

THE GRAND CANYON River Runner

Number Sixteen

preserving public access to the Colorado River

Winter, 2013



A TALE OF TWO BOATS

By Gaylord Staveley

Based on excerpts from a forthcoming book on the human history of the Colorado River system and the Grand Canyon.

Fifteen years after Major John Wesley Powell's voyage of discovery down the mainstem Green and Colorado rivers and through Grand Canyon, a thirty year old trapper named Nathaniel Galloway began boating the smaller rivers that ran tributary to the Green in Utah, Wyoming and Colorado. In 1891 he tackled the rapids-filled gorges of Red Canyon, the Canyon of Lodore, a one hundred twenty-five mile section of the Green that end-runs the Uintas and comes back into the Uinta Basin near Vernal, Utah.

After running those challenging waters a couple of times, he began looking for a new river. In 1895 he and a companion, probably one of his sons, ran the Green down to the head of Cataract Canyon and then rowed and dragged back upstream to Moab, Utah.

In 1896, on a repeat run of the upper gorges, he encountered two prospectors who had gotten boat-wrecked in a formidable rapid called Ashley falls (now buried about two miles up-reservoir from Flaming Gorge Dam). Galloway and one of the men, William Richmond, decided to throw in together and run all the way down the rivers, as Powell had done. Trapping and prospecting as they went, it took them almost five months to go from Jensen, Utah to Needles, California, much of it in the dead of winter. That's another story, but it led to Galloway staking a placer claim as they passed through Glen Canyon, going back afterwards to work the claim, and being there when Robert Brewster Stanton

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USMC WOUNDED WARRIOR REGIMENT RIVER TRIP

GCRRA has recently confirmed plans to sponsor a Grand Canyon boating trip for members of the United States Marine Corps Wounded Warrior Regiment. This trip is NOT associated with the National Wounded Warrior Project, but is a unique offering by GCRRA. With a target trip date of August 2015, fundraising has already begun.

On this trip Wounded Warriors will experience - just as you have - moments of pure thrill, times of absolute serenity, and a deep connection with nature - all of which combine to create a truly life-changing experience.

They'll learn about the history and geology of the mighty Colorado River. They'll strengthen friendships, form bonds that will last a lifetime, and do it all under the

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USMC Wounded Warrior Regiment
Grand Canyon - Colorado River Fluting Trip
Sponsored by the Grand Canyon River Runners Association
www.gcrarrunners.org



The Adventure Begins
Over the top Wounded Warriors will experience moments of pure thrill, times of absolute serenity, and a deep connection with nature - all of which combine to create a truly life-changing experience. They'll learn about the history and geology of the mighty Colorado River. They'll strengthen friendships, form bonds that will last a lifetime, and do it all under the supervision of professional river guides and trained military medical personnel.

Winning in the Race
Wounded Warriors will enjoy the spectacular white water rapids and stretches of beautiful serenity and peace that the river and its surrounding landscape offers. When lunchtime comes, they'll make sandwiches, grab a cold drink and relax with friends in a peaceful place which features beautiful views of the Grand Canyon.

Setting in for the Fight
Over the top Wounded Warriors will enjoy the spectacular white water rapids and stretches of beautiful serenity and peace that the river and its surrounding landscape offers. When lunchtime comes, they'll make sandwiches, grab a cold drink and relax with friends in a peaceful place which features beautiful views of the Grand Canyon.



supervision of professional river guides and trained military medical personnel.

We are thrilled to be able to offer this special opportunity to a most deserving group of veterans who have sacrificed so much in their service to our country. It will be the experience of a lifetime for people who never dreamed they would have the opportunity.

Our Wounded Warriors Trip, which includes pre-trip and post-trip meals, lodging and transportation, will be a 10-day river adventure - two motor rigs, a paddle raft, and the specialized equipment required to support passengers with disabilities.

The outfitter for this trip, an authorized concessioner of the National Parks Service in Grand Canyon National Park and a member of the Grand Canyon River Outfitters Association, has extensive experience aiding persons with disabilities in rafting the Colorado River. Because river trips have to be planned well in advance, we have booked a charter for the summer of 2015. But initial deposits are due soon, so we are seeking donations now!

Our Passengers:
The United States Marine Corps Wounded Warrior Regiment provides and enables assistance to wounded, ill and injured Marines, sailors attached to or in support of Marine units, and their family members in order to assist them as they return to duty or transition to civilian life.

If you would like to support this trip, and these most deserving veterans, tax-deductible contributions can be made on-line: www.gcriverrunners.org - Click on the Wounded Warriors Trip button.

Or mail a check to:
GCRRA Wounded Warriors Trip
P.O. Box 20013
Sedona, AZ 86341-20013

If your organization would like to assist with our fundraising efforts, you can sponsor a veteran for \$3500. Please direct inquiries to:

Hank Detering
HankD461@aol.com
610-869-3631

The idea for this trip was first put forth by board member Hank Detering, Colonel, USMC (retired), and presented to the Board of Directors at our annual meeting in October, 2013. As is to be expected of an ex-Marine, Hank had already ironed out many of the details. Board approval of the plan was enthusiastic and unanimous.

This trip will serve as the model as Detering writes the manual for future GCRRA sponsored Wounded Warrior trips. Once this trip's projected funding of \$85,000 is realized, he hopes to offer the trip to each branch of the military as well as rotating the trip among interested rafting companies on a yearly basis.

GCRRA members can help by spreading the word about this worthy venture. Individual donations are welcome, as are full sponsorships of \$3500. Corporate donations will also be solicited, which provides another opportunity for our members to assist in the fundraising by talking about the trip with their employers. GCRRA has introduced a link to the Wounded Warrior trip on its website which contains a PayPal link for easy donating.

A downloadable PDF file on our website can be printed and shared with friends.

Thank you for your help!

Big Things Afoot

When Grand Canyon River Runners Association incorporated in 2004 we did all those things that incorporating compels you to do. We formulated bylaws and defined our purpose and our mission as a non-profit corporation representing the interests of commercially outfitted river runners in the Grand Canyon. To a person, the original board of directors expressed a commitment to keeping the river accessible to all. And by "all", we meant ALL, as in Everyone.

Accessibility is not always easy to achieve. Consider routine impediments to taking a Grand Canyon river trip. The logistics alone make it a challenge. The Grand Canyon isn't exactly centrally located - to anywhere. Then factor in that you can only put in at Lees Ferry, and your first opportunity to take a boat off the river does not come until you have traversed 225 miles of whitewater and wilderness. That translates to a lengthy span of days, which, after adding travel time to and from the start and finish points, will have made the trip inaccessible for many.

