

National Park Service
U.S. Department of the Interior

Grand Canyon National Park, AZ



the Action Guide *to* Preservation

**Colorado River
Grand Canyon National Park**



The Colorado River *through* Grand Canyon

A World Heritage Site

“Heritage is our legacy from the past, what we live with today, and what we pass on to future generations.” - UNESCO

A National Park

“...to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” -
The National Park Service Organic Act 1916

A Home

“THE COLORS OF THE CANYON
REPRESENT THE COLORS OF OUR SKIN:
RED, BLACK, WHITE, AND YELLOW.”
-DELORES HONGA, TRIBAL ELDER, HUALAPAI

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Introduction

The purpose of the Action Guide is to provide information about important park resources, regulations, and operating requirements, and to share minimum impact camping techniques. This guide is designed to help you understand and apply the principles of Leave No Trace® before and during your trip down the Colorado River through Grand Canyon. NPS river rangers, resource specialists, tribal members, and fellow boaters collaborated to develop the messages and information in this guide.

The staff of Grand Canyon National Park needs your collaboration in preserving this wonderful place. Thank you for caring. Enjoy your Colorado River trip.

For general information on trip planning visit the Grand Canyon National Park website at <https://www.nps.gov/grca/planyourvisit/noncommercial-riv-docs.htm>, or call the River Permits office at (800) 959-9164 or (928) 638-7884.

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Welcome *to the* Colorado River

The Colorado River is born of snow. High in the Rocky Mountains, the warm spring sun melts the winter's snowpack and the resulting water begins to flow downhill. Following the path of least resistance, water gathers and develops into streams, creeks, and rivers. Flowing waters meet at confluences, joining to form the Colorado River.

After the Colorado River leaves the Rocky Mountains, it journeys into the Colorado Plateau where it picks up sediment and moves it downstream like a conveyor belt. This moving silt, sand, and rock scour the bottom of the river's channel, deepening and widening it along the way. The rocks above the channel are also exposed to weathering and erosion, which widens the canyon. The gradient of the Colorado River and the material it moves make this desert river powerful. In Grand Canyon National Park alone, the Colorado River drops more than 2,000 ft. over 277 miles. Over its entire 1,450-mile course to the Gulf of California, it drops more than 14,000 ft.

The Colorado River supports an abundance of plant and animal life by delivering sediments to beaches and water to its banks. Beyond the shore, high up in the dunes, and up higher in the side canyons this diverse community of life expands, connecting the canyon to the rest of the Colorado Plateau.

A Colorado River expedition offers many opportunities to witness the passing of time, seasonal changes, and present conditions. We take pleasure in the journey. It's the joy of the ride, the sight of wildlife, the smell of rain, the roar of rapids, the endless night sky, and the unity we experience: that oneness between us, the river, and the canyon that makes running the river so special. The opportunities to enjoy these extraordinary personal and collective experiences are possible because Grand Canyon is a National Park.

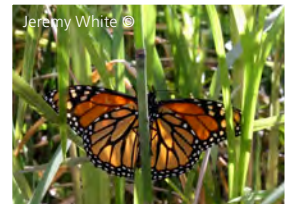
In 1919, Congress passed a law creating Grand Canyon National Park and mandating that Grand Canyon be protected for future generations. The National Park Service needs your help. Do your part to protect the canyon by obeying all regulations and understanding the important resource preservation concerns that underlie each regulation. By practicing Leave No Trace Outdoor Ethics, everyone helps fulfill the mission of the National Park Service.



The clear headwaters of the Colorado River, Rocky Mountain National Park



The silt-laden water of the Colorado River, Grand Canyon National Park



The Indigenous People of Grand Canyon

Since time immemorial, generations of indigenous people have considered Grand Canyon to be home. Historically, the Grand Canyon provided everything for communities to sustain themselves. People built homes, farmed, gathered resources, hunted game, and followed spiritual traditions.

Some tribes recount creation, emergence, or origin histories that take place within Grand Canyon. These stories are kept alive through oral tradition and are shared from generation to generation. Grand Canyon is sacred and is where the spirits of many ancestors reside. The presence of these ancestors is still felt in the canyon; they are alive in rock writings (rock art), archaeological sites, springs, gathering areas, traditions, and stories.

Grand Canyon is honored and cared for by American Indian tribes through pilgrimages, prayers, offerings and ceremonies. The associated tribes work with the National Park Service on diverse projects to care for and monitor archaeological and sacred sites, and native plant communities.



