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The Opinion Pages | EDITORIAL

National Monuments From Mr. Obama

By THE EDITORIAL BOARD | AUG. 26, 2016

Bill Clinton was like a kid with a new toy when, fairly late in his presidency, and to the great annoyance of Congress, he discovered his powers under the Antiquities Act to create national monuments with a stroke of the presidential pen — and then busily set about protecting areas of great scenic, environmental or historical significance that might otherwise be ignored by Congress or threatened by development. President Obama, to the delight of conservationists, is now very much on the same schedule.

On Wednesday, a day before the 100th birthday of the National Park Service, Mr. Obama designated 87,500 acres of Maine's north woods as a national monument, to be added to the park system and protected by the service against commercial exploitation. The transaction cost the government nothing. The land belonged to Roxanne Quimby, who lived in the Maine woods before making a fortune as a co-founder of Burt's Bees and accumulating property with the idea of turning it into a national park. Her family also provided an endowment of $20 million for maintenance.

Then, on Friday, Mr. Obama used the same authority to greatly expand a national marine monument (established a decade ago by President George W. Bush) off the coast of his native Hawaii. The monument will encompass 582,578 square miles of land and sea, and provide protection from commercial exploitation for an estimated 7,000 species that are increasingly stressed by climate change.

Both designations drew criticism — from timber interests in Maine, fishermen in Hawaii and officials in both places who resent federal stewardship. Though

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neither designation will impose economic hardship, there is invariably complaining whenever Washington asserts a public interest in land that states and private interests think should be theirs. But if presidents waited until there was complete agreement, Teddy Roosevelt would never have protected the Grand Canyon and Franklin Roosevelt would never have protected Joshua Tree National Park.

It is our hope that Mr. Obama will continue to seek out good candidates for monument designation, regardless of the political opposition. One controversial but indisputably compelling candidate is known as Bears Ears, an area of about two million acres in southeastern Utah of great natural beauty and rich in Native American artifacts that are increasingly at risk from the kind of thievery and destruction that inspired the Antiquities Act in the first place.

A second candidate is a monument proposal from Representative Raúl Grijalva, an Arizona Democrat, that would permanently forbid mining in 1.7 million acres adjacent to the Grand Canyon. A third, which is rapidly gaining support among Northeastern politicians, would protect a dramatic group of underwater canyons and mountains rising as high as 7,000 feet off the ocean floor and located about 150 miles southeast of Cape Cod. Known as the New England Coral Canyons and Seamounts, the monument would be the first in the Atlantic Ocean.

Much of Mr. Obama's late-blooming enthusiasm can be traced to Interior Secretary Sally Jewell, who oversees the Park Service and who, like her predecessor, Ken Salazar, has been a strong defender of public lands and the chronically underfunded parks system. But she has some unfinished business of her own: dying coral reefs in Biscayne National Park off Miami that need to be put off limits to recreational fishermen, Reagan-era oil and gas leases adjacent to Glacier National Park that need to be canceled, and a leasing plan that seeks to minimize development near Arches and Canyonlands National Parks in Utah that needs to be made final.

To build on what is becoming a strong environmental record, Mr. Obama will need help from the people around him. But ultimately, it's not his personal legacy that's at stake. It's what this generation leaves for the next.

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Monuments for Future Generations

By THE EDITORIAL BOARD JUNE 17, 2016

President Obama's visits this weekend to Carlsbad Caverns and Yosemite national parks give him a timely opportunity to think about how, in the twilight of his presidency, he can add to what has already been an admirable record of protecting America's public lands and marine reserves. The parks themselves are in a celebratory moment, the 100th anniversary of the founding of the National Park Service. But given Congress's preference for partisan infighting over environmental stewardship, it is unlikely to approve any additions to the park system. Still, there is much that Mr. Obama can do on his own using the 1906 Antiquities Act, which allows a president to unilaterally protect areas of great natural or historical value as monuments when Congress is unlikely to act.

Of the proposals now circulating at the White House, four potential monument designations are particularly compelling. The most controversial consists of 1.9 million acres in southeastern Utah known as Bears Ears because of two buttes that loom over the landscape. Bears Ears is rich in natural beauty and priceless Native American artifacts that are increasingly at risk from the pillaging and looting that inspired the Antiquities Act in the first place.

