

Grand Canyon River Runners Association

PRESERVING PUBLIC ACCESS TO THE COLORADO RIVER



The Grand Canyon River Runners Association is a non-profit group working to preserve public access to the Colorado River in Grand Canyon National Park for those who rely on the National Park Service's professional river concessioners.

Our goal is to preserve for the public the quality and quantity of professional river services traditionally available in the Grand Canyon.

We seek to educate the public about Grand Canyon history and science, to keep the public informed about river access issues, and to promote the highest ideals of resource stewardship and conservation for the Colorado River corridor within the Grand Canyon.

www.gcriverrunners.org

GCRRA WILDLIFE CENSUS PROGRAM

An Activity for Passengers:

For the next few days your guides are going to safely pilot you through the river's rapids, and lead you on hikes to secret and amazing places. They are also going to teach you about this canyon's unique geology, biology, and history. You will learn that this rugged looking place is both fragile and threatened.

Many of us are convinced that this grand canyon needs to be protected, and through the efforts of the organizations we belong to, people are actively engaged in conducting studies and gathering data to present to the agencies that make the decisions that determine the future.

If you are fortunate, during this trip you may meet some of the people who are conducting studies here in the Grand Canyon. They will be eager to tell you about their work. They could also use your help. Whether you meet them or not, we would like to offer you an opportunity to assist them with their research by collecting some data as you make this trip. We are interested in certain mammals, birds, and snakes. Don't worry, we promise that it will be fun and that it will be easy!

Three research projects are described on the following pages. They will introduce you to our researchers and provide you with some interesting information about the animals they are studying. Record your sightings on the Log Sheets. Then, at the end of your trip, mail or email your completed logs to the address provided. Feel free to copy information for other passengers, or to add additional notes.

We hope that you will select one or more of these projects and record your observations. Remember, any observation that you report will provide useful information. Don't worry if you forget to record a sighting, or even if you miss a day, every observation helps. We also hope that after your trip is over you will stay connected to the organizations you helped by supporting their continued efforts to preserve this canyon for generations to come. Thank you!

BIGHORN SHEEP, MULE DEER, AND COUGARS

Brandon Holton is a wildlife biologist at Grand Canyon National Park, where he specializes in large mammal ecology. He earned his Bachelor's degree in Zoology at the University of Tennessee, and his Master's in Environmental Science and Policy at Northern Arizona University. Brandon has studied a variety of species across different ecosystems, including salmon in Yukon River tributaries, lynx in western Montana, and pronghorn in northern Arizona grasslands. Since 2003, Brandon has been studying mountain lion ecology on the southern Colorado Plateau, and specifically Grand Canyon lions since 2008. In 2010, Brandon initiated the first systematic study of desert bighorn sheep in Grand Canyon.

Desert Bighorn Sheep in Grand Canyon are unique in occupying an extensive canyon system with multiple barriers with regards to genetic exchange and potentially represent the largest population of desert bighorn sheep found anywhere. However, the distribution, status, and ecological relations of bighorns in Grand Canyon are virtually unknown. Our objectives are to determine bighorn distribution patterns and habitat use in relation to mountain lion movements, forage quality, and human recreation patterns in Grand Canyon, identify disease prevalence and potential for transmission of infectious diseases, and evaluate genetic diversity and connectivity among and between sub-group populations of bighorns in Grand Canyon. Currently we are monitoring 8 bighorns (3 male and 5 female) using GPS satellite tracking collars along the Colorado River corridor. An important component of

understanding Grand Canyon's bighorn population is obtaining bighorn observations along the river to establish population trends. You can directly contribute to further understanding desert bighorn sheep at Grand Canyon by recording bighorn sightings and taking photographs during your trip.

Mule Deer occupy Grand Canyon's vertical gradients, from the canyon rim to the river bottom. Much of their habitat in Grand Canyon overlaps that of desert bighorn sheep, yet these two desert ungulates are rarely seen together. Scientists want to learn more about habitat partitioning between mule deer and bighorn sheep in Grand Canyon, and how this may relate to forage availability and predation risk from mountain lions. You can help by recording observations of mule deer along the river and in side canyons during day hikes.