The associated tribes welcome you to the Colorado River and ask that you protect the canyon during your trip by showing respect for everything from water, minerals, vegetation, animals, archaeological and historic sites, to sacred sites. Please stay on established trails, pack out garbage, keep wildlife wild, and keep away from archaeological sites.



The Traditionally Associated Tribes of Grand Canyon

Havasupai Tribe • Hopi Tribe • Hualapai Tribe
Kaibab Band of Paiute Indians • Las Vegas Paiute Tribe
Moapa Band of Paiute Indians • Navajo Nation
Paiute Indian Tribes of Utah • San Juan Southern Paiute Tribe
Yavapai-Apache Nation • Pueblo of Zuni

Leave No Trace Outdoor Ethics

Community • Responsibility • Individuality • Home

Once you are on the Colorado River in Grand Canyon, you will become part of a new and not-so-traditional community. Community members include boaters from all over the world, the Colorado River, its side streams, sand, soil, vegetation, archaeological sites, and wildlife. As one of 24,000 boaters who travel down the Colorado River through Grand Canyon National Park each year, you become an integral part of the community, and a caretaker of this international treasure.



All of us, as stewards of Grand Canyon National Park, have the responsibility to preserve and protect the river and surrounding canyon with as few impacts as possible. By following Leave No Trace Outdoor Ethics, each one of us leaves the canyon better than we found it and empowers us to be the best stewards possible of this unique place.

The Action Guide to Preservation contains Leave No Trace minimum impact techniques designed specifically for the Colorado River through Grand Canyon National Park. Every river and ecosystem is unique, so some techniques described in this guide may be different from those you experienced on other rivers.

The Principles of Leave No Trace Outdoor Ethics

- Plan Ahead and Prepare
- Travel and Camp on Durable Surfaces
- Dispose of Waste Properly
- Leave What You Find
- Minimize Campfire Impacts
- Respect Wildlife
- Be Considerate of Others



Visit the Leave No Trace website at: <https://LNT.org>

Plan Ahead *and* Prepare

Campsite Selection Planning

At a Glance:

- Be flexible during your trip.
- Print and bring the campsite list.
- Travel with your group and get to know your river neighbors.

A Grand Canyon expedition is a trip of a lifetime for everyone. By planning ahead and following these suggestions, you can potentially relax about finding campsites and simply enjoy the river's flow and canyon's majesty each day. Expect to meet and communicate with other boaters and backpackers on the river. Consider them your river neighbors; they are here for the same reasons you are and may have similar expectations of where to camp.

Knowledgeable guides can help you locate a campsite that's right for your group.



Plan to take campsites appropriate for your group size. Groups of up to 16 should use smaller camps. On occasion, you may need to share your campsite with other boaters and backpackers. If this happens, work together to minimize impacts.

A campsite list and other information is found on the NPS website.

<https://www.nps.gov/grca/planyourvisit/noncommercial-riv-docs.htm>

Which is better - a popular campsite or a less popular campsite?

Both are great! You're in the Grand Canyon. Popular campsites have more evidence of use. The less popular campsites are usually more pristine.



Get to know your neighbors

If there is a campsite that you really want, communicate your intentions with other boaters and be sincere. Feel empowered to negotiate or even trade for a special campsite if more than one group wants the same one.

Check in with other trips; a friendly greeting goes much farther than just asking someone where they plan to camp.

Other things to consider:

We recognize that plans change throughout the day. However, if you tell someone where you plan to camp, do your best to honor your commitments.

Designate someone in your group to be the campsite spokesperson. That way, information won't get confused between party members. Use your map when talking about campsites. Sometimes boaters have different names for the same campsites.

Splitting up trips and sending boaters ahead to obtain camp is not allowed in Grand Canyon National Park.

Although sometimes practiced on other rivers, it is against regulation and is considered poor etiquette in Grand Canyon. Groups that spread out during the day make the river feel crowded to other groups. Traveling together is safer. If

something happens to members of your trip who are behind you, you won't be able to go back to help them. Boaters in this very situation have spent the night alone, worrying about their family and friends and without their gear, food, and water.



Travel together and make sure everyone always wears his or her life jacket.

