy, fractured red sandstone. That sits above a layer of chunky blue-gray shale. And below that is smooth blue-black schist riven by narrow criss-crossed shafts of pink granite that has been sculpted by the river in formations I could never have dreamed up. I know that the river has spent a million years or more making those exact impressions on the schist. And that makes me feel like my petty concerns are less than nothing. Because they are.

And somehow that is exactly what I need.

This is what living at the bottom of the Grand Canyon for weeks at a time is all about. It's about being awestruck every day—on a minute-by-minute basis. One minute I see a

herd of desert bighorn sheep, while another it's the sunset on the cliffs, or the Milky Way splashed across the sliver of sky granted to me above the canyon in the dark of night. Or it's dozens of butterflies flitting around a plant I've never seen before, or the tarantula, or great blue heron, or scorpion, or rattlesnake, or the ever-present ants, dragging their latest find back to the nest across a deserted beach like that is just as important as any of my tiny accomplishments, because it is. Or perhaps even a rare sighting of a cougar running over the rocks beside the river. Anything, really. ALL of it.

Meanwhile, today is a big day. It's the day when we run four of the biggest dozen or so rapids in the entire 280 miles of the Grand Canyon. But on this trip I'm oddly calm. I say oddly, since all of my trips before (six of them), I've always been scared on this day—completely frightened. Perhaps it's the lower water levels, or maybe it's my experience and age. I don't know. I just know that from the very first rapid I knew that I had this. I knew that I was good for it. And as we go down, it becomes clear to everyone that my runs are the ones to watch.

I have young guides experienced in low water rivers approaching me to ask how I'm going to run the rapids. Usually, having only "small water" river experience, they are often overthinking it, trying to make technical micro moves when mostly it's a "set up and ride" kind of situation, while making sure to hit every big wave perfectly straight. They would call it "Tee-ing up". We didn't have a term for it back in the day, we just knew that if you didn't hit every big wave completely straight you ran the risk of flipping the boat, as I did in Granite Rapid in 1986, 35 years earlier, with my dad in the boat.

Today we're camped just above Phantom Ranch, as we have a trip member who will be hiking out from there. We need to get her there early in the morning so she has the best chance of climbing the one mile of

elevation to get up to the canyon rim in a day. This also happens to set us up to do "The Big Four" rapids—Horn Creek, Granite, Hermit, and Crystal in a single day. We will need to scout all of them, which means beaching our boats above them and hiking down to plan our routes. By any stretch, it is the biggest, baddest rafting day on one of the biggest rivers in North America.

We send one boat with the hiker, rowed by her boyfriend, down early to deliver her to the trail while the rest of us do the usual camp breakdown then catch up with him downstream. Stopping in at Phantom Ranch, a camping/cabin area at the bottom of the canyon on Bright Angel Trail, we fill up our ten five-gallon cans with drinking water, drop off some mail (to be stamped "Mailed by mule at the bottom of the Grand Canyon"), and pick up some treats. Meanwhile, Horn Creek Rapid, the first of the Big Four, beckons us.

Horn Creek Rapid is only about two miles below Phantom Ranch, so we're soon there. It has a steep initial drop, with the right side chock-full of big holes or waves depending on the water level. There is also a middle run. After scouting, the first several boats run right, and all have rough runs while one nearly flips. I opted to take (per usual) a more conservative run, so I decided to "split the horns" (run between two rocks at the top) which turns out to be the easiest and cleanest run of the rapid by our group. A boat behind me, which watched my run from shore, decides to take the same line, although the inexperienced guide ends up hitting one of the rocks. At least they had an easier time after that.

Many river rafters think that the name "Horn Creek" has something to do with the rapid. It doesn't. Horn Creek was named well before people were running the river the way we are now. But since it's named "Horn Creek" we river rafters seem to find it necessary to talk about rocks as if they are "horns." That's how we got to the phrase "splitting the horns" when,

in fact, we are simply entering the rapid between two rocks at the top, like we do at Hance Rapid, or others.

Next up is Granite Rapid, about three miles below Horn Creek. Granite is one of my nemesis rapids, and the only rapid in seven trips where I've flipped. Of course that was the trip where I had my Dad in the boat. I wrote about it in an essay in the *Boatman's Quarterly Review* called "Not This Day." Today Granite is a pale shadow of what it was like on that trip, and the waves are not going to flip our 18-foot boats. But it's still quite the wild ride, as you are right up against a wall and the only thing keeping you from scraping it are diagonal waves coming off it that alternate with diagonal waves coming from the other side, making it hard to hit every wave straight. At this water level that just leads to the boat rocking back and forth in a rather chaotic but in the end inconsequential movement.

Hermit is up next, only about a mile and a half away, and this one is known for its huge waves. At high water the waves can be bigger than your boat and very intimidating. The same trip that I flipped in Granite I should have also flipped in Hermit, as a wave near the top of the rapid turned my boat sideways and I was unable to get it straight before hitting the biggest wave. But rather than hitting the center of the wave, I luckily surfed safely off the right side of what was essentially a small mountain of water. In re-watching the video I still can't believe my luck. Our runs today are just fine, but still some of the biggest waves we will encounter on this trip.

Another three miles below lies the legendary Crystal Rapid, although it has changed and isn't quite the monster that built the legend. From Horn Creek to Crystal is only seven and a half miles, during which we run four of the biggest rapids in the Canyon. It's epic.

At the water levels we see these days there is a run both left and right of the main hole in Crystal that can flip an 18-foot raft at certain water

levels or if you hit it off center. On this day, some choose right and others choose left. My left run is completely smooth, not like back in the day. One year I even lined the rapid on the right as I was scared from flipping in Granite Rapid and almost flipping in Hermit Rapid. I was shaken, and not ready to take on Crystal in such a state. This time I was completely calm, because I knew I had it down cold. The volume of water flowing in a river can make a tremendous difference in the danger.

Having emerged from the biggest day of Grand Canyon rapids essentially unscathed, I feel pretty good. But I know that the much reduced water level was a major factor. Although I have quite a bit of experience, it doesn't necessarily mean a lot against the kind of huge waves we witnessed in the 1970s and 1980s.

After the biggest rapid day there is only one other potential disaster looming, and it's called Lava Falls. Among epic Grand Canyon rapids, Lava Falls is the most epic of all. Oddly enough, it has never been much of a nemesis for me. In high water, easier runs open up on the left, and at lower water levels the right side isn't as awful. Meanwhile, I ran the legendary "bubble line" run long before, when it existed, which fairly reliably took you through the trough hole in the center. I've never really had a bad run through Lava Falls, but it remains a rapid that you're afraid to scout. I've even had to go up in the rocks with toilet paper... the proverbial phrase scared s***less is a real thing.

At camp the night before we were to run Lava Falls, two young guides on our trip who were sharing rowing responsibilities flipped a coin to see who would row Lava. The anguish from the guide who lost the toss was obvious. It was clear his chance to run this epic rapid was something he deeply cherished, as would I in his place. After six trips, I totally understood this, so I immediately offered to give up my rowing spot to him. He was of course deeply grateful.

As I slept on this decision, I realized that I should even just give up my boat to him for the rest of the trip, so he could get more experience. I had already proved to my 64-year-old self that I still had it. I mean, I really had it. I didn't need more justification of my abilities.

From then on I was a "VIP"—"Very Important Passenger" and he strove to keep me from getting even the least bit splashed, hitting every wave straight on. He did a great job of it. It was October, and chilly, and it wasn't a small thing given that I refused to have much more than a splash jacket and waterproof pants. My wetsuit remained in my drybag, for reasons that I'm not even clear about.

Before long we came to the reservoir, where we had decided to tie our boats together into a big raft and float out overnight (a typical way of ending a Grand Canyon trip these days, as there is usually plenty of current out to the takeout spot at Pearce Ferry). From there, late in the day, but before dinner, we essentially had a party until bedtime, and set up watches with two people always awake to make sure we continued to head downstream.

On my watch in the middle of the night, the wisdom of that precaution became clear, as we lodged onto an almost river-wide sandbar. My colleague splashed into the shallows from his boat and slogged from one side of the "river" to the other, and detected where the channel was slightly deeper. We then had to wake up our comrades to help us push and pull the group of six rafts over to the slightly deeper channel to get us floating again. Although that was the only serious glitch, it wasn't the only thing that kept some of us awake.

We were all aware that just below our takeout spot was a rapid that no one wanted to run...like, ever. So some of us spent the night on edge making sure we would stop at the right time of night to allow us to easily float to take-out and not overshoot it into that awful rapid. Those of us staying vigilant realized that take-out

was coming up and in the darkness of a new moon we said we should eddy out. Luckily, one presented itself and we quickly untied the boats from the flotilla and rowed into the eddy and tied up. We found whatever sleep we could until morning. When we woke up and moved downstream we realized we had caught one of the few eddies available before takeout. We were astonishingly, and inadvertently, that close.

As we drifted into the ramp where our 19-day trip would come to a close, I considered what I had experienced. I had spent nearly three weeks in the wilderness, revisiting my youthful dream days of whitewater rafting on one of the most challenging rivers in North America and doing my best to stay alive and healthy. But much more than that, I was humbled.

When I'm in the Grand Canyon, through everything I see comes the understanding that I am nothing. The canyon doesn't care about me, it just is, as it's been for millions of years—well before humans existed and very likely, the way things are going, long after we're gone. In a very real sense, this knowledge frees me. My petty concerns fall away in the face of the stark beauty and truth presented to me in rock nearly as hard as diamonds, that has been worn into fluted shapes by the river flowing for millions of years before I arrived. I know that it will be there, wearing away the rock still, even as I inevitably return to making my own miniscule markings, like an ant on a lonely beach.

Roy Tennant

Tad's Emerging World - Glen Canyon Exposed

Dear Tad,

I'm writing you to let you know that I'm borrowing your 1950s Crown Graphic 4x5 camera and I'm going to use it to expose Glen Canyon and its emergence from its watery tomb.

My name is Dawn Kish and I'm a photographer like you. You don't know me but I'm a big fan of your work. I feel like you are the Ansel Adams of Glen Canyon. In your book *Glen Canyon - Images of a Lost World*, your photographs really spoke to me. You can feel that this canyon is so dear to your heart and soul.

Thank you for your time, light and vision and trying to save one of our precious canyons in the Southwest with your photographs. You fought to save this landscape from the Glen Canyon Dam but unfortunately the canyon became a giant reservoir called Lake Powell.

Well, I want you to know that the lake is now at its all time historic low since the 1960s because of drought, human consumption and climate change, but overall, Mother Nature is just taking over.

When I heard the news, I was curious and wanted to know what was happening. I wanted to see Glen Canyon. The canyon I never got to experience except in photographs, books and film. I wanted to see where you explored for over ten years with your cameras. And, where you made the most beautiful images of this epic landscape.

When I arrived at Hite Marina, I cried when I saw the mighty Colorado River flowing. My heart started to pound and it took my breath away. I knew I had to document this historic moment and run the returning river.

So I went on a journey with your camera, real 4x5 film, my DSLR and adventurous friends. We saw lake levels dropping and the canyon walls growing. It was an exploration of the unknown, like looking for buried treasure. We had moments with our feet stuck in the mud, found returning plant ecosystems and saw the excavation of lake sediment flushing out of the side canyons. I was spellbound with every curve of the canyon. I turned into a tiny ant against the massive sandstone structure of Tapestry Wall. At camp, we got slammed with a major wind/rain storm to make sure we were biblically humbled. At North Wash, I jumped into a replica of a Nevills cataract boat just for nostalgic fun. A wooden boat that ran the Glen back in the 1930s. We rowed for about ten miles of river and ran a few rapids until the river hit the lake.

I covered twelve days on the lake but this was just a tiny blip of a view. I need more time. I need twelve years and that would not even be enough. I had no idea that I would feel so overwhelmed by this seductive canyon. I can't wait to return for more. For more beauty.

So far, many of the photos I have taken have been under water. At least that is what the way-point says on my most recent map. According to the map I need a snorkel but now these photos are proof I'm on dry land.