A monument designation would earn Mr. Obama the admiration of conservationists and the many Indian tribes that support the idea. It would also arouse the fury of the political establishment in a state where the federal government already owns nearly two-thirds of the land and where powerful interests would resent the restrictions on off-road vehicles, oil and gas drilling, and other development that the designation would bring. But so what? Mr. Obama has nothing to lose politically, and everything to gain in terms of the environmental

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accomplishment.

Two other obvious candidates lie underwater. One would involve a fourfold expansion of the Papahanaumokuakea Marine National Monument, created by President George W. Bush in 2006. The area surrounds the uninhabited Northwestern Hawaiian Islands and is home to an estimated 7,000 marine and terrestrial species, a quarter of which are found nowhere else on earth.

The other candidate is known as the New England Coral Canyons and Seamounts, a dramatic group of underwater canyons and mountains rising as high as 7,000 feet above the ocean floor and located about 150 miles southeast of Cape Cod. The area is largely unexploited now; monument designation would keep it that way. It would also be the first national monument in the Atlantic Ocean.

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One of President Theodore Roosevelt's earliest monument designations, in 1908, protected the Grand Canyon until Congress could declare it a national park. But 1.7 million adjacent acres were not protected, and have since been poisoned by aggressive uranium mining. A 20-year moratorium on mining imposed by the Interior Department in 2012 would be made permanent by a monument proposal put forward by Representative Raúl Grijalva, an Arizona Democrat. Mr. Obama can honor the congressman, Mr. Roosevelt and the act itself by making this proposal

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his own.

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Valdez: What if politicians ruin the Grand Canyon?

Linda Valdez , The Republic | azcentral.com 3:47 p.m. MST May 8, 2016

There's a fight over the Grand Canyon. Arizonans are on one side. Many of their elected representatives are on the other.

It's a high-stakes battle in a long-running war about whether public land is meant to be used for profit or for conservation.

It's also a question of whether elected officials represent the people who put them in office – or themselves.

VALDEZ: Grand Canyon deserves a buffer

The Canyon is smack in the middle of this controversy. Your grandchildren will be the winners. Or losers.

As a National Park, the Canyon is the embodiment of our national conservation ethic. The park itself enjoys a high level of protection.

But the Grand Canyon is not an island. Federal land around it is managed for multiple uses, which include ranching, logging and mining. What happens on that land can touch the Canyon.

How uranium mining hurts the Canyon

Federal land outside the park boundary was open to uranium mining until 2012 when the Obama administration imposed a 20-year moratorium on new mines.

In a recent op-ed piece in The Hill, Russell Begaye, president of the Navajo Nation, and officials from the Hopi and Hualapai nations talked about the fallout from those pre-moratorium years.

"Uranium mining has left a toxic legacy – poisoning our waters, our homes, our families, and our children," they wrote. "More than 500 abandoned, un-reclaimed mines contaminate the Navajo Nation, next door to the Grand Canyon."

MY TURN: Tribes want new vision for the Canyon

They are supporting an effort by Democratic Rep. Raul Grijalva to make the mining moratorium permanent for the sake of protecting the Canyon and its watershed from contamination.

Grijalva's bill to designate 1.7 million acres of federal land around the Canyon as a monument was DOA in the Republican-controlled Congress. So the best chance of protecting the Canyon is if President Obama uses his authority under the Antiquities Act to establish the monument unilaterally.

Grijalva is pushing him to do that.

Democrats push for more protections

Fellow Democrat Rep. Ruben Gallego supports the effort. Democratic Rep. Ann Kirkpatrick, who supported the monument in the past, appears to be hedging her bets now that she's in a Senate race against Sen. John McCain. She "continues to hear concerns" about a monument designation, but "is interested in working on a compromise," according to her office. Rep. Kyrsten Sinema's office did not respond to repeated requests for her position.

In February, a poll found a whopping 80 percent of likely 2016 Arizona voters were in favor of the monument, according to the Grand Canyon Trust. Support for the Greater Grand Canyon Heritage National Monument rose to 95 percent among Democrats and 84 percent among independents. There was 65 percent support among of Republicans.

Yes. Even a healthy majority of Republicans thought it was good idea.

Republicans say it's a 'land grab'

Arizona Republican Rep. Paul Gosar, who calls the monument idea a "land grab," offered a bill to curb the president's power under the Antiquities Act to designate monuments. The other four Republicans in Arizona's House delegation got on board.Yet Arizona's Republican elected officials are unified in opposition.

Arizona's GOP Sens. McCain and Jeff Flake, Gov. Doug Ducey, Attorney General Mark Brnovich and GOP Legislative leadership joined members of the House delegation in signing on to a policy brief from the Arizona Chamber Foundation and the Prosper Foundation that characterizes the idea as a "monumental mistake."