Travel *and* Camp on Durable Surfaces

Choosing the Right Path

Land varies in durability along the river corridor. Near the water you will walk on more durable surfaces such as beach sand, gravel, rock, and maintained trails, but once you climb higher, the ground changes by becoming more fragile and more often covered by plants. Each step leaves a footprint. Some are obvious immediately and are harmless, like when you walk on sand, others only show their harmful impacts cumulatively when 5, 10, or 100 feet have stepped on the same plant or soil.

Recognize and walk and camp on durable surfaces.

Camp on or near the boats on resilient surfaces. Resilient surfaces are not as affected by foot traffic and usually contain few plants. By walking and camping on them, you will have a less harmful impact on the environment.



Biological soil crusts surround this trail.

The National Park Service maintains trails for boaters to access campsites, attraction sites and to scout rapids. Learn to recognize maintained trails and stick to them.



Set up camp on durable surfaces near the boats. It's easier on your back and makes camp chores simpler.

At a Glance:

- Durable surfaces are resistant to impacts.
- Walk on sand, gravel, rock, and established trails.
- Avoid trampling vegetation and crushing biological soil crusts.
- Camp on or near the boats on resilient surfaces.

Be aware of and avoid fragile surfaces.

Vegetation: The Colorado River corridor contains many plant species that have adapted in order to thrive in a desert environment. They are slow growing and fragile. Please try not to step, or camp on them.

Biological Soil Crusts:

Biological soil crusts also known as cryptobiotic soil, are a diverse community of living organisms such as algae, cyanobacteria (blue-green algae) bacteria, lichen, mosses, liverworts, and fungi.



Biological soil crusts are an indicator of the old high-water zone.

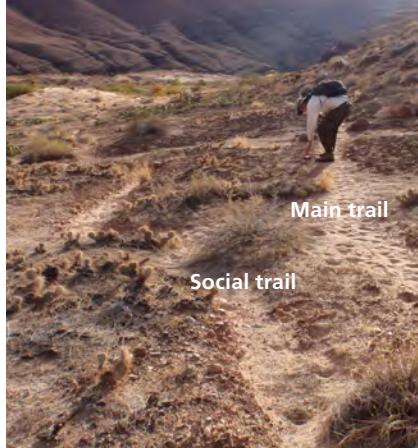
These crusts maintain soil stability, prevent erosion, contribute nutrients for plant growth, retain water in the soil for plants, and provide a home for seedling germination. Just one step can crush the crust, taking decades for it to recover!



Sand Dunes: Dunes form when wind blows and eventually deposits fine sand particles. Before Glen Canyon Dam, the river had a high sediment load and delivered sand to the banks of the river. Over time, wind blew sand particles away from the river, creating and adding to existing sand dunes. Some of these well-developed sand dunes host 700-year-old mesquite and acacia. Other dunes appear barren. Today, sand dunes are fragile because the Colorado River no longer delivers enough sediment to replace what has eroded away. This makes them especially vulnerable to erosion from weather and off-trail hiking.

Social Trails

Social trails are not planned and constructed; they are caused by hikers straying from the established trail system. They will often be dead-end, shortcut or parallel other social trails, and frequently become a confusing maze of intertwining and redundant pathways. The resulting mass of compacted soil throughout the affected area promotes erosion and vegetation loss significantly altering the natural landscape. In order to prevent the proliferation of social trails, learn to identify and avoid them. Stay on established trails and encourage all members of your trip to do the same. Be careful that you do not create new social trails. Remember that just one set of footprints through a fragile area can create a visible scar that lasts for years.



Rehabilitation Projects

In an effort to restore the natural landscape, the National Park Service in collaboration with volunteer organizations rehabilitate impacted areas by delineating existing designated trails and obliterating social trails. Vertical mulching is a method of artfully inserting branches vertically into the ground, blocking access to social trails and allowing natural vegetation to grow back. National Park Service staff and partners also block access to social trails by placing rocks and planting vegetation in them. Be sure to leave the vertical



The social trail above was obliterated by National Park Service personnel.

mulching in place and remember that collecting it for firewood is not allowed.

The Old High-water Zone

At a Glance:

- The old high-water zone marks the high flow of the pre-dam river.
- Identify the old high-water zone by identifying its plants and biological soil crusts.
- The old high-water zone provides undisturbed habitat for native wildlife.