In the 1960s, David Brower, Director of the Sierra Club, said it was his biggest "mistake" to let Glen Canyon go to save Dinosaur National Monument instead. You mentioned that Glen Canyon was a hundred Dinosaurs. From my exploration, I know why you wanted to save this magical place and now it is my turn to preserve this canyon with emerging photographs. I hope this documentary will inspire the younger generations to not make that same "mistake."

I'll be going back into the darkroom and making big 4x5 negative prints. Also, my assistant, Ciera Murrietta, is putting a film together about this project. Plus, I'll create digital prints for an exhibit where your photo archive lives at NAU Cline Library this summer. I'll be working with your former print maker, Richard Jackson — he is a big part of the story because you gave your Crown Graphic camera to him. You two became friends when you worked on your photo book together. He has been so gracious to lend me your historic camera and now I have it to document the emergence of Glen Canyon. It's my turn to create art and advocacy.

Thank you for your inspiration and creativity and your camera. I'll let you know what develops.

Your biggest fan,
Dawn Kish

All photos: Dawn Kish



Watch the trailer: <https://dawnkish.com/film>



Near West Canyon
photo: Dawn Kish



Little Arch Canyon
photo: Dawn Kish
Tad 4x5 Crown Graphic Camera





Petrified Sand Dunes
Dungeon Canyon
photo: Dawn Kish
Tad 4x5 Crown Graphic Camera



Where is this?
This unique place is across the Colorado River from Hite Marina, UT—very close to where river trips would start through Glen Canyon. This photograph was taken looking upstream at a new river channel that hugs the cliffband. The old river channel was farther to the right (river left). On the map above, you can see that the red waypoint shows that the photographer would be swimming in Lake Powell based on today's current maps. On the photo, you can see the white band of the high water mark about 150' above the river. The lake levels have never been this low since Glen Canyon dam was built in 1963 because of drought, human consumption and climate change. Glen Canyon is finally emerging from its watery tomb in our lifetime.

Ministering for the Future—A Letter

Following is an open letter to my great grandkids' great grandkids¹, written from 34.42 N, 118.42 W on this 542nd day of the plague year(s?).

A dozen years ago, I took a road trip with my parents along the California Sierras, what they once called Gold Country and what for you may yet again be the shore of an inland sea. We stopped by to see my Great Uncle Fred, a mountain of a man. He was the type of person whose eyes sparkled with wit and who took pleasure in crafting a good rhyme to bring a little zest into the day. Fred broke free from family expectations of a white collar professional path to grow his own almond farm and pioneer his own way.

A few weeks back, I met a new Fred, my cousin's kid who was scarcely a dozen days old. There's something magical about a newborn baby. They're such simple creatures, and yet their entire existence sparkles with the future. Seeing my new nephew² and reflecting on his life ahead, remind me of an old piece of family folklore.

When we drove down the Sierras, we stopped by Hetch Hetchy Dam, and my mom shared a story that stuck in my mind like an acorn seed in its cup. The Hetch Hetchy Valley welled with fresh snowmelt reflecting back the mountains above, a towering sight that overshadowed the hidden depths in the water below. My mom had written a letter from a grandmother to her granddaughter trying to explain what was lost when the Hetch Hetchy Valley flooded. When the dam was first built, Hetch Hetchy was known as a rival to Yosemite Valley, one of the most magical natural wonders that exists anywhere in the world. Yet even with ample adjective and analogy, how can words ever truly do justice to such a place? Even memories fade and decay, like

the towering trees rotting under the weight of so much water.

The world you, the great-grand children of the great-grand children of my little nephew Fred³, will inhabit seems more obscured than the lost Hetch Hetchy Valley floor. Seven generations is a long time, yet the oddities of our current moment make glimpsing what life might be like in a few years seem incredibly uncertain—like trying to see the surface of Hetch Hetchy Reservoir being battered by a thunderstorm. Let alone several centuries or however long human lifespans stretch seven generations in the future to come.

Perhaps the biotechnology revolution that gave us mRNA vaccines will help cure cancer and let us live young as centenarians. Or perhaps increasing access to such and similar tools will unleash untold horrors of our own creation. Biologically engineered plagues and the often forgotten but still very much present reality of nuclear warfare threaten an abrupt armageddon. Or perhaps the sixth extinction will accelerate and the slow burning climate crisis will precipitate mass human migration that sparks new wars and upheaval on the scale of the Bronze Age collapse in the mediterranean. Who knows!

Today the world endures the second year of an unprecedented pandemic—or at least one unlike anything in modern memory and one with unique rhythms to modern technological life. The virus ripples across our lives like rain on a reservoir. Five hundred or so days ago we scurried to grab every scrap of toilet paper we could find. A simple trip to the grocery store embodied a Mad Max style mania. Now dozens of ships wait outside major harbors as people buy more and more online. Home prices rise and rise while seemingly more and more of our neighbors live on the streets. Invisible even to a microscope, an epidemic of loneliness and

alienation plagues our land. When all the accoutrements of modernity are stripped away, the truth is that only those we love—and who love us in turn—provide the will to survive.

Early in my life, Great Uncle Fred hosted a massive family reunion. Complete with cousins of cousins my parents had never met before, what felt like hundreds of people were in attendance. We gathered in Fred's almond grove. Really it was a rather fitting place. A family grove makes more sense than a single tree, with many trunks sprouting from a tangled root network obscured under the ground. In California's vast interconnected water systems, it is only through dams like the one at Hetch Hetchy Reservoir that the vast fields encompassing the entirety of the Central Valley are possible.

Those invisible spaces, out of sight and too often out of mind, bind our past into how we create the future—just like how water flowing underground nourishes forests that otherwise would not be able to exist. Roots run deep. My best understanding of the family history, so much lost to myth and memory, is that our part of the family stems from a British emigre. They sailed directly to California en route to Nevada to make their pile in the silver rush. Missing their chance, they turned back and settled near Santa Maria.

My ancestors lived in such an impossibly different world, something I struggle today to imagine. Sure I could and have read the history of the era or first hand letters of those early settlers of American California. Yet the rhythm of day to day life seems so alien. A man might be, and many frequently were, shot over a dispute over some shiny rocks. The state legislature actually passed a law to prevent mining firms from prohibiting workers from leaving to try to “make their pile” elsewhere—the basis for California's ban on non-

compete clauses today.

It is humbling to consider the massive transformations in our way of life from that era and also how little ripples like those gold rush era laws still affect Silicon Valley today. And yet those years were only as far back as my grandparents' grandparents—four generations. How much further is it to peer across seven generations! My grandparents experienced World War Two and the all out effort to fight the forces of fascism. Their grandparents knew nothing of heavier than air flight—let alone the threat of armageddon raised by the atom bomb. My generation will likely live to see a human land on Mars.

Looking ahead seven generations, sadly the only thing that people these days seem to say with any certainty is that your generation will revile us. For our dithering. For the financial, environmental and moral debts we have left unpaid and imposed upon you without your consent.

You might wonder. Why not change our ways if we are so certain our actions pave the path to calamity?

The simple yet sad truth is that by the time you are alive, we will be long dead. We live in a world where gratification is instant, just a click away. The day-to-day lives of nearly everyone in my country are in temperature controlled caves of wood, cement and steel. Massive yet subtle changes occurring over decades lie far beyond the comprehension of that lived experience.

The scale of climatic change juxtaposed to the day-to-day life of an American early in the twenty first century reminds me of those visitors who drive up to the rim of the Grand Canyon, lick their ice cream cone a few times, snap a photo, and call it a day. The magnitude of the cliffs, side canyons, mesas and then the gorge that the mighty Colorado River is currently carving, so exceed anything that one might experience in a city, that the scale of the situation simply does not register. So they lick their ice cream cone and walk away.

A few weeks ago, I had the

incredible opportunity to raft down the upper half of the Grand Canyon, completing a trip I began down the lower half with my dad and brother eight years earlier. For someone from Southern California and a family steeped in the world of water—my dad, brother, his wife, and my mom all worked in the industry—rafting down the river that makes our modern way of life in the West possible is a pilgrimage in every sense of the word.

Down in the canyon, every aspect of life changes. Aridity is all encompassing. The only way to condition the air is to wrap a wet cloth around yourself and let evaporation cool a thin envelope around your body. Forget to drink water for just a few hours and the headaches begin. The air sucks water out of your skin constantly, even when you aren't sweating. Uninterrupted, the depletion of your body's water reserves will lead to growing dizziness, disturbing dreams, dry urine and ultimately death.

Living in cities, in our tightly calibrated caves of steel, we avoid that reality. Our climate is controlled. The earth's weather and the global climate emphatically are not. Yet our day-to-day lives operate in an environment tightly regimented through air conditioning and physical barriers that separate us from the larger world. Rafting down the Colorado River offers us a glimpse of the world as it actually is.

That type of expedition into the uncontrollable environment reminds us how much work goes into things we take for granted like maintaining our body's homeostasis. Just keeping a water balance and an internal temperature of 98.6 is an unforgiving endeavor in the desert. The dry air can dessicate and cook your body. Meanwhile the cold snowmelt flowing downriver refreshes until it gives you the chills.

In cities, we live in a narrow band of human experience, never encountering the simple physical reality that surrounds us. Homeostasis is a given in our manufactured caves, an equilibrium disturbed perhaps most often

when we gorge ourselves on too much food or drink. Is it any surprise that we have no appreciation for the forces upending the equilibrium of the earth's biosphere?

We take for granted our internal equilibrium, the near continual maintenance of 98.6 degrees, only noticing when we get sick or our body has to fight to maintain homeostasis in the face of harsh external conditions. Temperature is our bodies first line of defense against pathogens.

Heat resistant proteins are more expensive for bacteria and fungi to produce so it makes ecological sense for our body to invest in warm blood. Compare that to say reptiles which will sun cook their body into a fever to fight off a fungal infection. It's an open question what a warmer world will mean for that immunological defense.

Will more heat resistant bacteria and/or fungi evolve to adapt to the changing environment? That simple biology highlights the truth that while the ultimate effects of greenhouse gas accumulation are unknown, the clear truth is that we can no longer take homeostasis for granted. Today there are already examples of fungal infections that aren't supposed to happen in areas ranging from South Korea to Pakistan to India.

Coming out of the Grand Canyon, we hiked through the geologic layers we had rafted the week before. Traversing those massive mountains of rock, so far beyond what any of us experience in urban life, provides a hint of how deep time runs there. Billions of years of tectonic upheaval and erosion from wind and water carved this near mile deep fissure into the face of the earth. A simple side canyon took many multiples of a human lifespan to develop, generations and generations beyond our experience on this planet.

Hiking up, out of the canyon, we often paused to look at the layers like the Kaibab where the rock houses many brachiopod fossils. A few miles up the river that was a short walk from the water. Now it was thousands of feet up. Those creatures

reigned over the earth for countless generations—millenia upon millenia in the Paleozoic. Until they didn't. Each of the previous five mass extinction events involved abrupt climate change, a recording of ecological niches that overthrow the established order. The pace of change of the current transformation of the earth's atmosphere outstrips any of those previous five.

As we neared the rim, the world changed. The rock layers proceeded just the same. The path led us up in the neat and tidy manner one comes to expect from the Park Service. The number of humans, however, dramatically increased. Moreover, the nature of the humans on the trail transformed. Big backpacks laden for a long hike were exchanged for big plastic water bottles. After being immersed in the backcountry, my mind did not register that a mom walking down the path was speaking into a little black box of glass and steel. Not to the humans in front of them.

That culture was so alien to life in the elements, where saying hi to strangers isn't a courtesy so much as a good precautionary practice. Remember this is a landscape that has killed Boston marathon-level athletes who ran out of water. Relatedly, there is a very real and very tragic phenomenon whereby someone will see a beautiful picture on their glass box and venture to the location without understanding what's involved. Or realizing the danger that rapidly changing weather conditions pose, particularly in an exposed gorgeous mountain top.