Cougars Grand Canyon's mountain lion (*Puma concolor*) study focuses on movements and other behaviors of cougars, with the goal of providing information that can be used to increase human safety, and, provide insight into the ecology of cougars in the Grand Canyon Eco-Region. Since 2003 we have captured 22 cougars along the south rim, and 10 cougars along the north rim of Grand Canyon, fitting them with collars that collect high-precision GPS fixes every day. Over the past two years, we have begun to examine cougar-bighorn sheep interactions in the inner canyon. Cougar sightings are extremely rare, but if you are lucky you might spot a footprint. You can help by recording any tracks that you encounter during your trip.

WILDLIFE CENSUS DATA SHEET: DESERT BIGHORN SHEEP

Notes:

Date and Time of Day: Approximate time (who wears a watch in the canyon?!))

River Mile, L/R: Left or Right side of the river, looking downstream.

Location: Where the sheep were located: river's edge, lower slope, upper slope, side canyon, etc.

(Group Size): Indicate the TOTAL number of sheep in the group you observed.

Class Count: Using the "Curl" pictures as a guide, indicate the number of sheep observed in each Class (sex/age). If you are not sure of an individual sheep's class, record it under "AGE/SEX UNK"

Activity: Foraging, resting, moving, standing, drinking, mating, etc.

Weather: Clouds, wind, and approximate temperature.

Example: At 5:15 PM on July 16, 2012; 8 foraging sheep were sighted on the left side of the river at mile 137. They were near the edge of the river. The weather was cloudy, windy, and about 100 F.

Mail To: Brandon Holton
Science and Resource Management
P.O. Box 129
Grand Canyon, AZ 86023
EMAIL: <brandon_holton@nps.gov>

Sex and Age: Use the photos below to determine the Class for each of the sheep observed.



Class IV - Full Curl
Male, age 8 - 16 years



Class III - ¾ Curl
Male, age 6 - 8 years



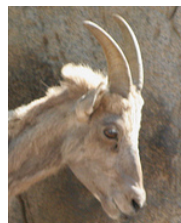
Class II - ½ Curl
Male, age 3.5 - 6 years



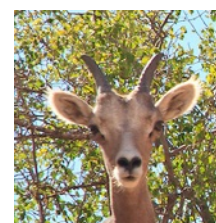
Class I - ¼ Curl
Male, age 2.5 years



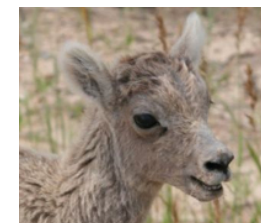
Class Y - Yearling Ram
Male, age 1 year



Class E - Adult Ewe



Class e - Yearling Ewe



Class L - Lamb

Not sure about a Ewe or Yearling's CLASS?

Record it under Age/Sex Unknown

DESERT BIGHORN SHEEP:

Class count:

Log Sheet

IV III II I Y E e L ?

DATE	RIVER MILE	LOCATION	#	Full Curl	¾ Curl	½ Curl	¼ Curl	Yearling Ram	Adult Ewe	Yearling Ewe	Lamb	AGE SEX UNK	ACTIVITY	WEATHER
7/16/12 late afternoon	137 L	River's edge	8	1		1			3		2	1	Foraging	50% clouds windy, 100F

Special Note: Bighorn respiratory disease (pneumonia) has over recent years become one of the drivers of bighorn sheep research. The Mohave National Preserve is currently experiencing a pneumonia caused population die-off of bighorn sheep. Grand Canyon bighorn sheep are indeed susceptible to these same disease pathogens and potential die-offs. The primary exposure of these disease pathogens comes from domestic sheep and goats, which are carriers for but unaffected by these pathogens. Bighorn sheep are however affected by these pathogens which cause pneumonia, is highly contagious, and one of the primary mortality factors for bighorn sheep.

Please Report observations of: 1) sick/dead bighorn sheep, 2) lambs, 3) domestic sheep and goats. Thank you!

If you observe a SICK or DEAD Bighorn: call Brandon ASAP and report the location - 928-638-7752!