Pre-dam High-water

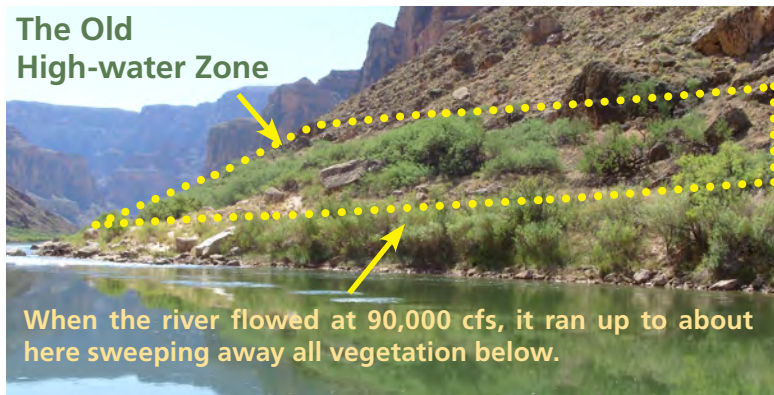
One of the most fragile resources you will encounter during your river trip is the old high-water zone. This vegetation zone is an extremely fragile living remnant of the past and needs your help to protect it.

Pre-dam flow of the Colorado River

Before the construction of Glen Canyon Dam upstream of Lees Ferry, the river's flow fluctuated dramatically. During the winter, flows would often decrease to around 5,000 cubic feet per second (cfs), with a record low flow of 700 cfs in 1924. As snow melted in the Rocky Mountains, spring flows would increase to around 120,000 cfs, with an estimated record high of 300,000 cfs in 1884. Flows peaked in May and June, then started to decrease into the summer but with much variability during the summer monsoon season. The river also carried huge amounts of sediment that would replenish riverside sand bars and give the river its chocolate- brown color.

After the completion of Glen Canyon Dam in 1963, the river flow became restricted, with flows usually ranging between 8,000-14,000 cfs. Dam releases fluctuate daily according to demand for hydroelectric power. Glen Canyon Dam also holds back all upstream sediment so water emerging from the dam is clear.

The Old High-water Zone



The Old High-water Zone

Imagine the river running at over 100,000 cfs before Glen Canyon Dam. By the time the water reached Grand Canyon, the river would be full of sediment and running high above its regular channel bed. Any vegetation growing along the banks was swept away, leaving behind a scoured zone of rocks and an enormous amount of sand that was redeposited each spring.

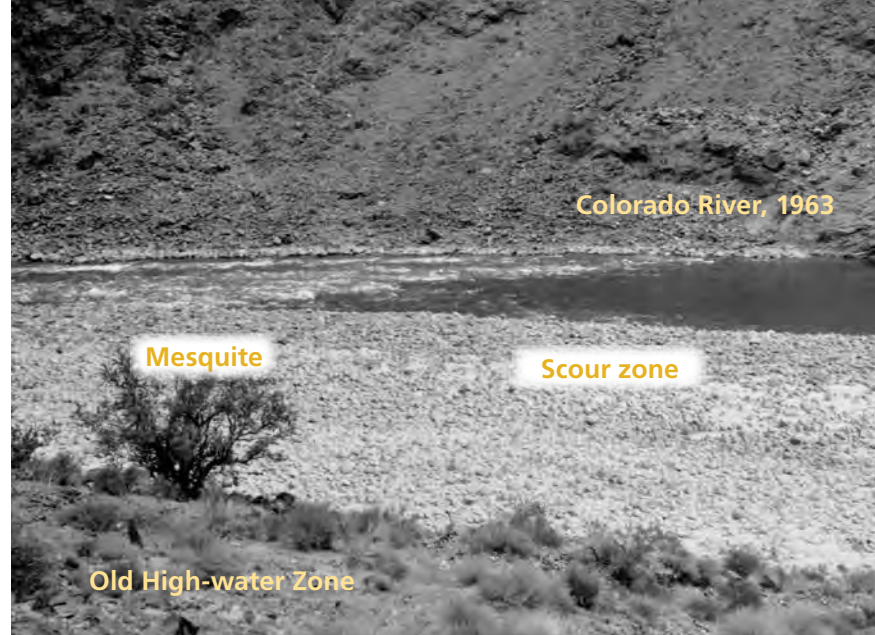
Just above the scour zone in sand dunes and on talus slopes, grew desert-adapted plants like mesquite and acacia. When the river ran high, the trees soaked up the water with their extensive root systems. When the river ran low the trees' taproots reached deep down for groundwater. Today, this zone of vegetation marks the river's highest flow and is known as the old high-water zone. It is called 'old' because the river hasn't naturally flowed this high since Glen Canyon Dam began operating.