That dynamic makes me wonder how well we will adapt to climate change. Some *Homo sapiens* are confident our technology will save us from the fate of previous species on earth that saw climactic scale upheaval. All five previous mass extinctions saw massive upheaval in the ecological pecking order. There is no certainty that we too will not go the way of the dinosaur.

Technology makes a great servant but a poor master. Anecdotes about

Instagram explorers venturing off unwittingly to dangerous mountain peaks, or the sad sight of someone walking in circles staring at Google Maps, belie a simple truth. Advanced technology can in fact be an anchor dragging us down as we work to adapt to new circumstances. The survival rate of stranded Age of Discovery European explorers was exceptionally poor.

Today we face terra incognita somewhat similar to those early explorers, not venturing beyond the spatial map of the Earth but a temporal unknown of what the future world will look like. Humans a millenia ago may not have known what lay across the ocean but they could say with much greater certainty what the future world would look like. Largely the same as the one they'd lived in all their life. That's not true for us today.

Their experience with the unknown across the physical world should humble us as we look ahead seven generations. The first Europeans to see the Grand Canyon thought the Colorado River was only six feet across, so alien was the scale of the place.

Looking out at what climate change means for my family, I can't help but shake the feeling that for all the sophisticated math and modeling, our vantage point of the future Earth is not too dissimilar from those first Europeans looking out and seeing a six-foot wide muddy creek that in reality formed a raging river orders of magnitude wider.

Modeling the future climate is a tremendously difficult task, with great inherent uncertainty! The oceans are a poorly understood yet critical heat and carbon sink. Our best understanding of climate scale feedback loops suggests that uncertainty should be an argument for greater action to make the planet habitable for future generations. Of course in these stormy times, the world is turned upside down like a river raft spun sideways and flipped over a wave train.

In a flipped raft and thrust under-

water, you're supposed to find your way to the edge of and then out from under the raft. You're supposed to put your feet downriver and time your breaths in between waves so you don't gulp down a mouthful of whitewater, and in the Colorado, silt. Forced underwater, hopefully such rules have been ingrained into your muscle memory as every fiber of your body yearns to once again breath free. Rafting today, one has access to tools that float your body above less dense whitewater so you can actually breath. Without those flotation devices, your body is too dense to rise above the air infused whitewater. Unlike our ancestors, we also have access to inflatable rafts that bounce off of rather than break upon rocks like wooden boats of yore. Still one can never forget that it is ultimately the river that's in charge. All we can do is take the best path possible through the churn.

Similarly, while we have technology that previous species didn't develop, ultimately we are dependent just the same on this spaceship we call Earth. Perhaps iPhones, aviation, skyscrapers and all the rest of our modern technologies will enable us to adapt. But perhaps those tools will be immaterial in the face of widespread crop failure, mass migration of billions and pathogens breaching our 98.6 first line of immunological defense. The future is uncertain but we can be confident that the Earth's equilibrium has been upended. The urgent question is what path will let us best navigate the unknown ahead.

Part of the challenge in finding that path is that, just like the massive walls of the Grand Canyon, the scale of the problem dwarfs our capacity for individual action. It's all too easy to feel powerless and resigned to the status quo, even if it means punting problems onto future generations. Today we can choose as individuals to make choices like eating less meat, driving an electric car and flying less. Yet those choices operate largely in a world that subsidizes incredibly carbon intensive behavior. Only around

thirteen percent of the world economy operates with a price on carbon.

The Colorado River we rafted and Sierra snowmelt feeding reservoirs like Hetch Hetchy Dam historically supplied about half of Southern California's water supply, with the remaining coming from local sources like groundwater and recycled water. Growing up in a water household, every drop counted. I can still feel the visceral invocation to keep showers under two minutes. Across more and more of the region, residents are allotted a water budget—a reasonable amount to use for their local climate and household size. That provides everyone the freedom to use the water they need, and recognizes the real cost by charging a higher price if they choose to go beyond their budget.

I wonder why we do not implement a similar budget based approach for carbon. There have already been rigorous efforts to calculate the household carbon budget everyone on Earth needs to meet in order to avoid the worst of climate change. Attaching a higher price to excessive carbon use is not as technically easy as water use which is easily quantifiable with a water meter. Nor is it as institutionally simple as carbon pervades the economy and is not sold as a single commodity by a single monopoly institution. Many of the challenges of international diplomatic efforts to build consensus for global decarbonization flow from those simple yet deep measurement and governance challenges.

From the perspective of seven generations from now, the fact that global coordination occurs primarily through negotiation across nation states must seem rather odd. Not all the countries in the United Nations today are excessively legitimate! A growing array of cities, companies and others have committed to decarbonize yet vast swathes of the globe lie outside the reach of such agreements. Nothing in those patchwork agreements truly matches the global scale of the challenge to decarbonize.

Looking back from the future, one

might wonder why we, the humans living on this earth themselves, do not come to an agreement. Countries, cities, companies...all those are a step removed from the actual people making choices.

When I was a kid in the '90s, people would talk about how the Internet was creating a new global village. That phrase reminds me of my Great Uncle Fred's gathering in the almond groves. Looking back and talking to my family, there weren't actually physically hundreds of people there. Sometimes the world feels impossibly big when you're small.

Yet sometimes also children can see the truth that adults have closed their eyes to. There truly were stories of hundreds of our greater family floating through the forest that day. Those invisible roots are no less real, just as groundwater is no less critical for life than a surface stream. Just as our fates are no less intertwined as a species despite the lines we draw on a map splitting us apart.

The sixth mass extinction is a global event. Decarbonization will require humanity-wide action at a global scale. Over the past several decades we have tried to dance around that reality, dithering and delaying. It's time to recognize the simple truth staring us in the face. The first step to taking any collective action, at any scale, is to take seriously the idea that together you form a group.

Why not take a random subset of humanity, say a thousand people from every corner of the globe, and give them the time, space and resources necessary to thoughtfully consider the path humanity might chart through these turbulent times? Any proposals agreed to could be put for a global vote. Yes, the results would not be binding. Neither was COP 26 or any of the previous twenty-five United Nations Climate Change Conferences.

A global vote could provide the moral authority for putting a price on carbon and ostracizing bad actors. It could help snap us out of our complacency with the status quo and

systems that simply outsource carbon emissions to other countries. Any potential downside pales against the risks of inaction.

Perhaps the Panglossian optimists are right and climate change this time will be different from the previous five mass extinctions. But perhaps not. Cynics will say that any sort of experiment in global direct democracy is hopelessly naive. I would humbly posit that it is more naive to leave the sustainability of the human species to chance and not do everything we can to ensure this planet we call Earth is still conducive to human life in seven generations.

Such is the nature of hope when you're thrust underwater. It comes not from the head or heart. It comes from every fiber of your body yearning to breathe free, to be able to reach out and hug your family once again.

Such also is the nature of hope as humanity is slowly submerged into a world upended by climate change and thrown out of the homeostatic-esque equilibrium we take for granted. It comes from the will to survive, to do everything you can so that in seven generations the human story lives on.

Patrick Atwater

Footnotes:

- 1) This idea of looking ahead seven generations comes from an oft cited Iroquois principle.
- 2) Technically my cousin once removed but who likes a pedant?
- 3) Should he choose to have kids.

BECCA LAWTON

Rebecca (Becca) Lawton, long-time Grand Canyon guide, U.S. Park Service river ranger, geologist, author, and musician. Becca is a consummate professional who worked in Grand Canyon during the 1970s and '80s, bringing great insight and knowledge to the trips she was on. She was one of the earliest women guides in the canyon. This interview was conducted and recorded by Sharon Hester via Zoom video meetings on June 15 and 22, 2022.

Hester: Well, just go ahead and tell me how you got started.

Lawton: How did I get started? I got started because we had gone on a backpacking trip to the Grand Canyon when I was in—I think I was in ninth grade. Our whole family went, and we got down to the river and we saw the boats. We all just went, “Wow!” because we were fans of John Wesley Powell already. We had seen that Walt Disney movie. Did you see that one? It’s called “Ten Who Dared.”

Hester: Oh yeah, yeah, yeah. Yeah, I’ve seen it.

Lawton: It’s pretty cheesy, and I think they shot a lot of the whitewater footage not in the canyon. But we were captivated by that. Anyway, we got down to the bottom of the canyon and saw the boats, and we all wanted to do it. And my brother Tim wrote to ARTA, I think he wrote to Rob Elliott. I don’t know what he wrote, I never read it, but apparently, he got a letter back saying, “Hey, you wrote a good letter. Do you want to come work for us?” So he was a guide, and I went on a trip with him as a guest on the Stanislaus River. I thought it was just amazing. The first rapid, going through Cadillac Charlie, was the most fun thing I had ever done. And it seemed like a big rapid, but it was probably foot-high waves, you know.

So after that I went to work at the Grand Canyon on the South Rim, and I really felt like I belonged there. I worked in the lunch counter at Desert View, near the Indian Watchtower. I was a soda jerk.

Hester: Oh, so you weren’t a Ranger, you were like a Fred Harvey?

Lawton: Right, I worked for Fred Harvey. I lied about my age to get the job. And I just would go out and watch the boats go by. From Desert View you don’t see them very often. They come into that one stretch, Furnace Flats—they come into view and then go out of view—and we would run to the rim and watch them. I didn’t think I would ever be a river guide, but I knew I belonged in the Grand Canyon.

And then I got a chance to interview with Mother Lode Raft Trips, because I was bird watching with Dave Whitaker, who was an ARTA guide. And his sister had cofounded Mother Lode Raft Trips early on. Anyway, I went for an interview, because Dave said I should, but I

thought, “I’ll never get hired as a guide.” But they hired me on the spot, and trained me in paddleboats on the Stanislaus and American. So that was the beginning, in 1972. I was just out of high school, so then I was eighteen and didn’t have to lie about my age to get hired anymore. So I worked on the Stanislaus in paddleboats, and then when the chance came to jump onto ARTA and learn to row, I did it. I quit Mother Lode in the middle of the season and jumped on with ARTA.

Hester: Did Mother Lode not run oar boats—is that why?

Lawton: They didn’t run oar boats, and they didn’t run outside California. I thought, “There’s no way I’ll get to the Grand Canyon this way, if I stay with Mother Lode.” And so I learned to row, and that very first season I started working on the Tuolumne. I didn’t work very many trips on the Tuolumne, but I did guide there, and then I worked for the Forest Service, helping with their plan to qualify it as a Wild and Scenic River. And so I would go down the Tuolumne for the Forest Service.

Hester: Did you already have a degree in some kind of biology or forestry or something?

Lawton: No. I was in college at the time, and I did that as an internship: worked for Carl Rust at the Forest Service. And I thought I wanted to be some kind of a scientist, and after a few river seasons I decided to become a fluvial geologist, because of our work on the river. I saw how rivers worked on a day-to-day basis, and the modern streams that we boated on, and I wanted to study ancient rivers. And that’s what I did. But before that I was working on the Stanislaus, worked on the Tuolumne, and then got transferred to Utah. I loved the desert already, because I



Kayaking Devil’s Staircase, Stanislaus River, California, April 1978.

Photograph by Harvey Young.



Playing guitar at Camp Nine put-in, Stanislaus River, California, 1973.

Photograph by Gary Genest.

had gone there with my family quite a bit as a little kid. And ARTA sent me out to the Green and the Yampa, and that was 1974. So 1974 and '75, I worked the Green, the Yampa, the Colorado in Cataract and Westwater. And you know, because I never went to whitewater

school, I was learning on the job how to row. And I made every mistake in the book. I didn't kill anybody, thank God, or hurt anybody, but I learned by doing, because that's how we did it back then—you know, we apprenticed.

Hester: There really weren't many whitewater schools, really.

Lawton: No. So in the old trainings we'd sit by the river, they'd draw pictures in the sand, and it was really figure it out as you go. So by trial and error I just gradually got better, good enough to keep my job, basically, and loved working in Utah, loved working the desert rivers. In 1976, I leased the guides' headquarters we called Felliniville, in Jensen, Utah, for the Northern Utah operation. It's a pretty famous sort of outpost. I had been working for the Park Service on another internship for the University of California, Santa Cruz, where you could get college credit for field studies. It's what I had done on the Tuolumne with the Forest Service. That way I could do a ton of learning outside of classes.