PRO: Why the Canyon needs more protection

CON: Why a Canyon monument is a bad idea

Other signers include a long list of hunting and fishing groups, the National Rifle Association, the Arizona Mining Association, the state chapter of Safari Club International, the Mohave County Board of Supervisors, and the city or town councils of Bullhead City, Fredonia and Tusayan.

The paper argues that the monument designation would limit the multiple-use management, and frets that "federalizing" land that is already federal would limit local control.

A long-standing sense of entitlement

The members of the Arizona Game and Fish Commission sent a letter in January urging Obama not to create the monument because it "could impose unnecessary rules and regulations," hinder state wildlife management, interfere with forest "harvest," and possibly curb public-land ranching.

Grijalva says those uses would be grandfathered in. This is really about mining.

The Chamber's policy paper says "twenty-first century uranium mining is highly regulated," and that "access to federal lands for mineral exploration and development is critical."

This sense of entitlement to commodity uses of public land reflects history.

Canyon's worth isn't measured in dollars But this good, old Sugar Daddy approach to those who use the public land for personal profit is in direct conflict with preservation of our remarkable natural heritage.

As the nation's population grows and urbanizes, special places like the Grand Canyon become more important to the health of our national soul.

The people get it. Too many elected officials don't.

POLL: Most Arizonans support Canyon monument

The disconnect suggests the average Arizonan sees a value that their elected representatives miss. A value that isn't measured in dollar signs.

Bottom line: Canyon belongs to everyone

Edmond Tilousi, vice chair of the Havasupai Tribe, explained it to the National Press Club in Washington, D.C., recently, according to Arizona Republic reporter William V Theobald.

"I have lived in and around the Grand Canyon all of my life, and in later years I saw the wonders of these lands," Tilousi said. "It was then I saw the power and the spirit of God."

Many of the 4.5 million-plus yearly visitors to the Canyon have felt that spirit — one way or another. Soft clouds above hard geology. A condor wheeling overhead. Mule hooves click, clacking down dizzyingly steep switchbacks.

"It's an environmental treasure," says Grijalva, "and to the Native people, it is one of their cathedrals."

The Grand Canyon belongs to every American — the people get that. It should not be imperiled for anyone's profit or political ideology — more politicians need to hear that.

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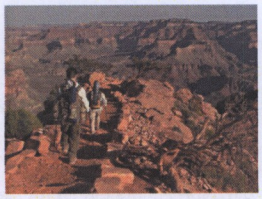
Valdez: Grand Canyon deserves a buffer

Linda Valdez, The Republic | azcentral.com 8:05 a.m. MST February 2, 2016

Linda Valdez: Designating a monument to protect this national treasure isn't a federal land grab. Why it makes sense:



South Kaibab, Grand Canyon | Screamingly steep, shadeless and sun-beaten may not sound like an endorsement, but those are what makethe South Kaibab astounding. Most Grand Canyon trails follow a fault line that limitsrange of vision. But Kaibab is a torpedo, launching from the rim and chasing a ridgeline down and out across the Canyon. At 1.5 miles, you reach the comfy plateau called Cedar Ridge. The trail curves past O'Neill Butte and approaches Skeleton Point, offering your first glimpse of the Colorado River. From here, the trail drops through a natural break in the Redwall Limestone in steep switchbacks that depositYou on the scrubby Tonto Plateau. And when you think the Kaibab can't get steeper, it plunges steeply for the final 2gorgeous, colorful miles untilit reaches the Kaibab Suspension Bridge crossing to Phantom Ranch. |Details:928-638-7888,www.nps.gov/grca (http://www.nps.gov/grca).

(Photo: David Kadlubowski/The Republic)

Let's be clear: Creating a buffer around the Grand Canyon (/story/news/arizona/politics/2016/01/30/grand-canyon-monument-buffer-game-and-fish-commissioners-environmentalists-disagree/79078114/) is not a federal land grab.

This is about adding protection to land around the park that is currently under federal control.

It is in Arizona's best interest. The Grand Canyon is our state's signature landmark.

But the issue is much bigger that any one state. The Canyon is a natural wonder of national importance.

As part of the National Park system, it belongs to every American.

That's why President Obama should permanently prevent new uranium mining around the park using the same executive authority under the Antiquities Act that Theodore Roosevelt used to bring the Grand Canyon itself under public protection.