What happened to the scour zone? A new community of plants has become established here because it is no longer scoured. Baccharis, arrow-weed, willow, tamarisk, and other moisture-dependent plants now live along this new high-water zone. Mesquite trees are starting to grow in this zone.

Locating the Old High-water Zone

As you travel downstream, observe how the old high-water zone is sometimes apparent and easy to detect; sometimes it is less apparent and hard to spot; and sometimes it is nonexistent.

To identify the old high-water zone, look up from shore at the terrain for rounded sandy slopes or higher terraces of sand.



Some are covered thickly in vegetation and some are sparsely covered in vegetation. As you move higher, notice how the sand transitions into biological soil crusts and not how different the vegetation is from the shore. Look for grasses, cactus, and mesquite trees.

Soap Creek (River Mile 11.3) exhibits a good example of the old high-water zone. Follow the established trail leading out of camp and look for sandy slopes, sandy terraces, biological soil crusts, and historic driftwood. The Nankoweap area (River Miles 52 – 54) also displays obvious characteristics of the old high-water zone.



Mature mesquite live in the old high-water zone.

Baccharis, arrow-weed, willow, and tamarisk live in the new high-water zone.



Plants in the Old High-water Zone (avoid camping here)

Western Honey Mesquite (*Prosopis glandulosa* var. *torreyana*)

Mesquite, a deciduous tree grows individually and in groups. They stabilize sand dunes and talus slopes with their extensive root systems. They furnish shade as well as shelter to wildlife. Female Lucy's warblers build nests in their cavities. Identify these trees by their small leaflet pairs, spines, and seed pods. Acacia, a similar plant, is also an indicator of the old high-water zone.



Grand Canyon Beavertail Cactus (*Opuntia basilaris* var. *longiarreolata*)



Beavertail cactus is a low-spreading succulent lacking spines. Rodents and lizards take cover for safety among the pads. Brilliant flowers bloom during the spring and provide nectar to pollinating insects and hummingbirds.

Plants in the New High-water Zone (camp here)

Tamarisk, Saltcedar (*Tamarix ramosissima*)

Tamarisk is an invasive, non-native tree with numerous slender branches and white-to-pink flowers. They are an ecological threat to native vegetation because they outcompete and replace native species as they intercept water. They provide little food value to wildlife, but plenty of shade for boaters. Be aware, during the spring, the southwestern willow flycatcher builds open cup nests in tamarisk along the Colorado River.



Baccharis, Seep-Willow (*Baccharis* species)

Although it is not a true willow, baccharis is commonly found forming thickets throughout the river corridor. Their spreading root systems effectively stabilize the soil. Look for straight slender stalks, long narrow leaves, and numerous dead branches at the base. The flowers lack petals and form in clusters. Their tiny seeds blow away with the wind. These plants are important to butterflies and insects.



Arrow-Weed (*Pluchea sericea*)

Arrow-weed is a shrub common along the river, arrow-weed forms large patches on beaches and cobble bars. Its stiff stems, silvery-green leaves, and long straight branches set it apart from other plants along the river corridor. Purplish flowers form in clusters at the ends of branches. These plants are also important to butterflies and insects.



To learn more about Grand Canyon plants visit:
<https://www.nps.gov/grca/learn/nature/plants.htm>

Dispose of Waste Properly

At a Glance:

- Remove and recycle excess packaging before your trip.
- Kitchen tarps protect campsites and prevent unwanted ants and rodents.
- Bring a supply of personal waste bags for day hikes.
- Bring a “pee” bucket for the toilet area.

Package, Repackage, and Recycle

Reduce your load. “Pack it in, Pack it out” may be the motto during your trip, but “*Package and Repackage*” is your mantra beforehand. Dispose of and recycle all unnecessary packaging. Plan to reuse plastic zippered bags; they make great lunch bags or garbage bags for day hikes and for picking up micro-trash around camp.

Prevent Unwanted Dinner Guests

Kitchen tarps under tables protect the ground, preventing the buildup of crumbs, which attract ants, rodents, and other wildlife. They also keep the area clean for the next boaters. When cleaning up your kitchen, make sure that everyone knows to put the larger pieces of food in the garbage and shake the rest of the smaller crumbs on the tarp out in the river. When dumping the dish water buckets in the river, remember to use a strainer to screen the garbage.