Hester: That's smart.

Lawton: So I wrote to the Park Service and I said, "I'd like to come out and work for you. I'm in college at Santa Cruz, and I'd really like to come out and study the dinosaur quarry." I wondered what all those bones were doing in that one piece of rock. At U.C. Santa Cruz there was a woman professor, Kay Behrensmeyer, who specialized in a branch of paleontology that studies the transport of bones in water. And so I worked with her and went out to Jensen, Utah, to stay for part of the winter of 1975. And I became part of the community out there, and honestly thought I was going to live out there for a long time.

Hester: So the community was the raft guides, or more of the Park Service?

Lawton: You know, both. When I wasn't working for ARTA, the Park Service sponsored me as an intern at the quarry, and I did one of the early studies of the transport



Becca Lawton, River Guide and ARTA Area Manager, at ARTA Headquarters at Felliniville, on the Green River in Jensen, Utah, 1976.

Photograph by Gregg Harmon.

of bones in rivers. We were seeing that it was not a marshy environment, but a river sandbar. Because of my career as a guide, and experience with moving water, and knowing how we travel as pieces of sediment in rivers, I could see the same patterns in the rocks, too. Anyway, that research was very intertwined with my river life at that time, and I loved living in Utah. But I still really wanted to go to the Grand Canyon. And I should also tell you about my Idaho career, because I would go back and forth between Salmon, Idaho, and Jensen, Utah, and work river trips in both places. And that's how I got to work on the Selway early on, and apparently was the first licensed woman to run the Selway under oar power. I mean, that was because I happened to be there at the right place at the right time.

Hester: And that was with ARTA too?



On the Middle Fork of the Salmon River, Idaho, 1978.

Photograph by Jann Dorman.



Padding Avon Redshank in Cross Mountain Canyon on Yampa River, Colorado, 1976. Photograph by Miles Evans.



At Red Canyon takeout on the Green River, Utah, 1979. Photograph by Teal Kinamun.

Lawton: That was with ARTA. I never did really work for any other company after leaving Mother Lode. I worked for ARTA, and ARTA Southwest, and when ARTA Southwest became AZRA, I worked for AZRA. I never sought out any other company until I worked for the Park Service at the end of my time in the canyon many years later. So I got to run some exciting trips in Idaho as well. Then what took me down to the Grand Canyon was Jessica Youle marrying Robert Elliott, and that must have been in the early 1970s. She was learning to row, and she came up and did an assistant trip on the Yampa in 1976 when I was the area manager. She just loved the Yampa, and she loved the Utah operation, and she was

very beloved by our whole crew. I was the area manager and the only woman on the crew, and when she came up and was learning to row she spent a lot of time in my boat. We got to Warm Springs Rapid, and as we were floating into it, she asked me questions about where she should be and which direction she should row, and just as I realized that she was still learning and maybe shouldn't be rowing Warm Springs quite yet, she said to me, "Becca, maybe you should row it instead." So we hurriedly swapped, I jumped in the rowing seat and rowed us through, and we squeaked by the hole as it was splashing and crashing. And when she got home, she told Rob, "You've got to get Becca down here." Because we had bonded over that exciting experience. So at the end of that season, 1976, I went and did my first assistant trip, and Moley (Bob Haymond) was on it, and Roger Hoagland, and David Winn was the head guide. Jessica was along. David and Moley both let me row their boats a lot. I did one or two more trips that year. And from '77 on, the canyon was my place. I did still go up and row some Middle Fork and Selway trips, rowing spring in the canyon, Idaho in early summer, and then back down to the Grand Canyon until the fall.

Hester: That's really common still today with a lot of guides.

Lawton: Is it? It was a lot of driving. Just me and my Volkswagen, putting the miles on, back and forth. I stayed in the canyon until 1986, and the last two seasons I was working for the Park Service.

Hester: What was the last year you said you were in the canyon?

Lawton: I left in '86. I was about to get married, and I told the Park Service, "Look, I'll stay until my wedding," and they said, "Yeah, yeah, stay until you get married." And with the Park Service, we didn't have to have set put-in dates, we could put in anytime we wanted.

Hester: Oh!

Lawton: I know! I don't know if it's still like that, but they kept delaying put-in, and I said, "Look, you guys, my wedding is on such-and-such a date." It worked out that I had to walk out the Bass Trail to get to my wedding on time. There was still some high water, so they wanted me to stay with the trip until after the big ones. So then a law-enforcement ranger rowed the boat the rest of the way. I didn't stay with the Park very long. I was already ready to move on, and I wanted to see what life was like outside the river, because I'd been there since I was a teenager, you know.

Hester: At least at the Grand Canyon, you mean? Or the river itself?

Lawton: I was on the river, yeah, since age eighteen, and I was starting to honestly think that if I was going to stay, I was going to have to start drinking pretty heavily. (laughter) I thought, "You know, that could happen." And I wanted to see if I could work in science, since I'd been trained to do so, and then I got into writing. Right away I got a science journalist job as soon as I left the river—well,



Standing on snout deck in Grand Canyon, Arizona, June 1978.
Photograph by Mary Hagen.

a couple months after.

So that's it in a nutshell, what I did. I was in the canyon from '76 to '86, it looks like from my notes.

Hester: What was your first experience in the canyon early on? What was that like for you?

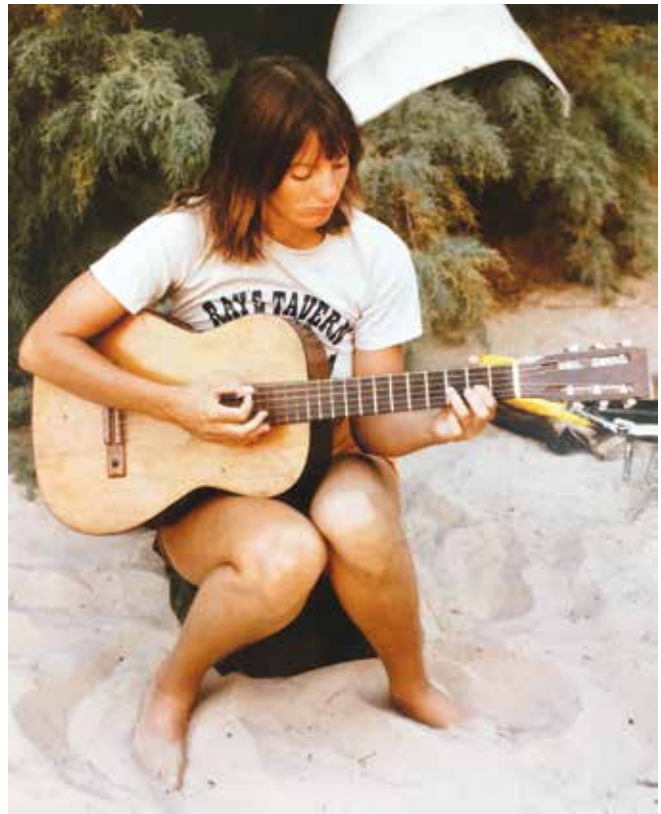
Lawton: Well, we rowed snout boats, so it just stunned me how hard the work was. But it was like, "I'm going to do this. I don't care if it kills me!" Because the snouts were pretty heavy. I thought that they were quite rowable once you got them going. I liked the way they handled. I never had any trouble with them. I mean, sometimes getting into an eddy or something could be really challenging.

Hester: Did you have anything happen rowing them, or anything that stood out for you when you were rowing snouts?

Lawton: (chuckles) It seems I fell out a lot. You know, one thing about the snouts was it was easy to fall back over the back seat and out between the two snouts.

Hester: You were at the back of the boat already!

Lawton: Yeah! Yeah, and it's a big boat, and the water was big. So I had to get used to bracing with my legs better than I had on some of the smaller boats on other rivers. So I think that was it. I never flipped one, and I never wrapped one anywhere. I honestly didn't have much...I had made most of my mistakes by the time I got to the canyon—and I had made a lot of them. I wrapped on the Tuolumne so badly one time that I had to hike



Playing guitar, Inner Gorge, Grand Canyon, Arizona, 1980.
Photograph by Steve Haase.

out, because we couldn't get the boat off the rock. That was very sobering. And then when I worked in Utah I had to learn to row bigger water. Cataract could get pretty big. And the Yampa, when it was high, had the dynamic of—you know the way desert rivers get when they get big. They're different than mountain streams. And so I got used to desert water up there. And honestly, by the time I got to the canyon I was pretty experienced, and didn't have a lot of drama in terms of boating. And that was fortunate.

Hester: Now, when I met you down there, you were working—AZRA had been divided into the snout and Havasu side, and you had moved to the Havasu side, right?

Lawton: Yeah, I had actually quit AZRA in 1980 or something. I said, "I can't come back because I'm going to ruin my back." And I did have back problems pretty early on—not so much from rowing the boats as from lifting the boxes. But I didn't think that it would—me being kind of an undersized oarsperson—that it would continue to be good for my body. And then Jessica called me up and said, "Look, we're going to run small boats. Do you want to come back?" And I said, "Yeah!" So I worked for the Havasu side, and mostly with Dave Lowry as the head boatman. He was often the head boatman of the small-boat side, so to speak, when we were running Havasus.

Hester: So that was because Rob and Jessica divorced

and AZRA was split.

Lawton: That's right, that's right. So I worked for Jessica. I had gotten to be pretty good friends with her from that Yampa trip onward. I was fairly compatible with the canyon crew, and it was a lot of fun. I mean, it was fun and not as hard as working on the snouts. And I'm trying to think if I had any drama with the small boats.

Hester: Well, there were the high-water years.

Lawton: Yeah, the high-water years, that was pretty exciting. Yeah, and you and I did that trip together when you guys hiked in.

Hester: I remember something about a high-water year. I kind of thought you were on the trip that rescued our snout boats at Carbon Lava Chuar Loop. Were you on that trip that came downstream, and we had people hike around, but the snout boats missed the pull-in?

Lawton: Might have been. Was Jimbo Tichenor there?

Hester: You would remember if it was that trip. I know we ended up on a trip at high water where...I was on the whole trip. I don't remember the details. I remember it was like we combined and we got rid of all the passengers from, like, Phantom down.

Lawton: Yes.

Hester: But I don't remember the details of it at all.

Lawton: Okay, so when we put on the water, it was high water, it was in the 50s [i.e., 50,000 cfs] already. And Scott Imsland was the head boatman. Lorna and I were two of the guides. And the water came up in Marble Canyon. As we were running it, it kept coming up, and we would get notices from the Park Service telling us how high it was. They were air dropping us little notes telling us how high it was. So then by the time we got to Phantom, it was close to 60,000 cfs.

Hester: Right.

Lawton: And that's when we sent the people out, and you guys came in.

Hester: No, no, I was already on a snout trip, I didn't hike in.

Lawton: Oh, you were on the snout trip! From Phantom on we were kind of running neck and neck with you snouts.

Hester: What I remember is I think they wanted you guys to catch up to us, send your people out, and I don't know if we sent our people out or not, though. But they wanted you to catch up with the snout boats so we could be there for safety. But in reality, the small oar boats did a lot better at high water, as far as catching eddies, than the snouts.

Lawton: That's so funny! We sent all the passengers out. The office didn't want passengers down there at that point. Scott Imsland has some movies of us after we got down below Lava, and everybody's drinking beer, just happy to be alive, that we got that far.

Hester: Were all the passengers gone? I'm trying to remember.

Lawton: They were gone.

Hester: We made them all hike out, I think.

Lawton: What I heard was AZRA didn't want the liability, because it wasn't really known in terms of how we would do in high water, until we got through with those couple trips. But okay, some people hiked in. Suzanne Jordan hiked in, and Bob Melville, and Tim Turner from Flagstaff; and some other people, just so we could not have commercial passengers...