Why Obama must act

The course of action is outlined in a proposal by Democratic Rep. Raul Grijalva. His Greater Grand Canyon Heritage National Monument plan makes permanent a 20-year moratorium on new uranium claims that was put in place in 2012.

Grijalva's plan is unlikely to make it through a Republican controlled Congress in an election year, which is why Obama needs to act.

The uranium mining moratorium is temporary and subject to change in a new presidential administration. Making it permanent protects aquifers and streams near the Colorado River from possible radioactive contamination from mining activity.

The 1.7 million acres that would become a national monument under the plan are currently publicly owned and under federal management.

That won't change.

Earth to critics: It's already federal land

A management plan would be written with the participation of interested parties – including ranchers, hunters, tribes, local communities, outdoor enthusiasts and land managers.The proposal specifies that access, hunting, grazing and timber management will continue -- and Obama can make that very clear in his designation.

These facts need to be acknowledged by opponents of the plan.

AZCENTRAL

Close Grand Canyon's uranium-mining loopholes

(http://www.azcentral.com/story/opinion/op-ed/2015/08/17/close-grand-canyons-

uranium-mining-loopholes/31743309/)

Last month, all the current members of the Arizona Game and Fish Commission, as well as some former members, sent a letter to Obama asking him not to designate the monument. They worried about possible changes in land management.

Their letter dismissed concerns about uranium contamination by pointing to the moratorium, and suggesting that "safe technology" might allow for uranium mining near the Canyon in the future.

Permanent protection is better.

Land needs permanent mining protection

Opposition also comes in a policy brief from the Arizona Chamber Foundation and the Prosper Foundation, which calls the monument proposal a move to "designate another 1.7 million acres of Arizona as federal land." No. It's already federal land.

The brief also says monument designation would erode the concept of multiple-use on this federal land. But only new mining claims would be restricted, and that use is currently banned by the temporary moratorium.

AZCENTRAL

Radiation rise stalls uranium mine permits near Grand Canyon

(http://www.azcentral.com/story/news/arizona/investigations/2015/12/31/radiation-rise-stalls-uranium-mine-permits-near-grand-canyon/78133164/)

The paper argues in favor of local control, but the uranium mining that could threaten the Canyon would be governed by federal law. A permanent federal prohibition is necessary.

The policy brief carries the names of some heavy hitters, including Republicans Gov. Doug Ducey, Sens. John McCain and Jeff Flake, as well as Republican Reps. Paul Gosar, David Schweikert, Matt Salmon, Trent Franks and Republican state legislative leadership. Also listed in opposition are the National Rifle Association, the Arizona Mining Association and a number of hunting and fishing interest groups.

This uranium mine, photographed in 2011, is located north of Grand Canyon National Park on the Arizona Strip. *(Photo: Mark Henle/The Republic)*

The document says the plan would "lock" the 64,000 acres of State Trust land and 22,000 acres of private land that are within the proposed boundaries "under federal control."

These state and private in-holdings are currently within federal land. The ownership won't change.

The proposed monument is simply a buffer on federal land to assure uranium mining does not endanger the Grand Canyon.

Roger Clark of the Grand Canyon Trust said a soon-to-be-released poll done for the organization found 80 percent support for protecting the lands around the Canyon. Support was strong across political parties and demographic groups, the poll found.

The Canyon's value to Arizona is tangible.

According to the National Park Service, more than 4.7 million people visited the Grand Canyon in 2014, contributing an estimated $509 million to local communities surrounding the park.

Of course, the Canyon's full value cannot be measured in cold cash or reduced to politics or special interests.

The Canyon deserves the protection for its inherent worth as a natural wonder of international significance. It needs to be surrounded by a national monument.

Canyon spots you don't want to miss:

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Grand Canyon spots you don't want to miss

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SundayReview | OPINION

Obama the Monument Maker

By DOUGLAS BRINKLEY AUG. 27, 2016

President Obama seems most comfortable outside on an 18-hole golf course, not hunting bear in Colorado, as Theodore Roosevelt did while president in 1905, or deep-sea fishing for tarpon in the Texas Gulf, as Franklin D. Roosevelt, an avid angler, did on a getaway from the White House in 1937.

Yet as president, Mr. Obama has visited more than 30 national parks and emerged as a 21st-century Theodore Roosevelt for his protection of public lands and marine reserves. His use of the Antiquities Act of 1906, which gives a president unilateral authority to protect federal lands as national monuments, has enabled him to establish 23 new monuments, more than any other president, and greatly expand a few others.