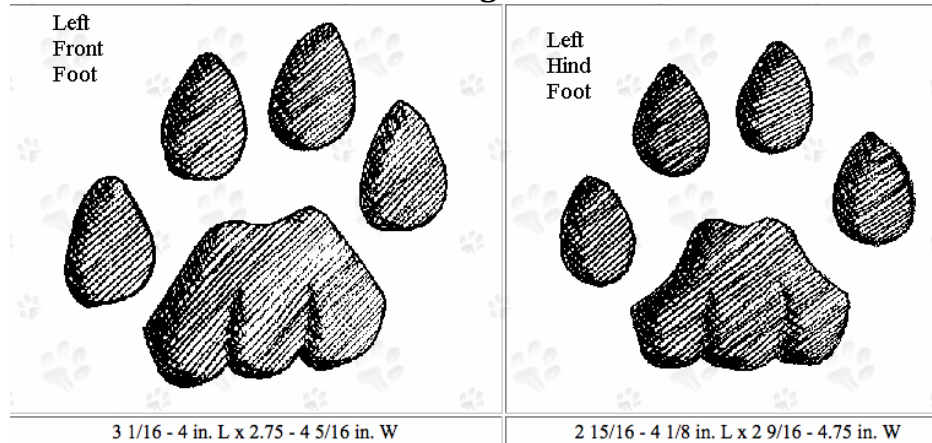
**Brandon Holton: <brandon_holton@nps.gov>
PO Box 129, Grand Canyon, AZ 86203**

Recorder (Name/Email): _____

Seen one of these?

COUGAR TRACKS

Log Sheet



If you have the good fortune to be one of the few people who spot a Cougar's footprint in camp or on a hike, or if you have the once-in-a-lifetime experience of actually seeing a cougar in the Grand Canyon, **please record the requested information below:**

- 1. Date:** _____
- 2. River Mile and Left/Right or --Name of Location:** _____
- 3. Photograph (Yes/No):** _____

When you take a photo of a footprint, include an object of known size in the photo so there is a way to "measure" the print. And, expect an email from Brandon requesting a copy!

RECORDER: _____
(Name/email):

Mail to: **Brandon Holton**
Science and Resource Management
P.O. Box 129
Grand Canyon, AZ 86023

WILDLIFE CENSUS DATA SHEET: MULE DEER

Notes:

Date + Time of Day: Approximate time (who wears a watch in the canyon?!).

L/R: Left or Right side of the river, looking downstream.

Location: Where the deer were located: river's edge, lower slope, upper slope, side canyon, etc.

Group Size: Indicate the TOTAL number of deer in the group you observed.

Individual Deer Totals: Indicate the number of deer observed in each category listed: Antlered, Antlerless, Juvenile.

Activity: Foraging, resting, moving, standing, drinking, mating, etc.

Weather: Clouds, wind, and approximate temperature.

Example: At 10:30 AM on August 6, 2012; 5 deer were sighted on the right side of the river at mile 209. They were at the edge of the river, drinking. The weather was cloudy, wind calm, and about 90 F.

E **EMAIL:** <brandon_holton@nps.gov>

MULE DEER:

Log Sheet

INDIVIDUAL DEER TOTALS:

DATE TIME of Day	RIVER MILE L/R	LOCATION In relation to the river	GROUP SIZE Total #	ANTLERED	ANTLERLESS	JUVENILE	ACTIVITY	WEATHER
8/6/2012 mid- morning	209 R	River's edge	5	1	2	2	Drinking	70% clouds calm, 90F

Recorder (Name/Email): _____

Brandon Holton: <brandon_holton@nps.gov>
PO Box 129, Grand Canyon, AZ 86203

BIRDS:

Janice Stroud-Settles, Wildlife Biologist, NPS, Grand Canyon (Master's in Biology), has studied various species in Yellowstone National Park, southern Alabama, and northern Michigan. Prior to arriving in Grand Canyon in 2011, Janice worked for the Arizona Game and Fish Department. Janice had been monitoring the presence/absence of the Southwestern Willow Flycatcher and oversees the California condor monitoring program in Grand Canyon. The challenge of collecting data on bird species in a vast and remote National Park like Grand Canyon is overwhelming. What may be easily accessible habitat for a bird often times is inaccessible to a person. Therefore, incidental bird observations become an important source of data, especially if special status species are sighted. River trips are a great way to observe certain bird species since the river and surrounding riparian habitat provides important components of habitat to many species.