Hester: But helpers, high-siders.

Lawton: Yeah. Then we were all at Crystal together.

Hester: Yeah, I remember being together, and I remember I think they wanted you to catch up to us to run together and do support for you guys, but in reality, you guys did as well or better than the snouts.

Lawton: Yes. Yeah, we were doing okay, and I think it's good that we didn't have fully loaded boats...It was good we had some ballast, but I think fully loaded boats would have been maybe harder—I'm not sure.

Hester: Do you remember anything that happened on the trip or high water?

Lawton: Yeah. Well, we were doing fine, we didn't flip or anything, but we were kind of curious how much higher it was going to get. So we got to Crystal, and the Park Service was there. This is the event that Kevin Fedarko talks about in *The Emerald Mile*. You know, John Thomas from the park was there with the radio. So we were watching trips and waiting our turn to go through—you know, we were taking turns, people had to stop and take their turns. But this motor trip didn't stop. Lorna and I were already returning back to our boats, because we were supposed to go next, just the two of us. She was going to carry one of the folks who'd hiked in, and Bob Melville was going to ride with me. Scotty had asked us, "Well, who wants to go next?" And Lorna said, "Becca and I will!" And I was going, "What?!?!" Anyway, she volunteered us to go, so I said, "Okay, might as well go. It's not going to get any easier or less scary." So we ran back to the boats, and as we were running back, we heard the boat go over. We heard this thing go "Whomp!" You know, this big sound, and all these people screaming. (laughs) I shouldn't laugh. But all these people screaming up on the hill, who were watching, going, "Gaahhh!!!" because they had just seen this 33-footer flip.

They just ran right through, and one of them flipped.

Hester: I remember that. I remember that sound. I was already getting ready to run, at my boat, I think, and I just heard it.

Lawton: Yeah, so you too. So Lorna and I ran back to the overlook, and I think we had to wait again to actually row Crystal. Is that what you remember?

Hester: I only remember the sound of the huge "Whomp!" It flipped end over end.

Lawton: Yeah, it did, from what they said. So anyway, Lorna and I waited on the overlook, then went back and ran it, and we carried our two boatmen through, and we did fine. I'm not sure which one of us went first, but we

rowed down through there. And then I guess we waited for AZRA boats to come through a few at a time. And then we reunited down below—the two trips.

Let's see, the other thing that happened during high water for me was that I went and worked for the Park, in '85-'86, and the water was still pretty decent, we still had pretty good water.

Hester: Yeah, 45,000 was not uncommon, I think, in '85 still.

Lawton: Yeah.

Hester: At least in the spring.

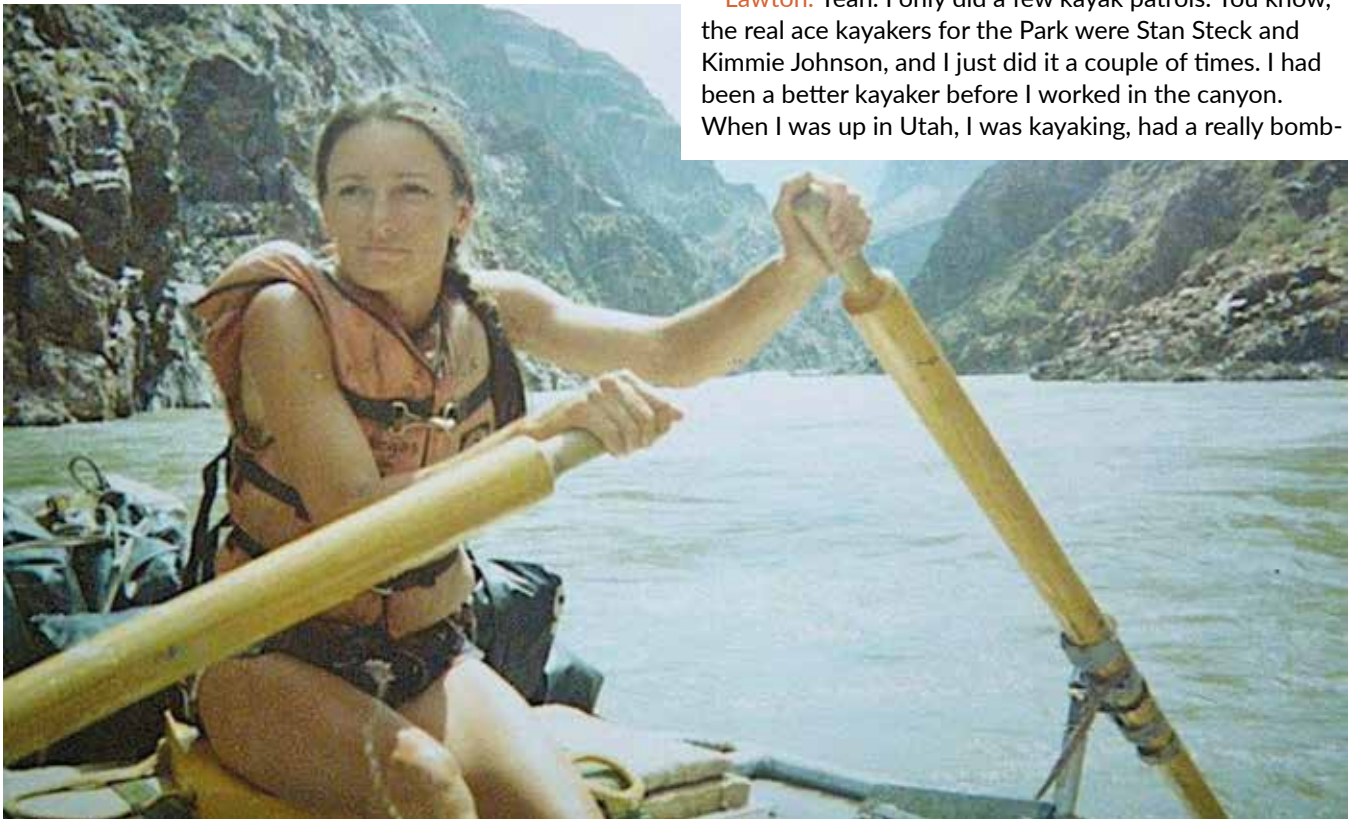
Lawton: Right. It just didn't go down for a couple of years, as they were still lowering the level of the lake. One time with the Park Service on patrol we were at Crystal, talking to boaters, and a private trip was there. I was on kayak patrol on that trip. So we were talking to these private boaters. We knew a couple of these people from having seen them on trips the prior year. Anyway, we ran through, and we got down to the bottom; and the private trip wasn't coming through, wasn't coming through. So we said, let's go on down and find a place to have lunch. We went on down, and then we were having lunch somewhere down below, I don't know, President Nixon Rock, down there somewhere. Things started floating by. You probably remember that during the high water there was lots of flotsam all the time. But the stuff that was coming down, clearly somebody had flipped. So, my sister, who was also with the Park Service, said, "Becca, I

think that's a person out there." And I said (incredulously) "No!" Sure enough, there was somebody floating by in a lifejacket. So, I jumped in the kayak and went after him. And one of the other river rangers, Denny Haskew, who ran with us that year, jumped in one of the patrol boats, and everybody else folded up the lunch and came a little bit later. But he and I got to this person, and he wasn't conscious. Anyway, we pulled him up on the raft and started to do CPR. Then we got him to a beach, still doing CPR, and kept the CPR going for the next hour until a helicopter came down and declared him dead. But he was an older fellow—probably about my age now, and he had not made the pull right, and he'd apparently gone into Crystal Hole and gone over, and then had a bad swim. So that was not a great experience, and some of the people who had come with the Park Service as assistants—we would take people from other areas of the Park down—they were not too excited about running rivers after that.

But let's see, what else for the high water? Just mainly nowhere to camp. I never got into any flash flood things like people talked about at Havasu, so didn't have anything gripping like that. But I was really glad to have been there for high water. It was just phenomenal to have had that opportunity, and to continue to get to run, even, while it was high and exciting, a lot of fun.

Hester: Right. So, you were kayaking for the Park too. You'd already learned to kayak in your career, and continued on as a ranger.

Lawton: Yeah. I only did a few kayak patrols. You know, the real ace kayakers for the Park were Stan Steck and Kimmie Johnson, and I just did it a couple of times. I had been a better kayaker before I worked in the canyon. When I was up in Utah, I was kayaking, had a really bomb-



Arriving at Phantom Ranch on 60,000 cubic feet per second, June 1983. Photograph by Tim Turner.

proof roll and everything in Cataract Canyon. But I didn't really keep it up like you have. So, I just did it a little bit for the Park, but it was during the high water. The kayaks came in handy, as you know, for rescues and stuff—like you rescued me last summer on the Green River.

Hester: Oh yeah, that's right! (laughter) Back to working as a guide in the early days, how was it being a woman guide down there, for you—the AZRA crew or the guests, do you remember, anything stand out on that for you?

Lawton: Yeah. You know, early on there was a bit of trouble with one or two of the guides who were less experienced. I had a lot of support from people who knew me, like Moley and Dave Lowry. David Winn was a big supporter. I think what would happen was there were doubters on the crew then, they thought that women maybe didn't have it as together. So, it helped to have people vouch for us until the others got to see our work was really good. But there's also that story that people tell, where I told the guy to fuck off.

Hester: I can't remember the story. You'll have to repeat it, I guess. (laughs)

Lawton: People would come up to me and say, "Hey, I heard that story about you." I wasn't really proud of myself for saying that to a passenger. Anyway, it was during the snout days. For some reason I was very compatible with snout boats. Maybe from kayaking, Shay, I had learned really good angles and how to plan ahead on runs. And so we got to House Rock and I had a boatful of women passengers plus one man. He was kind of a smaller person himself, and a scientist of some sort. And the boatman running House Rock ahead of me—I was rowing sweep—he hadn't done a lot of trips down in the canyon. And so he started kind of close to the right side, and then ended up having to pull all the way through the rapid. And the guy in my boat was watching him, and how hard he was working, and he looked at me and must have thought, "Oh, there's no way she's going to actually be able to do this."

Hester: You're like, "Well, I actually plan a little better." (laughter)

Lawton: I had the benefit of having more trips down there, and also knowing we just had to plan ahead. And I mean, who didn't, in a snout, if they didn't want to work their asses off? Anyway, so this passenger turned to me and said, "Are you sure you can do this?" And I said, "Why don't you fuck off?" And he sat down and shut up. I did this really great cut with a good angle, and "schoom! vroom!" we just headed downstream on like three strokes.

Hester: You started a lot farther left than that other boatman did, I'm guessing.

Lawton: Yeah, I did, and had some momentum going in. And when we got to the bottom and the passenger looked at me, and he looked at the rapid, and like, "How did you do that?!" So from then on he didn't doubt me, and we made reparations farther downstream. But he had been kind of needling me all day about I don't know what, so I

already was kind of on edge. So that was a notorious story, and Wesley Smith liked to tell it a lot.

Then, there was that thing that you and I did where we would get on different boats at put-in so that people would not get on them.

Hester: Did we, like, switch with the male guides?

Lawton: Yes!

Hester: I kind of vaguely remember that now.

Lawton: Yeah, we totally did.

Hester: Explain it again so it's clear, because I can barely remember.

Lawton: We were used to being at Lees Ferry and seeing people not board our boats. A few days later they'd be clamoring to get on the boats with us, but at put-in it was like, "I don't know, I don't think so." So you and I would get on other boats, and we would pretend, "Oh, this is my boat." And then the people would go crowd on the other boats, and then we'd get on our own, and they were stuck—"Oh my God, my stuff's tied-in now. What am I going to do?!"

Hester: I kind of remember that now. I'd totally forgotten.

Lawton: I was trying to remember it, too, when John Markey wrote to me about an incident at Lees Ferry. You and I were there. And he said that he wouldn't talk to the boatwomen—"I couldn't talk to you, Becca, because I just thought you gals, you women, were just so attractive. I was so too shy to talk to you."