Then there is physical accessibility. After my first trip I nurtured a belief that this river running business was only for the strong of mind and body, delighted that I qualified. I was unable to shake off this fallacy until I participated in an autumn trip a year before the birth of GCRRA. Steve Hatch was at the tiller of a motor rig that passed my own trip just after we left Lees Ferry. This was Hatch's

annual trip for people with disabilities. The guests had special needs, yet with the help of their family and support staff on the boat with them, all were about to experience the very same trip that had changed my own life just a few years before. I was intrigued by this brave group of Canyon explorers, and stereotypes began to crumble to dust as we followed them downriver.

As we progressed downstream we would occasionally occupy a camp that the Hatch trip had enjoyed a few days ahead of us. There were ramp marks where the boat had parked, with wheelchair tracks on the beach that opened my eyes and my mind. I found a pair of grooved impressions in the sand and sat down where someone in a wheelchair had settled to see the very same breathtaking view at sundown, and I heard the same ringtails chattering in the rocks as my eyes closed for the night. Several times I awoke and stared at the sky, instantly mesmerized by the dazzling expanse of the Milky Way stretching away to forever and beyond. I knew that someone else had rested here a few nights before and that they, too, had felt the immense imprint of this place. That their locomotion was aided



by a wheelchair did not alter how the Canyon touched and embraced them. They learned what I learned - what we all learn -- when the Canyon teaches us.

In 2005 a brother/sister act, John and Kathleen Jo Ryan, organized and filmed an inspirational 15-day river journey that became the documentary, "Right To Risk". Kathleen Jo wrote of the origins and realization of that trip in her article that appeared in issue Number Five of The River Runner. The trip brought together eight remarkable people with a range of disabilities, each demonstrating a strength of spirit that was completely disproportionate to their physical abilities. A follow-up article by one of the participants, Susan Yim, a quadriplegic stroke survivor, appears in issue Number Six. In it Susan talks about why the right to risk, or self-determination, is so vitally important to those with disabilities. She called it the right to participate fully in life.

Hank Detering came to the GCRRA board of directors round-aboutly. You have seen his name in The River Runner before as a photo contributor in issue Number Eight, then as an author in Number Eleven. After a brief email correspondence I suggested that he might like to be on our advisory committee, a non-voting position that sometimes leads to an invitation to join the board. Hank jumped in enthusiastically and within a year we got him on the board.

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In March, 2012 Hank joined me and GCRRA's secretary, Jan Taylor, at the Guides Training Seminar near Marble Canyon. I had never met Hank in person, but knowing he was a Marine I was able to identify him when I spotted a lean fellow with a buzz cut striding toward the registration table. Sure enough, it was Hank. Together we sat through a succession of talks by scientists who all shared a need for extra eyes and ears to further their observational studies. This is when Hank had an idea about a way to help.

That first project that Hank proposed, the Wildlife Census Program, got underway in 2013 with river passengers contributing to science projects involving bighorn sheep, mule deer, mountain lion, snakes and specific birds. The link is on our website and anyone can print their own log sheets in order to participate in any or all of these ongoing studies. Early feedback from the scientists has been favorable, and they have encouraged us to continue the project.

Again this year it was Hank who suggested that GCRRA sponsor a charter trip for wounded warriors. In 2008 the GCRRA board of directors had amended the organization's bylaws to allow fundraising for "the enablement of visitation opportunities to this same area for those in need of special assistance." It took us a few years, but when the right proposal came along we were ready. In less than 5 weeks our capable webmaster, Catharine Cooper, put together the web page and necessary links. She installed PayPal for the convenience of donors and we are spreading the word about the trip to encourage donations. Our goal is to fund the trip completely so that our veterans do not pay a penny for their trip of a lifetime.



"MARI CARLOS WEDGED INTO THE GREAT UNCONFORMITY" @ KAY OGDEN

There is plenty of opportunity for GCRRA members to participate in the Wounded Warrior trip by direct donation in any amount, or by organizing a business, corporate or group sponsorship for \$3500. There is more information about the trip on our website, so please take a look and encourage friends and family to participate as well. The trip launches in August, 2015, the best possible Thanks for a group that has sacrificed so much, and served our country so honorably.

See you downstream. —Mari Carlos



"MOON/SUNRISE" @ CHARLES TAYLOR



"REFLECTION TUCK-UP CANYON" @ CHARLES TAYLOR

California Condor Update

by Chris Parish

So, here we sit in the middle of February 2013, coming off of one of the worst lead exposure seasons the condors have experienced to date, and we still have nearly a dozen birds left to trap and test. I wonder how many of those most hardy individuals will make it through the rest of the winter; eight of them haven't been contacted through radio telemetry since early December raising the stakes of the game considerably. The next step will be to take to the air and scan the landscape with the help of radio telemetry equipment and a fixed-wing aircraft. At least then we have the ability to cover the otherwise unavailable areas of the rugged canyons and still snow-covered topography that condors have come to call home.

So this is our winter routine. Each year we attempt to trap and test the entire population just after the Fall and Winter hunting seasons in northern Arizona and southern Utah to make sure that if a condor did ingest a dose of lead from a gut pile or unrecovered carcass shot with lead ammunition, we can hold and treat them with chelation therapy, the same process by which humans are cleared of the toxic substance. If you've been following the story of the condor you might be thinking, why are the condors still being exposed to lead, some eleven years after annual exposures were first identified on the Kaibab Plateau, and since the Arizona Game and Fish Department implemented a lead reduction program for the Kaibab? The answer may be revealed in the condors' newly established haunts. No longer are the days when you might be able to track the majority of the population of now 75 birds between the South Rim of the Grand Canyon and the Kaibab Plateau. Today, the majority of the condor flock resides in southern Utah, beginning usually in early May and extending through the winter months until the snows usually push them out of the high country north of Zion National Park.

Why did the condor cross the state line? Like any good scavenger, the condor population found another food source, this one much more predictable than natural die offs of native ungulates alone. Beginning usually in early June, thousands of domestic sheep are trucked and driven into the high country east of Cedar City and north of Zion National Park. The sheer numbers alone prove to be a great thing for scavengers who clean up the remains of birthing processes as well as naturally occurring death following sickness, disease and predation. The condors have done exactly what they need to for survival; they've reconned their new home (70 mile radius), and discovered the areas most fit for living off of a plentiful seasonal food source. The problem comes usually by late September or early October, when the sheep are pulled from the landscape, generally following winter weather events. At the same time, the general hunting seasons begin in southern Utah. No problem, we know the drill, we've been here before

(2002 in northern Arizona), but now we have to start all over again. We shared our findings of lead exposed birds in conjunction with foraging during and after the hunting seasons in southern Utah



CHRIS PARISH AND EDDIE FELTS TAG AND DRAW BLOOD FROM CONDOR 441 FOR THE FIRST TIME

with the Division of Wildlife Resources and they have mounted an effort similar to Arizona Game and Fish Department's lead reduction campaign. However, change takes time and the hunters there are just now hearing about yet another way they can contribute to a long history of conservation. In Arizona we've enjoyed well over 80% participation by way of shooting non-lead ammunition or removing lead-tainted remains from the field. We are hopeful that Utah will come along in the same manner. Some have suggested that an all-out ban is the only true solution, but keep in mind there has been a ban in California since 2008 and the birds are still suffering from lead exposure and lead-caused death at unsustainable rates in central California. The key to any lead reduction effort is education. You can help by spreading the word.