On Wednesday, he set aside some 87,000 acres of federal land along the Penobscot River in north-central Maine as the Katahdin Woods and Waters National Monument. The action will safeguard the wild country around the 5,267-foot Mount Katahdin, the state's highest peak. Then, on Friday, he announced a fourfold expansion of a marine monument designated by President George W. Bush off the coast of Hawaii.

The Maine land was a gift to the federal government from the foundation created by Roxanne Quimby, a co-founder of Burt's Bees, maker of lip balm and body care products. She also pledged $40 million to support the new monument.

Ms. Quimby's gift is a reminder of the role that philanthropists have long played in protecting treasured landscapes. In 1907, the San Francisco Bay Area businessman William Kent presented the first President Roosevelt with a 295-acre

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old-growth redwood grove in Marin County, Calif. Today it is Muir Woods National Monument. In 1943, the second President Roosevelt accepted a gift of 222,000 acres in western Wyoming from John D. Rockefeller Jr. The president designated the pristine valley Jackson Hole National Monument, later incorporated into Grand Teton National Park.

Only a fool would argue that the Roosevelts were wrong to have saved those scenic wonders. The same can be said of President Obama's actions last week. In 1846, after adventuring in that northern forest, Henry David Thoreau mused in "The Maine Woods": "Why should not we, who have renounced the king's authority, have our national preserves... for inspiration and our own true recreation?"

Teddy Roosevelt became the first president to use the Antiquities Act when he set aside Devils Tower in Wyoming. Two years later, he protected more than 800,000 acres of the Grand Canyon, offering this rationale as development threatened to overrun it: "Let this great wonder of nature remain as it now is. You cannot improve on it. But what you can do is keep it for your children, your children's children, and all who come after you, as the one great sight which every American should see."

Since preserving Devils Tower, he and 14 of his successors have designated some 150 national monuments.

Wild landscapes are not the only places that have been protected. President Obama has also pushed the National Park Service to be more multicultural in interpreting America's past. Toward that end, he has established history-minded national monuments honoring César E. Chávez in California; Harriet Tubman in Maryland; the Stonewall Inn in New York; Belmont-Paul, home to the National Woman's Party, in Washington, D.C.; and the Honouliuli Internment Camp, where Japanese-Americans were held during World War II. These places are reminders of the struggles for equality and dignity that have been part of the nation's history.

Now, in the park service's centennial year, President Obama should use his last months in office to preserve more places wild and historic. I suggest these four:

1. Castner Range, Texas

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This former artillery range adjacent to the city of El Paso rises up from the desert and comprises 7,000 acres of rugged mountains, canyons and arroyos in the Franklin Mountains. In the 1950s, the novelist Jack Kerouac extolled the view from these heights in "The Dharma Bums", writing of seeing "all of Mexico, all of Chihuahua, the entire sand-glittering desert of it, under a late sinking moon that was huge and bright." The Defense Department declared this range "excess land" in 1971.

2. Grand Canyon, Arizona

In 2012, President Obama ordered a 20-year moratorium on new mining claims on one million acres of federal land abutting Grand Canyon National Park. That was a fine start. But 1.7 million acres ringing the rugged canyon should be declared the Grand Canyon National Heritage Monument to protect the entire watershed from new uranium mines and safeguard the health of the Native Americans who have lived there for generations.

3. Bears Ears, Utah

This remote, 1.9 million-acre area is sacred to the region's native tribes. With an estimated 100,000 archaeological sites, it is one of the nation's most significant cultural and historical landscapes. But looting and desecration are taking their toll.

4. Gold Butte, Nevada

This 350,000-acre desertscape, not far from Las Vegas, has been called southern Nevada's "piece of the Grand Canyon." It's a mind-boggling geographic vortex where the Great Basin, the Mojave and Sonoran deserts and Colorado Plateau all meet. Sadly, the priceless panels of petroglyphs at Gold Butte, of world-heritage value, were vandalized recently. Increased protection for the ancestral home of the Moapa band of Paiutes and critical habitat for the desert tortoise is sorely needed.

Douglas Brinkley is a history professor at Rice University and the author of "Rightful Heritage: Franklin D. Roosevelt and the Land of America."

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THE HILL

ril 26, 2016, 08:31 am

The Grand Canyon is under siege

By President Russell Begaye, Navajo Nation, Troy Honahnie Jr. and Dawn Hubbs

Ha t̨ay g'am, Wi:Nyi Gacha, Ongtupqa, Tsékooh Hatsoh, Chimik'yana'kya deya'a. ("Grand Canyon" in Havasupai, Hualapai, Hopi, Navajo, and Zuni languages.)