Hester: Was he one of the boatmen you were working with then?

Lawton: No. John Markey worked for Vladimir Kovalik and Wilderness World. A super-nice guy, but shy, I guess. And we were just full of ourselves, doing things like hopping off of boats like we were just talking about. And so sometimes people didn't talk to us, and I wondered why, and later I would find out that they were shy or thought that we were unattainable goddesses or something, when we were just trying to get by down there. (laughs) But anyway, it was fun. But I think the harassment, so to speak, that I encountered was mostly in the first year, when people didn't know me. And then we clearly were sympatico and worked well together. But I certainly encountered more trouble in Idaho and in Utah before becoming more experienced about how to handle it. So even though I wanted to get to the canyon right away, as soon as I was a guide, in a way it was good that I was more experienced by the time I got there, because there was handling the comments. And by then it seemed easy to row, compared to the Selway or Tuolumne, say. But it was hard in terms of wind, heat, and hours that we worked. I mean, we had to really want to do it—and I did, you know. And back when we had campfires was the worst.

Hester: Yeah, talk about that a little bit.

Lawton: Oh my God! It was like, oh Jesus. I mean, the stoves were bad enough, but gathering all the wood

before you get to camp. And of course, the wood was getting harder and harder to find because it doesn't get below the dam.

Hester: Now, was the wood for cooking or for campfires?

Lawton: It was for cooking. So we'd make these funky fires in fire pans. And so then we carried this ungodly heavy fire pan.

Hester: It was a big, steel, half a 55-gallon drum.

Lawton: Cut in half, yeah. And if ARTA had a welder who could do a nice job with that, he was like a god, you know. So we carried those big things, and we made these fires. And we were always, always covered with soot, charcoal on all our clothes, and on our legs. Part of the beauty was we were charcoal smudged. And so getting up early enough to get the fire going, and the coffee, it was always in the dark. (laughs)

On the first trip with my own boat, I got up in the dark and made a fire and I wondered, "Why isn't anybody else getting up?" And I think it was maybe three hours before sunlight, and thought I had the timing down correctly, but I didn't. I finally gave up, went back to bed, and when I woke up, somebody else had gotten it going later. Anyway, it was just more arduous, you know, having the fires, and trying to keep the beaches clean. We were doing the best we could with it, but it wasn't easy, keeping the charcoal out of the sand and everything.

Hester: But yeah, I want to hear more. I think it would be great to think about more like stories, like what it was like to work back then, like cooking—if anything else comes to mind about any particular story that stands out for you in the canyon. It doesn't have to be rapids or anything. It could be anything. I mean, like that story about the guy needling you all day until House Rock, and you put him in his place and showed him! (laughter)

Lawton: I didn't have to say that to him, but anyway, I'm glad I had a good run after that, because if I had screwed it up, that would have been really embarrassing! (laughter)

Hester: It would have! Yeah, that's true.

Lawton: Oh God!

Hester: Anyway, I would think about other things that you remember. I'm thinking about things in my career—maybe some weird cooking incident or hiking incident, or someone getting...I mean, there's all sorts of things too we can cover, I know that happened, like people getting lost, or flips, or...

Lawton: I didn't flip while I worked for AZRA. I flipped in high-water Crystal once with the Park, with an empty boat, one time when I didn't want to run it empty but for some reason we did.

Hester: What else about Park Service things? Any kind of unusual arrests? Can you even talk about stuff like that?

Lawton: Well, I was on the AZRA trip where Moley burned Nankoweap, and we flew the crazy guy out.

Hester: That would be a good one to talk about. I'm pretty sure Lorna's going to talk about that too, but we

could have both of you guys do it.

Lawton: Yeah, we were on it together, and we recently talked about it, kind of comparing notes, to see if we remembered the same things. We did have different experiences, because the guy, Bruce, rode with me the first day, and I don't know if he ever rode with Lorna. We evacuated him as fast as we could, once we realized he was trouble. Yeah, that's a good story. My notes and Lorna's compared pretty well.

Hester: Yeah, that's a great story. That would be great to go over next time. Or if you can think of anything else unusual like that, because I know you were down there long enough to have some interesting things happen.

Lawton: Yeah. And I've been trying to dig them up as I've been writing about them for books and articles. I have journals from that time, and a lot of things that I've forgotten I've been finding in these notes, and I go, "Oh my God!"

Hester: Oh, that'd be great.

Lawton: I think the main thing that I noticed is that as we got more women on the crew, it got a lot easier to be a woman down there.

Hester: Yeah, we didn't have to switch boats at put-in anymore, with the guys. (laughs)

Lawton: Yeah, there was that. That was one thing that happened. And it just got easier to not...You know, we just normalized. At the beginning I sometimes felt like "the other," like the freak on the crew, because I was the one girl—not just in the canyon. Utah was the place where I worked with the fewest number of women. It was really helpful that it normalized in terms of gender, to be down there. I don't think it ever equalized, but it was clear that, hey, you didn't have to be Arnold Schwarzenegger to row a boat. And in fact, he maybe wouldn't have done a good job. (laughter)

Hester: Yeah

Lawton: ...What really stands out for me about the stockbroker/Vietnam vet/banker/doctor/whatever-he-was, because he claimed to be all those things, is how many times I've heard people start telling that story as if they were there. They'll say, "This happened in the Grand Canyon," and launch into telling the story. And I'll say, "You know, I was on that trip, and I can tell you what really happened." And I'll start telling them, and then they'll say, "What I heard was different" and cite an account by someone who wasn't there. It's funny, because it really makes me think about how river stories travel and change and morph, and once we tell them, they're not ours anymore. They become part of the, I don't know, public domain, they belong to everybody. That story is one I hear the most from people, and the one that they correct me on, even though I had the fellow in my boat the first day, and his girlfriend, whose life he threatened, too. I called up Moley recently, because he was the head boatman on the trip, and we pieced together an account of it. I wrote it down.

Hester: We have to tell that story. I think it's a good story, and it's good to have everybody's perspective on it. It's a good one to tell, but it is so true how that happens. It's funny how when a story starts being told, whether it's accurate or not, that's kind of how it stays.

Lawton: That's true. And when you try to subvert it, you run into a lot of resistance, because the story that we've been telling is as important to folks as the one that really happened.

Hester: Yeah. So why don't you tell that story, we've got lots of time.

Lawton: Sure. So Lorna and I figured out that the trip was in 1982 or '83. She was fairly new, and I was in my fifth or sixth year in the canyon. Anyway, we were rowing a Havasu trip, and I think it was right around Ten-Mile Rock, when this stockbroker fellow and his girlfriend started talking about the recreational drugs they had with them. They had been conversing among themselves, and their thoughts were still back in San Francisco, or wherever they were from, and I heard them say the word "quaaludes," for the first time. I had never heard about quaaludes before that trip. And I just kind of said to myself, "Let's watch these people because they're on some kind of substances they brought along to relax."

Hester: And how many people? Was it like a whole boat, when you say "people"?

Lawton: Three of them knew each other, the girlfriend of this fellow had come with a friend, and he followed them there. They didn't sign up with him. I don't think they really wanted him along.

Hester: Ohh!

Lawton: So anyway, he signed up and came along, and he was on the boat with them. There was one other person in the boat, too. They were talking, the stockbroker and his girlfriend, and I just noticed how weird both of their eyes were. I thought it might have something to do with the drugs they were taking. We got down to House Rock and according to Moley that's where the girlfriend pulled him aside and said, "My boyfriend has told me that he's going to kill me on this trip. He's going to shove me off a cliff." Which you and I know is a time-honored way to kill somebody in the Grand Canyon.

Hester: Probably the best way. (laughs)

Lawton: And so Moley said, "Okay, stick close to me, or stick close to any of the other boatmen, and we'll just watch it. We'll make sure no harm comes to you." And then the next day, this stockbroker was on somebody else's boat. There was a family of very large men on the trip who were a lot of fun, and they started a water fight, and I guess they got the stockbroker wet, and he threatened their lives. He told them something like, "You'd better not sleep too soundly tonight," and so they didn't. They stayed up all night and kept watch. And the next morning we figured out they had stayed up all night because they were scared of this guy. And some other things happened on the other guides' boats, as the people moved around,

and the whole crew got to see that this fellow was not okay. He was threatening to slice boats open with a knife, and saying, basically, "I can disable this whole trip by destroying all your boats." Michael Collier, who was on that trip, heard him say that. So we pretty much decided that whether he was going to kill his girlfriend or not, we needed to call in the Park Service to fly him out.

So we kind of speed-ran down to Nankoweap. Moley made the decision that he and the assistant boatman were going to stay there at the Nankoweap delta with the stockbroker, and the rest of us were going downstream. So we arranged to do that. The three of them stayed behind with one boat, and we others went on down with the rest of the trip, including the girlfriend, as far as the Little Colorado. We were going to wait there or nearby for Moley and the assistant boatman, Frank, a really tall fellow, to catch up with us downstream. And so Moley has probably told the story a million times how he put out signal panels, and wasn't getting any response. He had the wrong batteries or something for the emergency radio, so there wasn't any hope of getting aircraft by line-of-sight radio, which is what we carried then. So he shot up a flare, the flare blew into the mesquite forest and caught fire, and I guess Outdoors Unlimited came along and helped them bucket brigade, to try to put out the fire, but it just kept burning. All this time the stockbroker is kind of sitting on the beach, watching this all go on, watching them fight the fire.

Hester: Did he know that he was being evacuated at that point?

Lawton: By that point he had figured it out, that he was not going to continue on the trip. He said, "It won't matter, because I'm just going to get up on the rim and shoot you all with a high-powered rifle."

Hester: Was the most popular question on the trip after that, how close is the rim to the river, versus how deep was the water? (laughs)

Lawton: Yeah, we weren't too worried that he was going to kill us. He was just so full of it, you know. He was just not okay in his mind somehow. More than one person said, "Well, he's off his meds," because that's what we thought might have happened. So a tour helicopter saw the fire and landed to check out what was going on. They contacted the Park Service, and then the Park Service came in. And I think it was Joe Quiroz and Kim Crumbo who came in, both Vietnam vets, and Kim a former Navy SEAL. Kim told me later that they flew in armed to the teeth, because somehow they had gotten the information that someone on the trip had a rifle, that there was an armed person down there. So they came completely SWAT-gear up. They walked up and said, "So, what's going on?" And Kim told me later, "Well, we listened to the guy talk for about fifteen seconds, and then we grabbed him." (laughter) Imagine being grabbed by those guys! But anyway, so they got him on the helicopter.

Hester: They must have handcuffed him then.

Lawton: Yes, they handcuffed him. They flew out and they followed the river downstream. So they passed us on their way out, and the stockbroker was watching us from the window, kind of checking us all out.

Hester: You could see him?

Lawton: Maybe he was figuring out how he could shoot us from the rim.

Hester: Could you see his face in the helicopter when he went by?

Lawton: Yeah, I could see his face. I think he was probably looking for his girlfriend. And so his girlfriend kind of marched past me and said, "That asshole!" But she had kind of a smile on her face, like she was getting off on it all. And I said, "Well, you guys really got our attention this time." (laughs) Anyway, that's the last we saw of him. But Moley said he had to go up and give a deposition. He said we all had to hike out at Phantom to talk to the Park, but I don't remember having to do that.

Hester: So Moley did hike out later, and then back?

Lawton: Yeah, he hiked out.

Hester: And then did he come back to the trip, or stay out?

Lawton: He came back, and then he might have flipped in Lava on that trip, I'm not sure. But once we hiked the girlfriend out, because she was a top-half customer, things settled down. A normal bunch of people walked in. And that was pretty much it. We never debriefed about it, that I remember. And the story just grew from there. A friend of mine was writing a novel based on this incident, and he sent me some of his pages. We got in a debate about what was true and what wasn't, and did it matter for the novel? And of course not. But it's funny how the story morphed. Lorna, who was there, too, tells a very clear narrative about it. And we agreed about how different the girlfriend's eyes and the stockbroker's eyes looked.