On a lighter note, four active nests have been documented and three wild-hatched chicks have been confirmed. If in fact the fourth finally shows its featherless head, it will be the first time that four chicks will have been produced in a single season for the Arizona/Utah flock.

Chris Parish is the Project Director for the Condor Reintroduction Project in northern Arizona and has worked for The Peregrine Fund in this capacity since 1997. His research into lead poisoning in raptors has resulted in a public awareness campaign to benefit hunters and wildlife alike. He has co-authored numerous articles on this and related topics. To read more about the Condor Reintroduction Project, visit The Peregrine Fund condor pages at <http://www.peregrinefund.org/condor>.



"BROWN-SPINED PRICKLY-PEAR" © MARI CARLOS



"ENGELMANN PRICKLY-PEAR PINK" © MARI CARLOS

PRICKLY PEAR CACTUS

by Suzanne Swedo

Prickly pears, like all members of the cactus family, are strictly New World plants. If you see something that looks like a cactus anywhere outside North or South America, somebody transplanted it from here to there. (Prickly pears have been planted all over the world by people, of course, often becoming aggressive pests in their adopted homes.) On the other hand, the spiny green succulents you might have seen elsewhere may look a lot like cactus, but aren't. The Old World does have its own green prickly plants, but they are probably Euphorbias. Here's a perfect example of parallel or convergent evolution, where organisms that live in similar environments and have adapted to similar conditions, look very much alike, even though they are not related.

Prickly pear (*Opuntia* spp.) is the most common genus in the Cactus family with lots of different species, though nobody is willing to say exactly how many kinds there are. This is because current DNA studies have the botanical world in a state of flux. When (and if) the molecular dust ever settles we probably still won't know how many kinds of prickly pear there are because they hybridize so readily with one another. What has been determined is that the genus *Opuntia*, which used to include both the flattened prickly pear cactus and the more cylindrical cholla has been split. Now the chollas are known as *Cylindropuntia*, and the prickly pears, the ones we are concerned with, get to keep the name *Opuntia*.

There are a number of prickly pear species in Grand Canyon, from the inner gorge to the rim, among which, according to the wonderful [River and Desert Plants of the Grand Canyon](#) by Huisinga, et al. are:

Beavertail Cactus *Opuntia basilaris* They are gray-green in color, with pads that are vaguely shaped like a beaver's tail. They don't have obvious spines, but do have insidious little glochids, short, fine, almost invisible stickers that get into your skin and break off so that you can't see them and can't get them out. Some authorities suggest smearing white glue over your skin and pulling it off as it dries, peeling off the stickers, something like waxing your eyebrows or other anatomical regions. (In fact, maybe warm wax would work even better than glue.) Anyway, beavertail fruits are smaller, duller in color, and less juicy than those of other species, but their flowers are an exquisite pinky-magenta and are some of the first desert flowers to pop out in spring, as early as February in some parts of the west.

Engelmann Prickly Pear, *O. engelmannii* is a bigger plant, up to three feet tall or so, and its pads are bigger than those of the beavertails and more oval in shape. They are much greener in color and they do have obvious spines. Their flowers are most often bright yellow, but

can be pink or red. They have big, juicy, delicious (and spineless) red fruits.

Pancake Opuntia, *O. chlorotica* has round, pancake-shaped pads that balance atop one another by their edges, and sometimes have a short trunk. They are the tallest prickly pear in the Grand Canyon, and can reach six feet. These have shortish yellow spines AND insidious little glochids. Their flowers are yellow and fruits are purplish.

Grizzly Bear and Porcupine Cacti, both subspecies of *O. polycantha*, have very long, sometimes quite dense spines, as their names suggest. Their flowers range from yellow to pink. The fruit is not as red and juicy as those of *O. engelmannii*, but is still plenty good to eat.

Brown-Spined Prickly Pear Cacti, *O. phaeacantha* have, you guessed it, brownish-colored spines that are usually more widely scattered on the pads. They are fairly easy to identify because they tend to sprawl horizontally along the ground, instead of growing vertically upwards like other species.

Even if the prickly pears seem peculiar, perhaps even homely, with their fat, leafless stems covered in spines, they do produce spectacular flowers. Like other plants, they need showy flowers in order to attract pollinators, usually bees. Cactus flowers are different from those of most other plants, though. Instead of the usual outer row of green sepals surrounding a ring of colorful petals, prickly pears have compromised on a spiral arrangement of delicate tepals, neither sepals nor petals, but a sort of compromise between the two.

At the very center of the flower is the female structure, the pistil, the base of which is the ovary that will become the fruit once it has been fertilized. Surrounding the pistil is a fuzzy yellow mass of stuff made up of stamens, the male parts of the flower, hundreds of fine filaments topped with little knobs called anthers where the pollen is

produced.

Bees, among the most common plant pollinators, suck nectar from flowers for energy, but they need pollen to feed their larvae. Plants need the bees to transfer pollen from the stamens of one flower to the pistil of another for fertilization. Prickly pear flowers have an unusual way of making sure this happens, and you can watch how they do it by pretending to be a bee. If you gently tickle the yellow center of the flower, as though a bee were crawling around inside, the sensitive stamens will all together bend inward toward the pistil. This is to make sure the bee gets a good dusting of pollen on its body which it will then carry to another flower.

Their flowers are only one of many features that make prickly pears unusual, and many of these are adaptations to hot, dry habitats. Their most obvious feature of course, is succulence. Their fleshy pads store water to get them through the dry times. And they must be quick about sucking up what little precipitation does fall. In most deserts summer downpours are frequently short and violent and water runs off the surface before most plants can capture it, whether or not they have somewhere to store it. Prickly pears, like most cacti, have shallow, widely spreading roots that suck up moisture before it can evaporate. Like most plants, the roots of cacti have fine root hairs that help the plant take up moisture as soon as the soil gets wet, but when the ground dries out, roots can lose moisture back to the soil. Prickly pears (and other cacti) can quickly discard their root hairs and grow a kind of scar tissue over the places where they were attached to prevent water loss, then produce new root hairs when they need them.