Bald Eagles, removed from the Endangered Species list in 2007, live near rivers, lakes, and marshes where they can find fish, their staple food. In Arizona, nests are typically placed in large deciduous or coniferous trees and cliff ledges/pinnacles near creeks, rivers, and reservoirs with a commanding view of the area. Bald Eagle concentration areas in the Grand Canyon eco region are generally present from November through March, which coincides with trout spawning and an abundance of waterfowl within the corridor.

Golden Eagles can be found in a variety of habitat including, tundra, grasslands, forested habitat and woodlands brush lands, and arid deserts. They build nests on cliffs or in the largest trees of forested stands that often afford them an unobstructed view of the surrounding habitat. The population/breeding status of Golden Eagles in Grand Canyon is largely unknown. Based on the limited available data, Golden Eagles are a rare to uncommon permanent resident and a rare fall migrant throughout the region.

Peregrine Falcons are the fastest flying birds in the world; they are able to dive at 200 miles per hour. Peregrines eat other birds as well as bats and will catch their prey in mid-air. After a devastating and rapid population decline mainly due to DDT bioaccumulation, the Peregrine Falcon was listed as an endangered species in 1970. Marking one of the most dramatic successes of the Endangered Species Act, the Peregrine Falcon was removed from the Endangered Species list in 1999. Post-delisting monitoring will continue to be carried out until 2015. The Peregrine Falcon is a fairly common summer resident and a rare spring and fall migrant throughout the region.

Threatened/Endangered Species:

Several "seldom seen" species are of particular interest. Although our objectives for each species is different, we are generally trying to identify potential habitat between river miles 0 and 277 in Grand Canyon National Park, conduct presence/absence surveys, and document nesting activity. If you are fortunate enough to sight one of these birds, we would greatly appreciate your record.

The **Mexican Spotted Owl** has been the focus of concern in the southwest for nearly two decades because of the owl's apparent dependence on old growth timber. However, in northern Arizona, subpopulations occur in rather unusual landscapes. Steep canyon habitat is strongly associated with spotted owls in Grand Canyon National Park, and large areas of unsurveyed habitat have been identified. In Grand Canyon, the owl's home range is usually located in the upper reaches of side canyons below forested plateaus. They will typically nest in caves found in the Redwall Limestone geologic layer. Given the owl's threatened status and evidence of population declines in the southwest, further surveys are needed to estimate the distribution and abundance of spotted owls and locate conservation areas to support long-term management and recovery.

The **Yellow-Billed Cuckoo**, whose loud call is heard more often than the bird is actually seen, is slow moving and secretive. It is sometimes called the rain crow because its song is often heard just before thunderstorms or summer showers. The western subspecies of the Yellow-billed cuckoo was once a common Neotropical migrant among river bottoms from British Columbia to Mexico; extending as far east as Colorado. Loss of riparian habitat and sensitivity to pesticide led to rapid population declines and range contraction. Despite widespread declines, the subspecies is not yet federally protected. Today it is a casual summer visitor in riparian areas, with only 5 records in Grand Canyon since 1950.

The **Southwestern Willow Flycatcher** is a Neotropical migrant that nests in relatively dense riparian habitats. Southwestern willow flycatchers have historically nested in native plants such as willows, buttonbush, box elder, and seep willow. Habitat and population of this riparian obligate bird have declined in recent decades, due to several factors including: loss and degradation of riparian habitat; invasion by nonnative plants; and brood parasitism by brown-headed cowbirds. Currently, the flycatchers will still nest in native plants when available, but will also nest in patches dominated by exotic plant species such as tamarisk and Russian olive.

WILDLIFE CENSUS DATA SHEET:
BIRDS



BALD EAGLE



Adult & Immature



MEXICAN SPOTTED OWL
(threatened)



GOLDEN EAGLE



The following two birds, the *Yellow Billed Cuckoo* (threatened) and the *Southwest Willow Flycatcher* (endangered) are very uncommon in the Grand Canyon. For observations to be confirmed a photo is necessary. So, if you spot one and can get a photo, let us know!