David W. Inouye ©



The Solution is Dilution: Bathe and urinate in the river, not in the creeks.

Unlike small creeks, the volume of water in the Colorado River is so large that it dilutes and breaks down your soaps and urine. Use soap in the river at least 100 yards away from any side stream. Soap is harmful to the environment and the wildlife that depends on clean water in the tributaries.

Urinate in the river. It is important to urinate directly in the water rather than in the wet sand because urine in the wet sand causes algal blooms that are both unsightly and carry an unpleasant odor. Algal blooms often develop on popular beaches, day use areas, lunch stops, and behind boulders where people frequently urinate.

Be Safe

Urinating directly in the river may require you to get your feet wet. Many groups use a pee bucket at camp. This is a clearly marked bucket that people use in the toilet area. It is emptied directly into the river. The pee bucket is both convenient and safe. It allows you to pee comfortably without the risk of slipping in the river in the dark.



Managing waste on day hikes

Thousands of people hike the same trails at Grand Canyon annually, and finding a good place to go to the bathroom during a day hike is a challenge. Sometimes it's impossible to get 200 feet away from a trail or seeps and springs. Because of these difficulties the National Park Service requires that boaters bag human feces during day hikes and bring it back to your river camp. A sanitary way to do this is by using a personal waste bag system.

Leave *What You* Find

Respect the Canyon

Taking natural and historic objects from the canyon is against the law.

Resist the temptation to bring souvenirs home from the canyon. Instead, bring a camera, sketchbook, and journal to record your finds. Leaving natural and historic objects in place is the right thing to do. Imagine what would happen if 24,000 boaters a year took home something special from the canyon. Every beautiful object you enjoy on your river trip was left in place by those before you. Be kind enough to do the same for those who will follow you.

Report acts of vandalism or theft.

Call the National Park Service Dispatch 928.638.7805

At a Glance:

- Collecting natural and historic objects is prohibited.
- Bring a camera, sketchbook, watercolor set, field guides, and journal to record your experiences.
- Behave respectfully at archaeological sites.

Preserve Archaeological Sites

Stay on established trails.

Shortcutting or creating social trails compacts the soil, which disturbs buried artifacts and leads to erosion at the site.



Enjoy structures, petroglyphs, and pictographs (rock writings) from a safe distance.

This way you won't accidentally touch or lean on rock writings or walls. Both are fragile. The oils and dirt in your hands transfer into and break down mortar in structures and pigments in rock art.

Leave artifacts in place.

Avoid picking up artifacts. If you do, please put them back where they were. Resist the temptation to make artifact piles. This preserves the artifact's context, while allowing the next people the thrill of discovering it on their own.



Minimize Campfire Impacts

Plan Ahead for Your Campfires

Campfire regulations exist to protect vegetation, wildlife habitat, diminishing resources, and the scenery. They also exist so that boaters will arrive at a pristine camp with no evidence of previous use.

Campfires are allowed all year if you bring your own wood. Be prepared and make having a campfire a special occasion. Keep your fires small or consider not having one at all.



Before Glen Canyon Dam, the river would scour beaches clean of any campfire impacts during spring runoff and flash floods.

Dave Mortenson ©



Today, campfire impacts remain on beaches unless boaters clean up after themselves.

At a Glance:

- Driftwood is the only type of firewood that is allowed to be collected. It is a limited resource.
- During the driftwood collection season, collect driftwood before you get to camp.
- An elevated fire pan and fire blanket is required for all campfires.

Required Equipment

Elevated Fire Pan

An elevated fire pan contains sparks, ash, and other fire debris and keeps these materials off the ground. Select (or cut to size) wood so that it fits within the fire pan.

Fire Blanket

A fire blanket will catch sparks, ash, and other fire debris that fall out of the pan. When cleaning up after a fire, make sure to empty debris from the fire blanket into the garbage.

Fire Remains

Carry out charcoal, ash, and other unburned debris. When boaters put wood, unburned wood, and charcoal in the river, it washes back up on the shoreline.



An elevated fire pan and fire blanket makes cleanup easier and keeps camping areas pristine.

The Colorado River runs through a desert landscape and the few trees that grow here are fragile. Some trees such as mesquite are very old and take a long time to regenerate. Even the dead wood from standing trees is protected because it provides critical habitat for wildlife.

Driftwood: Yesterday and Today

Before Glen Canyon Dam, the Colorado River transported massive quantities of driftwood during the spring runoff and seasonal flash floods. Boaters experienced lines of driftwood floating down the river.