Hester: But that cleared up, right, later? By the time he flew out was he still on drugs, do you think? Or he just was crazy? Or both?

Lawton: I think he was delusional in some way. I don't have much medical knowledge about mental illness, but he was not right in the head, way more mixed up than the rest of us.

Hester: All the guides and everyone on the trip, how did you feel you worked together as a team?

Lawton: I think our teamwork was really good. Moley told me later, "Becca, you were my sanity on that trip." And I don't remember being more sane than anybody else, but I didn't get to witness the chaos back at Nankoweap, which really did sound insane. Mostly we were fairly calm about it, once we knew we had to get him out of there, because no one was going to have a normal experience while he was there. I mean, I don't know how much he intended to follow through with his threats to his girlfriend, but it was enough to consider him a safety risk.

Hester: Crazy stuff.

Lawton: I don't remember another trip where a

passenger was so disruptive. Certainly not on a trip that I was on, where someone was evacuated because of threatening the other passengers. Maybe it happens.

Hester: Yeah, I'm sure other things have happened, but that's the main story people hear.

Lawton: I was evacuated myself after a life-threatening injury at Fat City, below Lava Falls. I had run the bubble line, hit it right on but then fell out in the sharp drop and was swimming behind the boat, but it was not an easy swim. A lot of turbulence, and I stayed down for long periods of time. And we had an assistant on the trip, and he jumped on the oars and finished the run. Just below the tail waves they pulled me back in. And the smart thing to do would have been to let him row us in, let him make that tight pull-in at Fat City, but he was fairly new and I took the oars back, as waterlogged as I was. Not a great decision, but we did get into the beach, just at the lowest possible spot. We unloaded, and as I finished the job by walking my personal gear upstream to camp, I had everything under both my arms. Huge armloads. I didn't want to make two trips, you know how that is. Well the rocks are very slick down there, sand polished, even when they're not wet. And I went down fast and caught my fall with my right hand, all the way in the sand. I fell hard and broke the bottle and cut tendons and at least one artery in my right hand.

So I glanced at it once and told myself, "Okay this is bleeding like a stuck pig so I'm not going to look at it or I'll faint, I'm just going to get up to the main camp and get help." I left everything there in the rocks and held my right hand with my left, with as much direct pressure as I could give it, and high-tailed it up to the kitchen. Moley saw me and at the time may have even been a pre-med student, but he got me lying down on some camp pad and assembled all the medical professionals on the trip. Four of them, I think, one doctor and three nurses. They formed a surgical team, all lined up and using med-speak, like, "Forceps?" "Forceps" and I heard one of them ask, "Is it pumping?" and I realized I was still losing a lot of blood. They stopped the bleeding eventually, and the anesthesiologist-doctor stitched the cut up with dental floss. It was quite a jagged cut, now it is a big curved scar across my right palm.

And Michael Collier, who's a pilot, succeeded in reaching the Park by radio, and they said they'd come in. They couldn't fly until the next morning, because it was getting dark by then, but Curt Sauer, who would later be my supervisor with the Park Service River Unit, flew in with one of the Park pilots, and they touched down right on the Fat City sandbar. It was a beautiful ride out, right at dawn, though I hated to leave the trip. And when I got to the South Rim clinic and the doctor said I'd have to wait two weeks before I could even be considered for surgery, something to do with waiting to see if it had been infected, I thought, "Damn, I could've stayed with the trip." But that wasn't true because even with my cut closed up

and bandaged I was a huge infection risk. But I was really lucky not to lose the use of a few of my fingers. Or to bleed out. I couldn't finish the season, but I did heal up better than the surgeon predicted, and I rowed another few seasons after that.

Hester: It's interesting to me how much the guides have to do besides guiding down there. I mean, what do you think of that? I mean, like sort of all the different job roles that guides have to do, not just row a boat.

Lawton: I think this is a really good point, something I wonder about when I look back on why I got into guiding. I got into guiding because I took a Stanislaus River trip, and I saw how much the river spoke for itself and was its own best advocate for water conservation. Just by taking people outside and giving them a chance to appreciate the outdoors, people transform, they care about the river. On Grand Canyon trips we see some people change their lives entirely, but everyone comes off the river transformed at least in part because of the depth of the experience. So that's why I wanted to guide. Then once I got into guiding—and I'm sure this happens for us all in some way—it became a matter of, "Well, okay, now I've also got to be an expert in first aid; I've also got to be good at the oars so I don't lose my job; I've also got to cook." I didn't know how to cook much. I learned as a guide. I had to learn to be personable in the boats all day, a challenge because I'm an extreme introvert. That was one of the hardest things for me to do, and I would sleep for three days after those trips from all the interaction, even though I loved it, as much as from the physical work. And we learned leadership, and team building. That's all part of the job of river guiding. And everything intensifies in the Grand Canyon, because we're so isolated, we become our own units of medical and psychological expertise, as well as, "Oh, yeah, let's get through these world-class rapids upright!" It's intense.

Hester: And even policing—like you guys were having to police this guy, basically.

Lawton: Yeah. I was really glad to see the rangers, who have actual law enforcement experience, come in and take over that piece. And you know, I'm sure you remember this, and I don't know how it is today, but the guide-park relationship was so good. It was just seamless, like we were just working with our friends to build that whole canyon-wide sort of professional network.

Hester: Did you like working for the park? How did that move go for you?

Lawton: I loved it. I really missed AZRA at first, because I had been with ARTA/AZRA since I was a teenager. I'd grown up with that part of the river family. Even though I ran into the AZRA crews occasionally with the Park, it wasn't like living with my friends. But then the Park became my family, too, and I was fortunate to be part of the River Unit for a few years.

Hester: Did you do law enforcement training back then, or they didn't require that back then?

Lawton: They did require it. There had to be at least one person with a law-enforcement commission on every trip. And we were required to carry a firearm, which we wrapped up and put it in the bottom of an ammo box because that wasn't how we worked out there. My sister Jen, who was a ranger at the same time I was, had a commission, as did Kim Crumbo and Kimmie Johnson. And it was exciting to take the park employees down the river, like the archaeologists. We would help them map Pueblo ruins, some even that I didn't know about as a guide, and some that hadn't been defined yet. The archaeologists might see two stones in a row and say, "This was part of a dwelling." And I said, "Okay." With the Park I learned a lot about the canyon in ways I hadn't known, in those two seasons I worked with them.

Hester: You mentioned earlier your brother Tim. I don't know if he was one of your mentors, but who were some of your mentors? Was Tim one, or other people? When you got started, did anyone take you under their wing?

Lawton: Let's see...I worked with Tim in Utah, and I'd say he was a mentor on those trips. Then there was Dave Whitacre, an ARTA boatman in California, who helped me get hired, and he mentored me in a lot of ways. I was interested in becoming a scientist in part because Tim and Dave were scientists, and they could show me things about the river I didn't know. When I got to Grand Canyon, I didn't work more than a few trips with my brother. I ran with Dave Lowry probably more than any other AZRA guide, and he was a really great colleague. We did a lot of scouting together, scouting rapids. I felt like he always had his eye on me, sort of like a little sister down there. He was also always on the lookout for what he called "acoustically correct" camps, natural amphitheaters where we could play guitar and sing in the evenings. Then Moley Haymond, David Winn, Michael Collier, and Scott Imsland were excellent trip leaders I worked with who were supportive. And Kim Crumbo when I ran with the Park Service. But I value the way everyone on our

On patrol with U.S. National Park Service River Unit, Grand Canyon, Arizona, 1985. Photograph by Matt McMackin.





In uniform with U.S. National Park Service River Unit, Grand Canyon, Arizona, 1984. Photograph by Jeannine Koshear.

crews had each other's backs. Boatwomen who were super colleagues and still are good friends were my sister Jen Lawton, Louise Teal, Lorna Corson, Sue Bassett (with Wilderness World), you (Shay Hester), Rebbi Gazzaniga, Kimmie Johnson, and RuthAnn Murray (Stoner). Suzanne Jordan, too, though we have lost her. And I might never have gotten down there if it hadn't been for Jessica.

Hester: Uh-huh, she got you started in the canyon.

Lawton: Yeah. She kind of said, "I want to get Becca down here and at least give her a try." And I got there and it was just like, "I'm staying! I'll do what I can to stay down here."

Hester: So how did working on the river impact your experience later? I guess we could talk about what you've done after the river, and how the river has affected that. I mean, if you can put the two together.

Lawton: Beginning with my first year in California, I kept river journals. I had started a journal in high school, and once I got to the river I was really intrigued by all the language, the way we talked about the river, the vocabulary that's used for describing rapids and parts of the boats. It's kind of like in *Moby Dick* where Melville devotes an entire chapter to the quarter-deck or the candles. I was very interested in writing things down.

Hester: Can you give an example of some of the vernacular that you're intrigued with?

Lawton: Yeah. For example, in my first book, *Reading Water*, I would take a part of the river, like eddies or the delta, and I'd write a chapter about how eddies operate in fluvial geology terms or how the delta functions in a geomorphological way, how we as boatmen lived with eddy fences, and breaking across them, or recirculating. We talk about the tongues of rapids, where we enter. Or at Lava Falls, we line up on the bubble line or run the "V" wave, and these are all things I find just fascinating in terms of language. So I studied writing to learn how to share them. My work in science was to figure out rivers hydraulically, how they move sediment, how their currents leave patterns in sand and silt. So in the journals I noted those things, but

I also wrote a ton about relationships, or what it's like to screw up on the river, or to do well, and how that feels. And then page after page of being determined to get better at the job, even though training could be kind of catch-as-catch-can. We kind of learned by trial and error until things got a little more organized on that front.

I have all these journals from that time, in part because I wanted to write a book about being a guide. And I didn't think I'd write more than one book about guiding or about rivers. And I didn't think I'd write short stories and poems. It's just that more books and more genres sort of evolved as I wrote more and more. I had gone back to school to get a Master's of Fine Arts in creative writing to learn how to write stories. I mean, we know how to tell them. As river guides, we are full of ourselves and full of stories (chuckles), but I found writing them down harder. To make them live on the page was something I didn't know how to do.

So I've been working on that for the last forty years. Well, and especially since I retired from the river in '86 and became a writer...

Hester: In '86 you retired from the river, or a different job?

Lawton: I retired from the river and went to State College, Pennsylvania, in 1986. That was the last year I was boating professionally. My husband was getting a doctorate in geology in Pennsylvania so I moved back there with him.

Hester: Okay. You got your degree as a hydrologist, is that right?

Lawton: My degree's in Earth Sciences, and at the time my concentration was called fluvial geology. It's got a lot in common with geomorphology. After I graduated from college, in the off seasons I often took field geology jobs. Then, after I left the river I worked as a writer for a while, working for a science magazine, because we were living in Pennsylvania, and that's just what happened. And then when we moved back west, I started working for consulting firms in groundwater. Groundwater is big on hiring geologists and hydrogeologists because you have to understand the strata underneath the earth's surface in order to know what the aquifers are like down there. So I did that until 2015. My last science job was here in Sonoma where I was working as a stream geologist in the local watershed, measuring flow and sediment, because we have a steelhead run here—or did—and there was all this research going on, and I helped build up a research program just down the road from my home, where we would measure flow in streams, often with the help of college students. I had college interns, sort of all the time, working with me on measuring stream flow, and putting together a picture of the hydrology of these creeks. So that's what I was doing when I wasn't writing stories.

Hester: And so now tell us a little bit about what you've written—your books or what you've published, and a little bit about what they're about.

Lawton: Yeah. Well, the first one was *Reading Water: Lessons From the River*. That was built from my master's thesis, which I published as a collection of essays about river guiding and river culture and river hydrology. That was 2002. And I wrote a novel that takes place on the Green River in Utah that won an award for fiction. My latest full-length book is *The Oasis This Time*, which is about water in the West. And last year I wrote the poetry book, *Swimming Grand Canyon*.

Hester: And that was poetry, *Swimming Grand Canyon*. That's a great one.

Lawton: Thank you.

Hester: Now the novel, does the novel have a name?