The body of the prickly pear is almost all stem. They do have leaves, but these are very small and appear only when the new green pad forms, then fall off, so they are seldom seen. The cactus performs its essential function, photosynthesis, turning sunlight into energy, right through its stems instead of its leaves as other plants do. That is useful in a dry climate for several reasons, the most obvious of which is that leaves have much more surface area from which to lose water than stems do.

Ordinarily, green leaves do the work of photosynthesis, which requires little openings or pores called stomata that allow necessary carbon dioxide in and let oxygen out, but they let water out as well. Cactus pads have fewer stomata than leaves do, so they lose less moisture. The pads are covered with a waxy coating as well that helps hold moisture in.

The cactus family is unique in possessing areoles, small more or less evenly spaced depressions usually sprouting spines. The leaves, flowers, roots, and the pads themselves develop from these areoles. *Opuntia* is unique among cacti in having glochids (those nasty, almost invisible little stickers) as well as spines. The spines and glochids are also thought to provide minute bits of shade along with increased surfaces to hold moisture.

The spines help to protect the juicy cactus from grazing animals. Smart desert travelers never leave home without tweezers! Some also contain nasty toxic chemicals in their tissues to discourage predators. (The cowboy who whacks off the top of a cactus to drink the clear water stored inside is a Hollywood invention.) The cacti are not totally invulnerable though; many desert animals do eat prickly pear and in times of drought or famine, they have been fed to cattle and horses. Of course, humans eat them too (more about that later.)



"ENGELMANN PRICKLY-PEAR YELLOW" © MARI CARLOS



"PEELING PRICKLY-PEAR FRUIT" © MARI CARLOS



"PRICKLY-PEAR BLOSSOM" © MARI CARLOS

Another adaptation to desiccation is the upright posture of the cactus. Prickly pears usually stand upright, presenting their narrow edges rather than their broad flat surfaces to the direct sunlight. Prickly pears (and chollas) are also unique among cactus in that they grow in segments. A giant saguaro, for example, grows by just getting taller and taller. *Opuntias* produce a flattened pad (or a cylinder in the case of chollas) each growing season, then more or less shut down, saving water until the next rain comes to form a new pad instead of

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just making the old one bigger.

One of the most important adaptations cacti have to prevent water loss is not obvious to the observer, and involves a chemical process that isn't easy to describe, called CAM photosynthesis. It isn't unique to the cactus family, but is shared by other hot climate plants. In a nutshell, an ordinary plant goes about its daily work of photosynthesis, turning sunlight into energy to fuel growth and reproduction during the day. The process involves taking in CO2 in the beginning, using sunlight to work its magic to make carbohydrates, then giving off oxygen (and water) at the end. (We animals do it backward, taking in oxygen, giving off CO2.) In order to take in and release these gases, the plant has to open its stomata, tiny pores. Normally, this needs to happen during the day when the sun is out. Unfortunately, that's the time when it's hottest and the plant is likely to lose too much water. CAM plants can perform the first part of the process during the day, then wait until night comes to open their stomata when it is cooler and more humid and water loss is reduced. If conditions are really bad, the plant can keep its stomata closed both day and night and just idle for a limited period of time. The disadvantage to this is that the plant grows very slowly.

All parts of the prickly pear have been eaten for centuries and most are delicious, but they are not more popular as a food source because of all those stickers. You can, however, find the fresh, more-or-less spineless, green pads, nopales, in the produce section of supermarkets in some neighborhoods in the southwest. You can also buy sliced, pickled, canned nopalitos in many stores. The very young, tender pads are the best, usually cut into strips, something like green beans, and eaten raw, boiled, fried, or grilled. They're great in soups and mixed with scrambled eggs. You can harvest your own using heavy gloves or tongs, then remove the spines and glochids by peeling them, scrubbing them with a stiff brush, stirring them around in fine gravel, or burning off the spines in an open flame.

The best parts of the prickly pear are the fruits, known as tunas (nothing to do with fish). They ripen in summer and are sweet and delicious right off the plant. They do have stickers, however, so it's best to pick them and hold them with tongs, cut them in half and scoop out the pink pulp. Don't try to chew the seeds, which are VERY hard, though they can be ground into meal and used as flour. You can remove the spines from the fruits the same way you would remove them from the pads. The pulp can be used to make all kinds of jellies, candies, syrup, and beverages, some of which are for sale in markets and on-line. You can also make any of these yourself by straining the pulp or squeezing out the juice and storing it in the freezer. There are lots of recipes and instructions for painless cactus preparation in many cookbooks, and of course, on the internet.

There is some evidence that prickly pear has important health benefits such as lowering blood sugar and cholesterol. There are also some less-substantiated claims that it can be used as an anti-inflammatory agent and can even cure hangovers.

Prickly pear cacti have played a fascinating role in world history and commerce that has mostly been forgotten, at least until the latest "scandal" involving Starbucks made the news. These cacti are host to the cochineal bug (*Dactylopius coccus*). This is a tiny (about the size of a map pinhead,) purplish, wingless, legless, female bug, not a beetle, who attaches herself, along with hundreds of her sisters, to cactus pads and sucks out the juices, something like aphids. The ladies then

spin themselves a cottony, waxy material commonly seen in clumps on prickly pear pads in the Grand Canyon and elsewhere as shelter and camouflage during the warmer months of the year. Next time you run across some of this, you can scrape off a bit to reveal the little purplish bug inside. If you give the bug a good squeeze you'll find it full of a brilliant red liquid that is not blood, but what turns out to be a very valuable dye. The Aztecs and other native people who lived in prickly pear country discovered this centuries ago and used it to color fabrics, usually worn only by rulers and other VIPs. They cultivated prickly pear cactus, inoculated them with cochineal bugs, then scraped off the bugs and dried them for later use. When the Spanish arrived in Mexico, they were impressed by this beautiful permanent dye, learned how the locals produced it, and began exporting it back to Europe. In time the profits from cochineal became second only to those from gold and silver. The Spanish never revealed the secret of the cochineal bug, but other Europeans, starting with the French, eventually figured it out and started cactus plantations of their own in any of their colonies where it would grow. That's why *Opuntia* can now be found all over the world.

Once synthetic aniline dyes were invented in the 1800s, the cochineal business collapsed...but not forever. It turns out that this natural product is safe and nontoxic, perfect for coloring foods and cosmetics. (In extremely rare cases it can cause an allergic reaction.) It came to replace the notorious carcinogenic red dyes that had been used before. You have probably eaten plenty of it whether you know it or not. The latest in the saga involves Starbucks, which uses it to color strawberry-flavored drinks. It's perfectly harmless, but some people are put off by the fact that they are eating ground-up bugs, partly because of the yuk factor, partly because vegetarians object to the fact that they have been consuming an animal product.