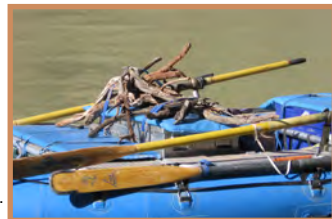
Today, the supply of driftwood on the Colorado River through Grand Canyon is severely reduced. Glen Canyon Dam traps driftwood in addition to sediments, reducing the amount that is present today. Driftwood collection is only allowed in the winter season when boaters need it most for warmth.

Collecting historic driftwood is prohibited. Historic driftwood is found where the river flooded (the old high-water zone) before Glen Canyon Dam. It is a historic reminder of the pre-dam river flows. Historic driftwood is the kind of driftwood that you find high up above the beaches in the slopes or on top of large boulders.

Gathering of wood from any tree standing, fallen, dead, or alive, is prohibited. Dead and down wood eventually breaks down into soil and provides habitat to wildlife. Also, sometimes plants appear to be dead when they are still alive.



Members of the Best Expedition pose for photo in front of driftwood. Circa 1891.



Collect driftwood
BEFORE you get to camp.



The 1957 photograph on the top left depicts the river flowing over the boulder at Boulder Narrows at an estimated 122,000 cfs. The 2009 photograph behind it shows the river at an estimated 10,000 cfs. The historic driftwood on top of the boulder was probably deposited during the 1957 spring runoff.

Campfire Wood/Driftwood Regulations and Procedures

Check current regulations that specify driftwood collection season.

Collect driftwood for campfires from along beaches at and below the new high-water line.

Collect driftwood BEFORE you get to camp.

If you take driftwood that is longer than your arms, use a handsaw to make it fit in the fire pan.

Avoid collecting driftwood that is thicker than your wrist. It's just too big to burn completely.

No other types of wood may be collected.



Driftwood



Not Driftwood

Respect Wildlife

Be a Good Neighbor

At a Glance:

- Learn about wildlife before your trip.
<https://www.nps.gov/grca/learn/nature/wildlife.htm>
- Feeding wildlife is illegal.
- Keep a clean camp to avoid unwanted pests.
- Bring field guides, binoculars, and cameras.

At Home in the Canyon

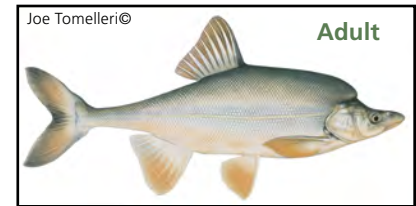
Grand Canyon National Park encompasses more than 1,200,000 acres of unfragmented habitat ranging from 1,200 feet above sea level to 9,200 feet above sea level. Grand Canyon's diverse ecosystem and habitats allow communities of plants and wildlife to thrive. The canyon is a home to stable populations of wildlife and a reserve for threatened and endangered species. As boaters, one of the most important things you can do to help protect wildlife is to avoid feeding them intentionally or unintentionally.

Threatened and Endangered Species

Grand Canyon wildlife faces increasing threats from habitat loss, disease, invasion of non-native species, and climate change. The Endangered Species Act of 1973 is designed to protect imperiled species from extinction. The Colorado River corridor provides critical habitat to many endangered and threatened species. The Redwall limestone provides habitat for nesting Mexican spotted owls and the California condor. Densely vegetated back eddies provide refuge for endangered Southwestern willow flycatcher, and the humpback chub are found in some tributaries.

Humpback Chub (*Gila cypha*)

The humpback chub is a native fish that is endemic to the Colorado River basin. These fish are specifically adapted to high turbidity, and seasonally variable flows and temperatures, all pre-dam conditions of the Colorado River. Humpback chub are endangered because of human-caused changes to the Colorado River ecosystem. Today, the largest population remaining in the world is found near the confluence with the Little Colorado River in Grand Canyon.



Young humpback chub are silver, have small eyes and large fins, but have not yet developed the characteristic adult hump behind their heads. If any humpback chub are accidentally caught, they must be immediately released unharmed.

California Condor (*Gymnogyps californicus*)

The California condor has a wingspan of up to 9.5 feet and is the largest flying land bird in North America. They are opportunistic scavengers, feeding exclusively on dead animals. Adults are primarily black, with white triangular patches underneath their wings. The bare heads of condors are grayish-black as juveniles and turn dull orange-pink as adults. There are currently over 70 condors flying free in northern Arizona, including several that were raised in wild nests within or near the Grand Canyon.