PEREGRINE FALCON



**YELLOW-BILLED
CUCKOO**



**SOUTHWESTERN WILLOW
FLYCATCHER**

“HERPS”

GRAND CANYON – COLORADO RIVER SNAKES

Geoffery C. Carpenter, PhD, is an Adjunct Professor at the University of Oklahoma Biological Station, where he teaches Field Herpetology and is responsible for the monitoring of local HERP populations. He is also a Full Professor at the Southwest Acupuncture College in New Mexico, where he teaches General Biology to Doctoral students of Oriental Medicine. Geoff earned his Bachelor’s degree in Zoology at the University of Oklahoma, his Master’s in Zoology and Physiology at the University of Wyoming, and his Doctorate in Biology at New Mexico State University. Geoff is President of Southwestern Biomes, Inc., an environmental and biological consulting company that conducts field survey/monitoring projects in New Mexico, Utah, and Arizona, and he is Associate Editor (Reptiles) of *The Southwestern Naturalist*.

Geoff’s passion (some guides have described it as an obsession!) is Herpetology -- reptiles and amphibians -- and he has been monitoring and studying them in the Grand Canyon since 2001. He is presently gathering data about snake sightings to determine their spatial distribution within the canyon and to acquire new distribution records for some of the canyon's less common snakes. In particular, Geoff is interested in the range margin that separates Grand Canyon Rattlesnakes (above National Canyon) from Speckled Rattlesnakes and in getting upstream records of Black-tailed Rattlesnakes. Geoff is gathering data for a book; *"Amphibians and Reptiles of the Grand Canyon Region"* and is hoping to acquire quality photos of the Grand Canyon's “herpetofaunal denizens” for publication. Your sightings, and possibly your pictures, can be part of this project.

WILDLIFE CENSUS DATA SHEET: SNAKES

Mail Log Sheet to:

**Dr. Geoffery C. Carpenter, President
Southwestern Biomes Inc.
1695 Smith Place
Bosque Farms, NM 87068**

EMAIL: <gcarpent@gmail.com>

The most commonly observed snakes in the canyon are rattlesnakes, which are often heard before they are seen. Several other harmless snake species are also frequently encountered in the canyon.

If you spot a Snake: Look at these photos. If the Snake you spotted is shown, please record the requested information on the Log Sheet. For location, NAMED canyons/creeks/trails are great, or use River Mile and Left or Right (looking downstream). Estimate the length.

If you spot a snake that is NOT shown here, and you get a photo, record as UNKNOWN. Geoff will contact you for a copy of the photo.

Grand Canyon Rattlesnake (*Crotalus oreganus abyssus*)—Common in upper reaches of the canyon-- from Lee's Ferry to Tuckup—“pinks” vary a great deal in color (see below). Pattern can be faint or distinct, but always consists of blotches rather than bands. Usually, distinct stripes on the side of the face, the tail is banded, and the tip, before the rattle, is distinctly black. — VENOMOUS!



Speckled Rattlesnake (*Crotalus mitchelli*)—common in lower canyon, mile 160 and beyond, and found as high up as Havasu Canyon. Color varies from very light to pink, and pattern typically banded and rarely blotched. Lacks distinct face stripe the tip of the tail is not distinctly black-- VENOMOUS!



Black-tailed Rattlesnake (*Crotalus molossus*)—relatively uncommon in the canyon, may be encountered from Tuckup westward in corridor. The end of the tail is jet black, some green coloration and a distinct pattern of darker bands (blotch-like) that are bordered by light-colored scales-- VENOMOUS!



California Kingsnake (*Lampropeltus getula*)—Kingsnakes may eat other snakes, even their own species. California kingsnakes in the canyon have a distinct pattern of light and dark bands.



Gophersnake (*Pituophis catnifer*) large-bodied snake with dark brown blotches on cream-colored background. An abundant species throughout the west, gopher snakes are seldom seen in the river corridor.



Whipsnakes (*Coluber*) These thin-bodied, big-eyed diurnal predators are very fast moving. The striped whipsnake (*C. taeniatus*; LEFT) is striped while the red racer (*C. flagellum*; RIGHT) a subspecies of the coachwhip is often a brilliant red color.



Western Patch-nosed Snake (*Salvadora hexalepis*)—a smallish snake with beige and gray stripes and a large patch-shaped scale at the tip of the nose. These are diurnal predators that eat lizards and arthropods.