You may not recognize these words, though you know the place they describe. The crown jewel of the U.S. National Park System, a place that leaves all Americans awestruck, one of the seven natural wonders of the world: The Grand Canyon.

We, the people of the Havasupai, Hopi, and Zuni tribes, the Hualapai Nation, the Navajo Nation, and other tribes, know the Grand Canyon as a place of internationally recognized beauty and unparalleled conservation value. But it is much more than that. We trace our ancestry to the Grand Canyon, and many of our ancestors are buried here. We consider the Grand Canyon sacred. It is a place where we see and understand our past, and it is vital to our future, as an eternal home and source of spiritual sustenance.

The Grand Canyon is truly under siege. For decades, uranium mining - first within Grand Canyon National Park, then just outside its boundaries - has marred our canyon home. As recently as the mid-2000s, thousands of new uranium mining claims were filed just north and south of the Grand Canyon National Park.

Uranium mining has left a toxic legacy – poisoning our waters, our homes, our families, and our children. More than 500 abandoned, un-reclaimed mines contaminate the Navajo Nation, next door to the Grand Canyon. The Hopi have yet to determine the full environmental and human cost of uranium milling waste left by mining companies.

We enthusiastically supported the Obama administration's 20-year withdrawal of more than 1 million acres around the Grand Canyon from new uranium mining in 2012. And, we have watched in alarm as the uranium mining industry and some of our elected officials have attempted to overturn this withdrawal, promising to do away with it come 2017.

We cannot survive intact as people without an intact Grand Canyon. In the waning days of your administration, we call on you, Mr. President, to do what is right for Grand Canyon, for the people and cultures that depend on Grand Canyon, and for the American people as a whole: designate the Greater Grand Canyon Heritage National Monument.

This is no abstract idea. We have worked closely with congressional partners to develop the Greater Grand Canyon Heritage National Monument Act. The Act lays out a reasonable and necessary strategy for protecting 1.7 million acres of culturally and biologically invaluable land surrounding Grand Canyon.

We are skeptical that Congress will do its job and pass this important piece of legislation. If it does not, we hope this legislation will serve as a template for you, Mr. President, to declare a monument under the Antiquities Act, which authorizes the President to protect this kind of place from threats.

Despite false claims to the contrary, the Greater Grand Canyon Heritage National Monument will not affect private property rights, grazing, hunting, fishing, or needed forest restoration within the monument.

It will, however, prohibit new uranium mining within monument boundaries, protecting our sacred lands from an industry that is neither adequately regulated by the federal government, nor adequately self-regulating. It is an industry with a disastrous history and the potential to create irreversible damage to our home, our sacred lands, and a world treasure.

Importantly, a monument will also honor the important historical stewardship responsibilities assumed by tribes in the region, and create new opportunities for tribes to work closely with federal agencies to ensure that the Grand Canyon remains vital, sacred, and sustaining for generations to come.

This centennial year of the National Park Service, as America celebrates its commitment to conservation, is also a bittersweet moment for many tribes, as we remember the lands that were taken from us. In this centennial year, in a place of such profound importance to so many Native Americans, we ask you, Mr. President, to finish the job you started.

Stand with us and with the millions of Americans who cherish the Grand Canyon and will applaud its protection. Honor our rich heritage and promising future as a people.

elebrate conservation in a place where we as native people have known and practiced conservation for millennia, and where the idea of onservation was reborn nearly 100 years ago. Mr. President, We respectfully ask to designate the Greater Grand Canyon Heritage as a National Monument.

President Begaye, Navajo Nation, Honahnie Jr. is environmental policy advisor and assistant to chairman Honanie, Hopi Nation and Hubbs is director, Department of Cultural Resources and Tribal Historic Preservation Officer, Hualapai Tribe

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The Opinion Pages | OP-ED CONTRIBUTOR

Grand Canyon Waters, at the Abyss

By MARK UDALL OCT. 14, 2015

Eldorado Springs, Colo. — I RECENTLY reunited with an old friend — not a person, but a place in Arizona, the state where I was born. It is a timeless place of great antiquity, a shrine of the ages that President Theodore Roosevelt said "man can only mar."

Roosevelt proclaimed the Grand Canyon a national monument in 1908. In so doing, he specifically intended to prevent mining and tourist development from harming one of our nation's most treasured landscapes. "Keep it for your children, your children's children and all who come after you," he said, "as the one great sight which every American should see."