Camp Neighbors

Common Raven (*Corvus corax*)

Ravens are extremely versatile and opportunistic in finding food. They feed on carrion, insects, berries, and food that boaters leave out. They are remarkable problem solvers and can unzip day packs and tents, scattering their contents. They fly off with plastic zippered bags full of snacks, sunscreen, and even wallets. Protect the ravens (and your belongings) by securing food and plastic bags.



Ringtail (*Bassariscus astutus*) These nocturnal “astute” members of the raccoon family are capable of climbing onto just about any surface in search of food. Their ankle joints rotate over 180 degrees, making them flexible and agile. Their tails

provide incredible balance, allowing them to cartwheel over your boats and ricochet between them. Like the common raven, ringtails will eat whatever they can. Protect the ringtail by securing your food at night, thus allowing them their natural diet of berries, insects, and lizards.

Grand Canyon Rattlesnake (*Crotalus viridis*) This nonaggressive endemic species has adapted to the canyon’s landscape by developing a pink hue. They eat small mammals



such as mice and rats (the kind of animals you don’t want in your camp) and will occasionally feed on amphibians and reptiles. Protect snakes by not attracting rodents to your camp. Boaters rarely get

bitten by snakes, and the ones who do get bitten have usually tried to handle them.

Rodents Hantavirus is a disease that is transmitted to humans by inhaling germs that are carried in rodent’s feces, urine, and saliva. Infected humans appear to have the symptoms of the flu. These include fever, ache-ridden muscles, headache, and cough. With hantavirus, the lungs of infected individuals fill with fluid and they suffer respiratory failure, usually within 2 to 6 days.

Be Considerate of Others

Grand Canyon: Our Wilderness Experience

At a Glance:

- Leave the river and the canyon better than you found it.
- Respect others and the quality of their experience.
- Treat archaeological sites and sacred sites respectfully.
- While in the presence of tribal members, please honor their request for quiet and privacy.

While on river trips, we all seek something special for ourselves, our families, and our friends. This might be solitude or camaraderie, or both. Even though we are unique individuals, we visit the river and the canyon for many of the same reasons. By considering the needs of others and by leaving the canyon as pristine as or better than you found it, everyone has the potential to create a positive and safe river experience.

Humility • Obligation • Gratitude

“Listen. Pass by sacred sites silently and if it is meant to be you might feel its presence, its strength.”

- Sharon Wilder. Hualapai Tribal Member



Health *and* Safety

An important step toward being a steward of the canyon is taking care of yourself and everyone else on your trip. Stay healthy and boat safely. Make sure that everyone knows that they have a role to play in safety; the least experienced boater is as important as the most experienced. Everyone is ultimately responsible for his or her own health and safety and for that of fellow trip participants.



In an emergency
call **(928) 638-7911**

Keep your hands and feet clean and moist.
Use anti-bacterial ointment on wounds.

Take care of wounds immediately; small things like cracks on your fingers and toes can become painful distractions or even debilitating injuries. When accidents happen or when boaters fail to keep themselves healthy and boat safely, the canyon suffers. People get distracted and focus on their immediate problem, forgetting to take care of the canyon. Take care of yourself; the canyon will be better able to inspire you and those that come after you.

Know what to do in an emergency. Ask the River Rangers about safety concerns and procedures and remember to review the River Trip Regulations for emergency procedures and information.

Avoid hantavirus by avoiding contact with all rodents and their burrows. Do not pitch tents or place sleeping bags near rodent burrows. Do not camp on or near rodent droppings. Store food and manage waste properly.

Contacts

For general information on trip planning

visit the Grand Canyon National Park website at www.nps.gov/grca/planyourvisit/noncommercial-riv-docs.htm or call the River Permits office at (800) 959-9164 or (928)-638-7884.

Grand Canyon Association	grandcanyon.org
Grand Canyon Youth	gcyouth.org
Leave No Trace	LNT.org
River Runners for Wilderness	rrfw.org
Grand Canyon Private Boaters Association	gcpba.org
Grand Canyon Trust	grandcanyontrust.org
Grand Canyon River Guides	gcrgr.org
Grand Canyon River Runners Association	gcriverrunners.org
Grand Canyon River Outfitters Association	gcroa.org
Native Voices on the Colorado River	nativevoicesgrandcanyon.org

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