For a naturalist, the most interesting aspect of the prickly pear/cochineal relationship by far is what keeps these freeloading bugs from sucking the cactus dry, and killing their own host. It turns out that they perform an important service, protecting the cactus from voracious predatory ants. In some entertaining experiments, entomologist Thomas Eisner found that a chemical in cochineal is toxic to ants. The ants don't even try to eat cochineal bugs, but there are various other insects that visit prickly pear cactus whose larvae DO eat cochineal bugs. They don't eat them all, just enough of them to use as ammunition. One of these, a moth larva, stores the chemical in its stomach and vomits all over any ant that threatens it. Another insect, this one a beetle larva, gets the stuff into its bloodstream and bleeds on attacking ants. Yet another, the larva of a fly, stores the chemical in its gut and poops on its enemies when they attack.

Yes, it's truly a jungle out there in the desert.

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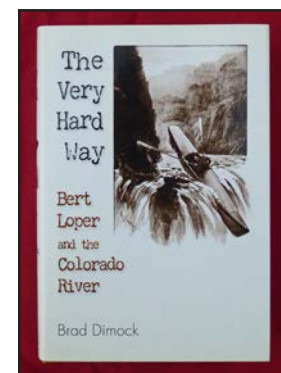
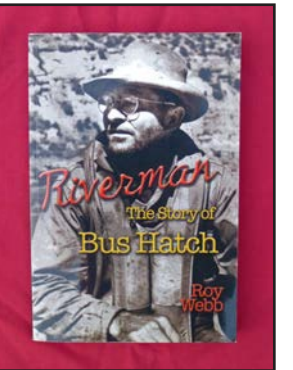
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Suzanne Swedo 2013
Suzanne Swedo, director of W.I.L.D., has backpacked the mountains of every continent. She has led groups into the wilderness for over 30 years and teaches wilderness survival and natural science for individuals, schools, universities,

Grand Canyon Reading List – Part 2

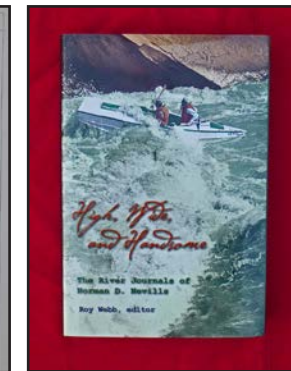
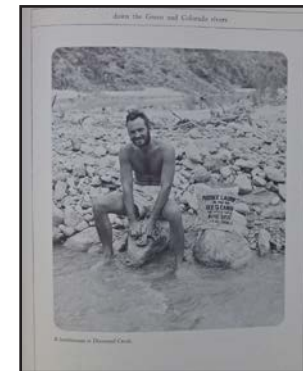
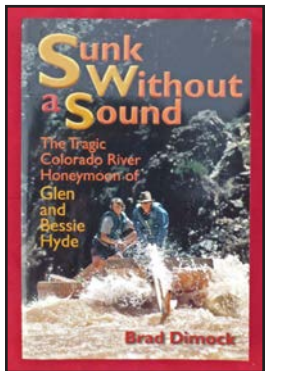
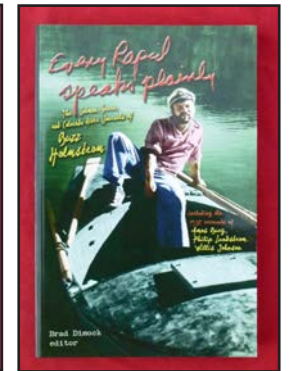
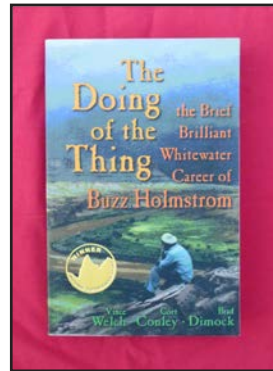
In the last issue of *The River Runner* we published Part I of author and historian Roy Webb's recommended books for Grand Canyon enthusiasts. Here is the conclusion of Roy's suggested reading list.

So let's move forward in time a bit. Another important early river runner is Bus Hatch; my biography of Bus, *RIVERMAN: THE STORY OF BUS HATCH*, is available from Fretwater Press (http://www.fretwater.com/Fretwater_Press/index.html) in a new and improved edition. Bus spent more time on the upper Green and its tributaries than he did the Grand Canyon but I wrote a whole chapter about the 1934 Dusty Dozen Grand trip, and added a chapter about his sons in the Grand in the 1960s, including the Bobby Kennedy trip in 1967.



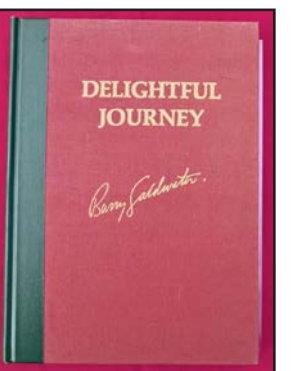
Hatch is still one of the best known and oldest river outfits in the Grand Canyon; they are on their 3rd generation of river runners. Another of my books, *CALL OF THE COLORADO*, published in 1994, contains many photos and stories about Grand Canyon river runners. It's out of print too, but I keep threatening to bring it back to life.

Fretwater Press is also the place to find three superb books on river runners in the Grand Canyon by Brad Dimock, recidivist river guide and excellent author. These are *THE DOING OF THE THING: THE BRIEF, BRILLIANT WHITEWATER CAREER OF BUZZ HOLMSTROM*; *SUNK WITHOUT A SOUND: THE TRAGIC COLORADO RIVER HONEYMOON OF GLEN AND BESSIE HYDE*; and *THE VERY HARD WAY: BERT LOPER AND THE COLORADO RIVER*. I can't recommend all of these too highly; Brad is an indefatigable researcher and a first-rate writer. All three are full of thrills, poignant scenes, tragedy, humor; really, you owe it to yourself to look for these, and a number of other titles on the Fretwater list. Tell Brad I sent you!



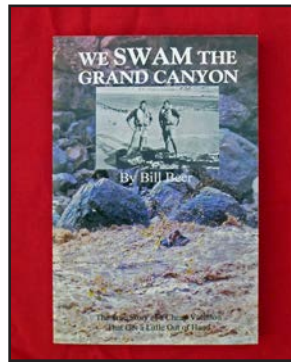
One river runner who had a great impact on the development of the modern river outfitting business was Norman D. Nevills. I mentioned that he was another of those characters, so common in Colorado River and Grand Canyon history, who was either adored or despised. (Powell is another; there is little middle ground in these disputes among scholars and readers!) For many years, after I processed his papers and wrote a finding aid, I struggled with the idea of a biography, but finally decided to let him tell his own story by editing and annotating his extensive journals, published by Utah State University Press in 2005. *HIGH, WIDE, AND HANDSOME: THE RIVER JOURNALS OF NORMAN D. NEVILLS* (the title comes from how Nevills used to describe running rapids) uses not only his on-the-spot diaries, but his extensive correspondence that is housed in the Nevills papers.