But mar it we have. An abandoned uranium mine on the canyon's South Rim has cost taxpayers more than $15 million to remove toxic wastes from the surface. And contaminated water — flowing underground through the mine's radioactive ore — continues to poison a spring-fed creek deep within the canyon. It is a permanent loss at an unconscionable cost that should never be borne again.

Roosevelt's proclamation set aside only a fraction of the Grand Canyon as a national monument. His decision rankled mining and tourist businesses in the booming Arizona territory. Local politicians and profiteers fought the postage-stamp-size monument's further protection as a national park in 1919.

In 1975, Congress nearly doubled the park's size, declaring that the entire Grand Canyon "including tributary side canyons and surrounding plateaus, is a natural feature of national and international significance." Senator Barry Goldwater of Arizona, a Republican, introduced the bill. My dad, Congressman

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Morris Udall, a Democrat from Arizona, helped unite bipartisan support to better protect Arizona's and America's most famous natural wonder.

The Grand Canyon Enlargement Act, signed into law by President Gerald Ford four decades ago, returned more than 100,000 acres of federal land to the Havasupai tribe. It also effectively banned the building of two new dams in the canyon's upper and lower gorge. But it, too, fell short in protecting the Grand Canyon in its entirety.

Today, four uranium mines operate within the watershed that drains directly into Grand Canyon National Park. Arbitrary boundaries and antiquated rules permit these mines to threaten hundreds more life-giving seeps and springs in the desert basins below. Thousands of new mining claims on public lands that surround the canyon were put on hold by a 20-year moratorium imposed in 2012 by Ken Salazar, then the interior secretary. The National Mining Association and the Nuclear Energy Institute are suing in federal court to end the ban.

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Achieving this hard-won hiatus on new uranium claims took more than five years and one of the broadest coalitions ever aligned to protect the Grand Canyon. The Havasupai, "people of blue-green water," whose sole source of drinking water is at risk, led the way. They were joined then by county supervisors, chambers of

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commerce, ranchers, hunters, bird-watchers, artists, scientists, Arizona's governor, game and fish commissioners and business owners. All united to stop uranium mining from permanently polluting the Grand Canyon and undermining the region's tourism-driven economy.

But the 2012 victory to halt new claims was temporary. Our challenge now is to rebuild that coalition and make the ban permanent. There's no reason to wait. President Obama can protect it now.

Congressman Raúl Grijalva, a Democrat from Arizona, plans to introduce the Greater Grand Canyon Heritage National Monument Act next week. It was written in collaboration with Havasupai, Hualapai and Hopi leaders. The Navajo Nation, which banned all uranium mining on its land in 2005, joined in support along with Zuni, Paiute and Yavapai leaders.

The bill aims to protect 1.7 million acres of historical tribal homeland, including water sources and sacred sites. It would preserve the Grand Canyon's rich heritage of "biological, cultural, recreational, geological, educational and scientific values." It would make permanent the 20-year ban on new mining clams but would allow hunting, grazing, recreation and all other uses to continue under existing laws.

Unfortunately, there's almost no chance that the legislation will gain approval in today's gridlocked Congress. But the 1906 Antiquities Act gives the president unilateral authority to set aside federal lands as protected national monuments to stop the looting of archaeological sites and for reasons of "historic or scientific interest."

This past summer, President Obama used this authority to protect over one million acres of federal land in California, Nevada and Texas. Now we must prevail upon the president to permanently protect the Grand Canyon's sacred waters.

Earlier this year, my wife and I were invited to join native leaders on a rafting trip through the Grand Canyon. We've made many such trips before. But this time, at nearly every spring along the way, we stopped to pray.

All water is sacred to those who have learned to live where it is scarce. We

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must defend the Grand Canyon's sacred waters from unconscionable loss.

Mark Udall, who represented Colorado as a Democrat in the Senate from 2009 to 2015, is a member of the board of the **Grand Canyon Trust**.

A version of this op-ed appears in print on October 14, 2015, on page A25 of the New York edition with the headline: Grand Canyon Waters, at the Abyss.

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Anakarina Rodriguez: Help preserve our national parks

By Anakarina Rodriguez Special to the arizona daily star Jul 14, 2016

Recently a group of Latino millennials under the age of 28 decided to break the mold and visit the Grand Canyon. With that, we launched Latinos for Parks.