Lawton: Yeah. It's called *Junction Utah*. It's about a river guide who discovers this environmental crisis in Northern Utah. Because she's in the backcountry, she has a view on what's going on out there in terms of oil exploration and its effects on water. It's really based on years I spent researching geology in Utah. Now I've gone back to my journals, because I am writing a memoir about becoming a Grand Canyon guide. And as I work it sometimes feels like such an old story that I wonder how do I even get into telling this at this point? But then I go into my journals and it's all there. There's all the excitement, there's all the immaturity. (laughs) There are all the hard lessons learned and all the friendships and loves and excitement of the river, and learning how to run the rapids for the first time, and getting into all kinds of trouble.

Hester: For example?

Lawton: (laughs) For example, when I was hired, I was hired by Mother Lode Raft Trips, and we ran these basket boats, which I'm sure you're familiar with: army surplus boats that are not built of commercial-grade whitewater material, like hypalon. Maybe they were neoprene, but they were light grade, and if you just looked at them cross-eyed, they'd rip. So it was common at the time to rip boats.

Hester: And they were really sloppy and sludgy and not firm—I remember that. Didn't they have double tubes around the outside?

Lawton: Yes, they had the double tubes, and so different from the snouts, say, which you had to get going and get momentum but then they'd go. The basket boat you had to learn how to row like a tub of Jell-O.

Hester: Did you paddle it too, though?

Lawton: Yeah, we paddled those for Mother Lode, yeah, and ARTA would sometimes run mixed oar and paddle trips back then, too.

Hester: Would people sit on the tubes? Would it even support them without falling in?

Lawton: (laughs) On my first spring training I'd write, "Well, we only lost one person today." And here it was, I don't know, March or something, back when it rained a lot and was super-cold, and everyone's falling in, off those tubes. And I'd write, "It was a pretty good day." (laughter) But gradually we got better, and it really helped to have

the better boats. It was amazing how the better boats helped us improve our performance, because before then we would see ARTA go by as we're trying to get downstream in these basket boats, and they'd be, "Lalala!" just rowing no problem, and "Oh, this is easy!" To go around Death Rock on the Stanislaus, no problem. And we're like, "gloob, gloob, gloob."

Hester: Yeah, gloobing. Uh-huh.

Lawton: It was hilarious! It was a lot of fun, and we just got a lot of people downstream, and a lot of people fell in love with the river that way, and signed the petition to help save the Stanislaus.

Hester: So your latest book you're working on is looking back at your life, or thinking kind of.

Lawton: Any one of us can write many different memoirs about different parts of our lives...In my case, my life as a scientist, or my life as a parent, or my life as a kid. And this one is about becoming a boatwoman in the seventies, of having the goal of going to the Grand Canyon, and then hanging in until I got there. And then keeping the job, what that was like. It's been interesting, because as I go back to those journals, I remember that I was a teenager when I got to the canyon. Even though I thought I knew everything, that was just part of being young, I think.

Hester: Well gosh, yeah, it sounds like you got a big story coming up, and more stories. All the books you've put together already would be great reading for guides or [those who] like rivers, or work in the canyon.

Lawton: I think so. *The Oasis This Time* has a chapter about the Grand Canyon and about what actually—what's the chemical thing that happens to people? The phenomenon of how many days it takes a person to really arrive—a client, a passenger. We used to call the passengers "the people." It took the people three days to really arrive at the river from their lives outside. And there's an actual scientific explanation for that, it's not only seen on the river, it's seen in other parts of nature. I wrote a chapter about the research behind our understanding that, and I interviewed Peter Winn and Louise Teal [former AZRA guides] for it. And I also talked to some experts in forest bathing. What we observed on the river resembles experiences other people are having in nature. There are many factors that influence why the river is so successful in helping people heal. I mean, the river is beautiful, it's fun, it's exciting, you can breathe—but there's also chemical stuff going on in everybody when they're out there, which I find fascinating.

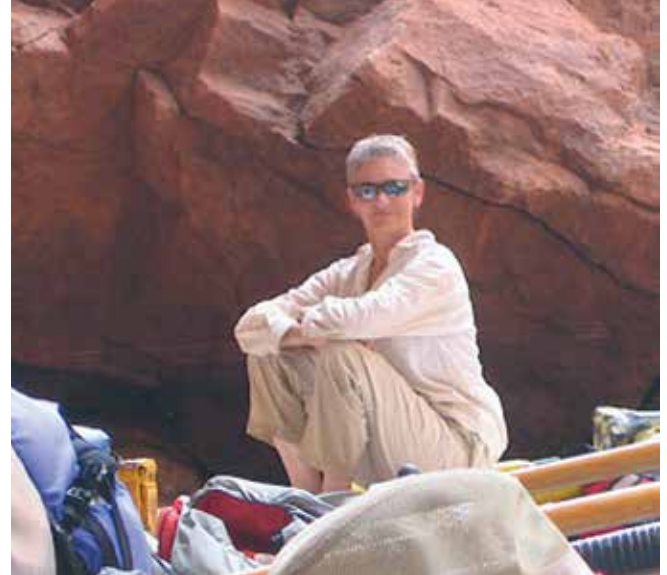
Hester: We don't have to do this, but would you be interested, is there part of that chapter, a couple of paragraphs, that you would be willing to read? Could that be part of the interview?

Lawton: Sure!

Hester: I mean, we can take time, there's no rush to find it, but I was thinking that might be a good way, if you think there might be a paragraph or two out of that chapter



On the water with my family on private river trip, Grand Canyon, Arizona, 2006.
Photograph by Krista Preston.



In Havasu Eddy on private river trip, Grand Canyon, Arizona, 2006.
Photograph by Krista Preston.

that would be meaningful—like maybe at the end of the interview, with...Do you want to do that?

Lawton: Sure. Here's a short passage from that chapter in *The Oasis This Time*.

Once the river had me, I found it easy to recognize the same love affair happening for other people on the fourteen-day trips we led. Passengers made the trek to our rafts at Lee's Ferry, Arizona, from all over the world, escaping deadlines, responsibilities, and overflowing voicemail and (back then) paper-filled inboxes back home. I became an expert in knowing just when someone would forget about life above the rim. As the river took them through legendary whitewater and to hidden grottoes and waterfalls, the rock walls got taller and the Canyon experience deeper...

Then the place works its magic. The Canyon may appear vast and overwhelming when seen as a whole, especially when viewed in the mere seventeen minutes the National Park Service notes as the average tourist's visitation time to the rim. What the mini-visitor doesn't grasp in that time are the pockets of sanctuary tucked everywhere in the Canyon's recesses. Deep green waterfalls. Pockets of shade and cool. Pools in red rock. Ferns, monkeyflowers, cottonwoods, willows.

"You only have to get them there," Canyon guide Louise Teal says. "The rest is cake."

Get people to the river, earn their trust, and take them deep into what Louise calls the "zillion-year-old rocks." She and I were passengers before we took up guiding. Then we never wanted to be apart from the Canyon's soul-stirring sunsets, embracing rock walls, and endlessly flowing water. Those we guided, too, found it a beautiful, intense, and, in Louise's words, "completely fulfilling place." It is—a place out of time and out of overwhelmed mind.

So take me to the river. Drop me in the water.

Hester: That's a really great description of how rivers change people.

Lawton: Yeah. Maybe I already said this, Shay, and if so,

I apologize, but I think that was one reason I wanted to stay in the canyon, besides the fact that it was so amazing, and one could live one's whole life down there and not see everything that there is to see, but of all the rivers I worked on, in Grand Canyon people had the time and the space and this amazing place, to change. And river guides have the opportunity to just facilitate that. And so that feels like one small way to save the world. I was interested in saving the natural world from the press of civilization. And I thought river guiding was a really good way to do that.

Hester: In the sense of helping other people connect and learn.

Lawton: Yeah! I mean, one thing I'm realizing as I'm writing my memoir is that we had to give up other things to become guides. There are other paths we didn't take when we decided to become river guides, at that critical time of our lives, when you can, for instance, go to Wall Street and make millions, or not (chuckles), like we did. And so we chose to do that, and in doing so we turned away from other possible avenues that we never maybe picked up again. Like I was going to be a professional musician at that point, I was a classically trained French horn player, but I gave that up just like that (snaps fingers) when I discovered the Stanislaus River. I really believed that the river would be the place that I could make the most difference in people's lives. And so it was great that we had the opportunity to do that when we did, and that people still are doing it.

Hester: Yeah, that's definitely great. It's still happening. I think people are very moved still, to go on a river trip.

Lawton: That's good, that's good.

Hester: Very, very life-changing still.

Lawton: That's wonderful.

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July 1, 2021 to June 30, 2022

Grand Canyon River Guides proudly presents the very long list of major contributors who supported our organization in numerous ways during this last fiscal year (July 1, 2021 through June 30, 2022). Due to space considerations, this list does not reflect the five-year memberships or contributions under \$100 (including general contributions and Circle of Friends), of which there were many. Your support helps us to move forward and maintain a healthy and vital organization that is better equipped to protect and preserve the Grand Canyon and the Colorado River experience.

We apologize in advance to anyone we may have missed in the lists below. Please let us know. And thanks again, not only to those acknowledged here, but to each and every one of you who support our efforts and believe in GCRG. We appreciate that support more than we can express. Thanks to you all!

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Cathryn Gorospe Education Assistance Foundation (to support educational opportunities in honor of Cathryn L. Gorospe)
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 Douglas Hardy (in honor of CRATE guides, Abel, Ben & Tyler. They are the best!)
 Valerie and John Hess (in memory of Diane Jay Israel)
 Tammy Jones (in memory of Dee and Sue Holladay)
 David Jaquette Donor Charitable Fund (in honor of Bill Mooz, Jorgen Visback, Howard Boot, fellow boaters)
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 Jean Ouellette (in memory of David Gladson)
 Ken Wright (in honor of Joanne Nissen)

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[Boatman's Quarterly Review](#)
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KSW Holdings, LLC
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GENERAL CONTRIBUTIONS (\$10,000 and up)

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\$40 1-year membership
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\$500 Benefactor*
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*benefactors and patrons get a life membership, a silver split twig figurine pendant, and our undying gratitude.

Grand Canyon River Guides, Inc.

Financial Statements

Statement of Activities Fiscal Year ending 6/30/22

Balance Sheet at 6/30/22

Revenue

Contributions	\$ 116,808
Membership dues	35,217
Foundation grants	33,000
Government grants	10,102
GTS income	8,725
Endowment gifts	8,646
Non-cash contributions	7,200
First aid class income	6,784
Sales of merchandise (net of cost)	(117)
Investment income (-\$28,486 unrealized)	(25,953)

Total Revenue **\$ 200,412**

Expenses

Salaries, benefits, & taxes	\$ 59,714
Outside contractors	39,349
Printing (mostly BQR)	19,991
Scholarships	13,530
Rent (includes \$7,200 donated rent)	12,000
Outside services & outfitters	10,104
Postage (mostly BQR)	9,411
Insurance	4,299
Honorariums	4,275
Telecom & utilities	3,976
Office expenses & supplies	3,098
Investment fees	2,192
Repairs & maintenance	1,764
Equipment & venue rental	1,411
Professional fees	1,250
Merchant & service fees	1,056
Depreciation	613
Other	480

Total Expenses **\$ 188,513**

Net Income **\$ 11,899**

Assets

Cash in checking/savings	\$ 162,094
Accounts receivable	238
Postage & security deposits	1,023
Fixed assets (at cost)	59,424
Less accumulated depreciation	(57,834)
Investments: Endowment Fund	93,589
Investments: Reserve Fund	60,722

Total Assets **\$ 319,256**

Liabilities & Equity

Accounts payable	\$ 0
Payroll tax liabilities	1,328
Net assets without donor restrictions	217,045
Net assets with donor restrictions	100,883

Total Liabilities & Equity **\$ 319,256**

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boatman's quarterly review

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"I hope you flip" by O'Conner the oracle child. Courtesy of Andrea Mikus.