One of Nevills' passengers on a 1940 trip through the Grand Canyon was Barry Goldwater, future senator and presidential candidate. Yes, before Goldwater became a presidential candidate, he was a river runner. One of his great ambitions in life, before bombing Vietnam back to the stone age, was to see the Colorado River through the Grand Canyon. So he signed on with Norm Nevills' 1940 traverse of the length of the river, although he started in Green River, Utah, going through Cataract Canyon and all the way through the Grand Canyon. At the end of his long political career, he allegedly said that the only vote he ever regretted as a Senator was the one to dam Glen Canyon. His *DELIGHTFUL JOURNEY DOWN THE GREEN AND COLORADO RIVERS* is an excellent book with lots of photographs.



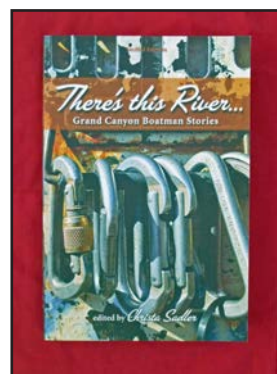
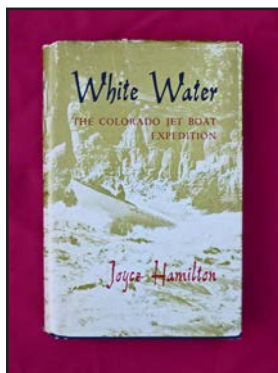
(CONT. PG. 10)

I also talked about Georgie White quite a bit; few characters are as well-known as Georgie, who also fits into that “love or hate” mold. Some saw her as a pioneer and loved her; others reviled her for turning river running from a macho expedition into something the whole family could enjoy. At any rate, she was definitely a character; there I was... No, seriously, I won't go into my own Georgie stories, but will recommend highly Richard Westwood's 1997 biography, *WOMAN OF THE RIVER: GEORGIE WHITE CLARK, WHITE-WATER PIONEER*. I'm not saying this just because I wrote the foreword, it really is an excellent book; he goes beyond the usual “there I was” to explore the transitional phase of river running history in the Grand Canyon, and tells a heckuva lot of good Georgie stories along the way. Georgie wrote her own autobiography, *GEORGIE CLARK: THIRTY YEARS OF RIVER RUNNING*, in 1977, but Westwood's book is much better.



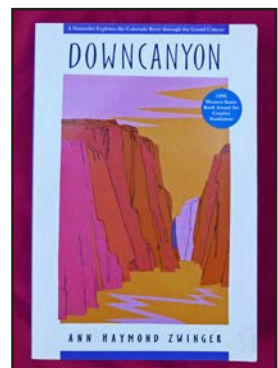
The 1950s was a transitional period in river running in the Grand Canyon, between the time of macho men wearing engineer boots in wooden boats and the dawn of the inflatable raft and the river runner. A couple of guys who were less than impressed with the formers' tales of derring-do in the canyon were Bill Beer and John Daggett. In 1956, they decided to prove that the Grand Canyon wasn't so tough, so they bought wet suits and set out to swim down the Colorado River through the Canyon. Bill Beer's book about it, *WE SWAM THE GRAND CANYON: THE TRUE STORY OF A CHEAP VACATION THAT GOT A LITTLE OUT OF HAND*, is one of the funniest and most enjoyable books about the Grand Canyon that you'll find. There are so many great stories from their trip; when his partner, John Daggett, got caught under the big rock at President Harding rapid; when they stared down the Superintendent of Grand Canyon National Park, and many other incidents. One of my favorite quotes about life in general comes from this book, Beer's comment about running Lava Falls--“suddenly I relaxed; there were no more decisions to make.” I think about it every time I feel the current catch me at the top of a rapid, or when the jet starts to accelerate down the runway.

And speaking of transitions, in 1960 a long-sought goal of running upriver through the Grand Canyon (don't ask me why, it just was!) was finally reached. The only full accounting of this epic is *WHITE WATER: THE COLORADO JET BOAT EXPEDITION*, by Joyce Hamilton. This feat, accomplished with New Zealand-designed jet boats, was the last time this was allowed by the NPS. It took me a while to find it, because the title is two words: white water. I did see it on Amazon but pretty pricey; try interlibrary loan. There was a film made about this event by the Indiana Gear Works Company, which had something to do with the production of the jet boat engines; that's where Don Briggs got all the footage of the upruns that you'll see in the DVD *River Runners of the Grand Canyon*.



Now to finish up with some more modern sources. One that a lot of boatmen like to read stories from is *THERE'S THIS RIVER: GRAND CANYON BOATMAN STORIES*, edited by Christa Sadler; it's out in a new edition. Another great book, focused on women river runners (who like to be called “boatmen,” by the way, despite Louise's title) is *BREAKING INTO THE CURRENT: BOATWOMEN OF THE GRAND CANYON*, edited by Louise Teal. It is another compilation of more modern river stories, with plenty of “there I was” but also plenty of tales of how hard it was for a woman to break into the river guide world in the 1970s and 1980s. For those with a taste for the more macabre, there is *OVER THE EDGE: DEATH IN GRAND CANYON*, by Michael Ghiglieri and Tom Myers. Michael is a long-time river guide, while Tom is the former emergency room doctor on the South Rim; together they present many harrowing and tragic tales of people who met their ends in a beautiful place. You'll be surprised at how few such things actually happen on the river; it's usually a case of “Hey, hold my beer and watch this!” up on the rims. Ghiglieri also describes his experiences as a river guide in *CANYON*, published in 1992. His doctorate in primate anthropology gives him an interesting perspective on river guides.

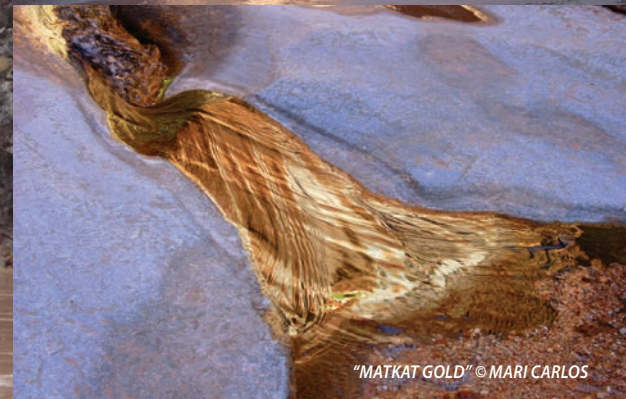
Then there are two books by a couple of my favorite authors, Colin Fletcher and Ann Zwinger. Fletcher, also the author of the 1963 *THE MAN WHO WALKED THROUGH TIME*, about his solo hike through the Grand Canyon, came back in 1997 to solo down the river, and the result is *RIVER: ONE MAN'S JOURNEY DOWN THE COLORADO, SOURCE TO SEA*, a reflective, introspective book about the river and his own life and work. Ann Zwinger, naturalist, is the source of my oft-used quote, “Days of the week have no meaning, nor do eons or epochs. Time is only today on the river and tonight on the sandbar,” which I bring out anytime someone asks what time it is. My favorite work of hers, *RUN RIVER RUN*, is about the Green, but she also came down the Grand Canyon in 1995 and wrote *DOWNCANYON: A NATURALIST EXPLORES THE COLORADO RIVER THROUGH THE GRAND CANYON*. Another elegant writer.



I'd also highly recommend the collected writing to be found in the *BOATMAN'S QUARTERLY REVIEW*, the official organ of the Grand Canyon River Guides Association. You can read many of them online at <http://www.gcr.org/bqr.html>, or order copies “printed on recycled paper, with soy ink, by really nice guys.” The BQR contains history, musings, poetry, artwork, and news about the Grand Canyon guide community, and each issue also includes an interview with a veteran guide that is part of Northern Arizona University's Grand Canyon oral history program (a recent one was with Mike Denoyer, one of the owners of Grand Canyon Expeditions). Their website also has a very good bookstore for Grand Canyon books and other items. Seriously, the GCRG is one of the best organizations around, and you might consider joining up. Finally, another organization that is well worth joining is the Grand Canyon River Runners Association, a group specifically for people like yourselves who love the river in the Grand Canyon. You can find out how to join, and read their fun and informative newsletter, *THE GRAND CANYON RIVER RUNNER*, at <http://www.gcriverrunners.org/>.

This list only dips beneath the surface of what is a huge body of work about the Grand Canyon; enough, Captain John Hance might say, to fill up the canyon. And I'm sure I've left some good books and sources out, since this is right off the top of my cluttered head. So go to your library, log on to Amazon.com, check around on eBay, and settle back with a good read about the one and only Grand Canyon. It's not the same as shading up in Redwall Cavern or running Lava Falls, but it'll keep you until the next trip. See you on the river!

Roy Webb





"APPROACHING REDWALL CAVERN" @ MARI CARLOS



"THE RAVEN" @ MARI CARLOS



"LOOKING DOWN RIVER FROM INSCRIPTION CANYON" @ MARI CARLOS

A TALE OF TWO BOATS

(CONT. FROM COVER)

was there as engineer and superintendent of a project to power-dredge Glen Canyon's gold-bearing bottom sands.

Galloway was introduced to Stanton as the fourth person ever to run the Green-Colorado mainstem and come through alive, and Stanton hired him. Among Galloway's assignments was shuttling the company's president Julius Stone up and down the river to inspect elements of the project. That acquaintanceship led, several years later, to Stone's hiring Galloway to lead him down Powell's route – the first known pleasure trip by boat through Grand Canyon.

By then—1909—Nathaniel Galloway was considered to be the dean of fast-water boatmen. During the previous twenty-five years he had built many boats, usually leaving one wherever he ended his run and building a new one for the next trip, each boat being an improvement over its predecessors. Galloway discarded earlier expeditions' idea of attacking the river in heavy boats, with several oarsmen rowing downstream faster than the current trying to create enough relative speed for steerability. Those had often been—literally—"crash courses". He had rejected that whole idea and worked out a pairing of boat design and river running technique based on a single oarsman in a light, maneuverable boat—one set of eyes and ears, facing downstream and using the energy of the river rather than the strength of multiple oarsmen for steerage. This undoubtedly was a combination of "smarts" and necessity: because he often trapped alone, he needed a boat one man could handle, in or out of the water. His blending of rowing technique with effective boat shapes and lines may well have come from studying the body shapes of wild ducks and geese, and the way they face downstream to ride riffles.

During most of his life, Nathaniel Galloway had been more interested in making a profit rather than making a reputation. While he and Julius Stone were still planning their 1909 expedition, Bert Loper, Charles Russell, and Edwin Monett launched at Green River, Utah (September 20, 1907) to run all the way down to Needles, California in boats named Arizona, Nevada, and Utah. Loper wrecked the Arizona and his camera, and dropped out for repairs; when he didn't catch up with them at Lees Ferry, Russell and Monett continued. By Christmas day, they were seventy-three miles into Marble and Grand Canyon and had entered the upper granite gorge. In the rapid Major Powell had named Sockdola ger, Monett impinged the Nevada, and was pinned in the cockpit by the rushing water. After he and most of the provisions were rescued by running a line from Russell's boat, they laid down to sleep without tying the grounded boat to anything. When they awoke they found that the river had risen during the night, lifted the Nevada, and carried it away.

Now they had only Utah, with cockpit space for one man, and from there on Monett had to walk, or climb around, bad rapids while Russell ran them, or ride sitting on the stern deck of

Russell's boat, dropping into the river and dragging along behind when that weight would have hindered Russell's maneuvering. Although they were backing into the rapids, as savvy boatmen would be, they apparently found the river somewhat faster than was comfortable: "We've needed," Monett said, trying to make his hanging from the boat an advantage, "...a drag that wouldn't get fouled on the rocks..."

Charlie Russell, a prospector and erstwhile newspaperman, had generated a lot of publicity about the trip, including a series of dispatches to newspapers, so that when he and Ed Monett reached Needles, California on January 10, 1908, with Monett riding piggy-back on the stern of their one remaining boat, they were greeted by five hundred cheering people. That summer their boat the Utah, was put on display at the south rim outside



THE "EDITH," ANOTHER GALLOWAY BOAT USED BY THE KOLBS IN 1911, AND BRAD DIMOCK'S REPLICA

the recently-built El Tovar Hotel, where it remained for several years, accompanied by a sign:

THE UTAH

THIS BOAT WENT THROUGH GRAND CANYON

The Russell-Monett publicity got Nathaniel Galloway's goat. He wrote to Robert Brewster Stanton that "parties traveling through the canyons this winter claim to be the inventors of the stern first technique." The following year, Galloway led the Stone expedition in Galloway-designed boats. Although it was not without incident, the expedition was smooth—as expeditions go. Then, in 1910, George Wharton James, a noted travel writer of the day, published his book *The Grand Canyon of Arizona: How To See It*, with a chapter devoted to Charley Russell's adventure. It described "Russell's Method Of Shooting Rapids" and was accompanied by a photo of Russell running the small rapid at the foot of the Bright Angel Trail, representing it as "Hermit Creek Rapids."

By 1911, with the Utah still on display at the south rim, Galloway, now more aware of his own accomplishments, wanted to put his boat there too, and thought he could get help from Dave Rust. Galloway and Rust had been mining partners in Glen Canyon. Rust was now well connected, having gone on to ramrod the building

of Rust Camp (which became Phantom Ranch) and the trans-river tramway that preceded the first footbridge. Galloway wrote Rust, saying he wanted his boat "to go to the Eltovar [sic] people as the most successful boat that ever traveled the Grand Canyon. As they already have one that shows the effects of the roughest usage, the contrast would be noticeable."

But it never happened. And, more's the pity, some time after 1911 the Utah was stuck away in a warehouse at the Park, and subsequently—when it became "old news," or got in the way—it was taken to the south rim garbage dump, where it was probably crushed or burned. The eleventh boat ever to have gone through Grand Canyon had been thrown away.

Grand Canyon National Park's river history is a rich and important one that should be elevated to its proper place in the

Park's interpretive mix of words and objects. The Park is fortunate to have Julius Stone's 1909 Galloway boat, plus a wonderful series of twenty or more river craft used in the ensuing century.

Several years ago, all of the Park's historic boats were removed from public viewing and stored in a south rim maintenance building. Since then, they've been moved to other such buildings for various reasons, and another move is now being planned.

So that some next generation cannot just decide these boats are "in the way," they should go to a permanent home where the public can see and care about them. The boats and related river artifacts and documents in the Park's collection are a core element in the human history of Grand Canyon National Park. They could, and should, be a unique display in the entire National Park System.

RAVENS

Jet black against shock blue.
The canyon drops out below him.
Upside down with claws retracted.

The other raven is drawn for a dive.
Midair collision.
And a caw to announce
points scored in a secret game.

A third raven crows from
a piñon tree.
As if to say, Look alive!

A caw seldom spoken
by a scavenger.

The airborne ravens
catch a second thermal.
And reset the clock
for a second round.

CALIFORNIA CONDOR DREAMIN'

I evoke the Kaibab Plateau
with rotting carcasses of Mastodons
and winged repo men dismantling them.

They relax under rib-cage cabanas
and leave to find their mates,
lounging in limestone caves.

Until the entire world pivots
on a single, smooth egg.
And one day, they wait for their baby
to take a first blundering flight.

Their nerves pulse to watch
the freefall of pinwheeling wings.
And soft feathers furious in the wind.

The truth of the ground waits.
And a life of soaring and scavenging
and the tug of flesh away from skeletons

left to blanch in the righteous sun.

Poems about interactions with animals in Grand Canyon by Seth Muller—a journalist, author, poet and playwright who lives in Flagstaff, Arizona. They will be part of a poetry book about Grand Canyon and the Colorado Plateau called Heart in the Bony Middle, to be released by Vishnu Temple Press in early 2014. Learn more at www.vishnutemplepress.com or www.sethmuller.com.



"RAVEN" © JAN MULLER

BIGHORN

We stand, you and us,
at the spigot
at the rest house.

You have horns,
but we have cameras.
And at least some of us
are not encumbered
by common sense.

You clop your hooves,
and shake your head.
But not all of us
converse in such
delicate ways.

Your horns a curl
of the divine proportion.
Your eyes transfixed,
confusing instinct,
needing water—with a
want to avoid us.

We stand, you and us,
at the spigot
at the rest house.

And you have been
far too kind.

WILDLIFE CENSUS PROGRAM UPDATE

Your chance to participate!

2013 was the first full year for the Wildlife Census Program, which offers opportunities for observational data collection by anyone who takes a trip through Grand Canyon by river. All the participating scientists have asked that their projects be included again in the 2014 data collection effort, and more projects may be added. The Data sheets and a full description of the program can be found on the GCRRRA website by going to the home page and clicking on the link with the photo of a bald eagle.

Current projects include the following:

Brandon Holton, Wildlife Biologist, Grand Canyon National Park, needs counts and other observational data for desert bighorn sheep, mountain lion (cougar) and mule deer. A number of sheep are now wearing tracking collars, as are some of the Canyon's cougar population. Although it is extremely rare to spot a cougar, you might see footprints if you are lucky.

Janice Stroud-Settles, Wildlife Biologist, Grand Canyon National Park, seeks to engage birders and other interested enthusiasts to identify and record bird sightings within the canyon. Specifically she is looking for bald eagle, golden eagle, and peregrine falcon data. In addition there are threatened and endangered species on her list that make this the ideal project for an enthusiastic birder.

Geoff Carpenter, PhD, is gathering data for an upcoming book, "Amphibians and Reptiles of the Grand Canyon Region", and is interested in all snake sightings by river travelers. His greatest need is for rattlesnake sightings and good locations records. Photographs are a huge help because variations between the species are subtle.



Grand Canyon River Runners Association



preserving public access to the colorado river

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"DOUBLE RAINBOW" © KAREN MARTINDALE

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Grand Canyon River Runners Association is a 501(c)3 organization

JOIN GCRRA

Have you experienced a fantastic commercially outfitted trip down the Colorado River? Are you planning to have one in the future? Do you think that the opportunity to see Grand Canyon from river level should be available to everyone, even if they do not have the skill or strength to row their own boat? Did you know that drought and global warming could have a dramatic effect on water flow in the river, navigability of the rapids and the availability of camping beaches? Did you know that the Park Service can change its management plan, including adjusting the number of visitors and kinds of trips permitted, from time to time? If you care about these issues, GCRRA speaks for you, with the Park Service and all government agencies whose policies affect the park, helping preserve your opportunities to participate in a commercially outfitted river trip. Have your voice heard! Join us today! Use the membership reply envelope included with this issue, or log on to our website : www.gcriverrunners.org to learn more. We have an online interactive membership form and can accept PAYPAL for your convenience.

Membership includes half-yearly issues of the beautiful Grand Canyon River Runner newsletter. GCRRA is a 501(c)3 organization.

CALLING ALL RIVER RUNNERS!

YOUR LITERARY AND ARISTIC CONTRIBUTIONS CAN BE SHOWCASED IN THE NEXT GCRRA NEWSLETTER

Send us your journal entries, poetry, postcards from the canyon, humorous stories, photos, and original art work for publication in the next newsletter or on the GCRRA website. Electronic submissions are preferred. EMAIL materials to: gcriverrunners@gmail.com

Technology challenged?
Mail your contributions to : GCRRA, P.O. 20013, Sedona, AZ 86341-20013. If you need more information your question will be routed to the Editor.

Submission deadline for the SPRING Issue is APRIL 1, 2014.