The goal was to engage young Latinos to visit the parks in our state, and to learn more about what we can do to help protect these sacred lands, because our national parks typically attract visitors who are older and less culturally diverse. ¡*Sí, se puede!*

Our group rented a 15-passenger van and loaded our camping gear for an unforgettable three-day adventure to the north. We marveled at the majestic vistas as we hiked, and experienced spectacular sunsets and sunrises each day.

We took the time to thank our park rangers, who are part of a team who serve 11 million visitors to national parks in Arizona. They safeguard our state's most valuable assets, and tell the stories of the American people who helped build our nation.

Along the way we fell in love with the National Park System and now want to protect it for future generations. Our trip proved to us that, as the agency is touting this year, its sites are parks for all.

Our national parks have been described as "America's best idea" and have enjoyed widespread support among the American people. But, as we also found out, our national parks are in trouble.

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Years of congressional underfunding have resulted in a nearly $12 billion backlog of needed infrastructure repairs that threaten visitor access, safety and historic preservation.

The Grand Canyon that we called home for three days has $371 million in repair needs, and the list continues throughout the state.

The Petrified Forest is waiting for $55 million in overdue repairs, while Saguaro needs $12 million to address its maintenance backlog. National parks in Arizona need our help.

There are 22 national park sites in Arizona. It makes sense to fix our parks. Not only do these parks provide recreational and cultural benefits, they also are expected to attract nearly $1 billion from tourism in Arizona this year.

According to the NPS' most current figures, in 2014 there were more than 4.7 million visits to Grand Canyon National Park. During those visits people spent $509 million, supporting 7,846 jobs in the local area and bringing a cumulative benefit to the local economy of $711 million.

According to that same report, at Saguaro, our backyard national park, more than 673,752 visitors spent nearly $41.6 million in Pima County. That spending supported 610 jobs and had a cumulative benefit to the local economy of more than $58 million. For every $1 invested in the National Park Service, more than $10 is returned to the people. That's a good rate of return.

The city of Tucson recognizes the value of our National Parks, and earlier this month passed a resolution asking Congress to invest in a dedicated fund for infrastructure repair. Their vote came just after a similar resolution for our National Parks passed at the U.S. Conference of Mayors.

We also hope you will join us in reaching out to our congressional representatives and encourage them to guarantee federal funding to fix our parks.

We hope that this year you will return to or make a first-time visit to a national park in Arizona.

Because, as we found out in our trip up north, once you experience the grandeur and beauty of our national parks, you start to believe that you can make a difference in protecting them for future generations to enjoy.

Anakarina Rodriguez is one of the founders of Latinos for Parks. She graduated from Arizona State University's School of Social Work in Tucson in May. Email her at

Rodriguez.Anakarina10@gmail.com

Learn more about our parks

Latino Conservation Week is observed July 16-24. Learn more at http://www.latinoconservationweek.com/

A hike up Sentinel Peak with the organizations Latinos for Parks and Latino Outdoors is planned for July 20.

Find out more about Saguaro National Park, which borders Tucson to the east and west, at https://www.nps.gov/sagu/index.htm

The next fee-free weekend for all our national parks is August 25-28, the National Park Service's 100-year anniversary.

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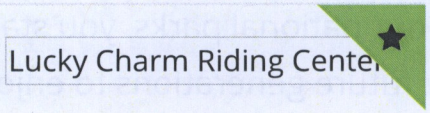

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NATIONAL GEOGRAPHIC

President Obama Should Proclaim the Greater Grand Canyon Heritage National Monument

Posted by Guest Blogger on August 15, 2016

By Dean B. Suagee

The Antiquities Act of 1906 authorizes the President to proclaim national monuments to protect historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on national public land. President Obama has used this authority to protect more national public land than any of his predecessors. As his presidency draws to a close, a few candidates for national monument proclamations are still under consideration. One is the proposed Greater Grand Canyon Heritage National Monument, about 1.7 million acres of federal land administered by the U.S. Forest Service and Bureau of Land Management on either side of Grand Canyon National Park. This proposal is also the subject of a bill sponsored by Congressman Raul Grijalva (D-AZ), H.R. 3882. I encourage the President to act on this proposal.

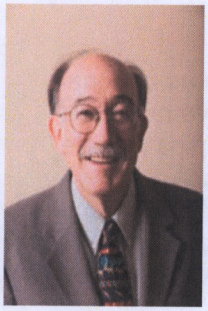
One theme in the Obama Administration's selection of places for designation as national monuments has been to commemorate chapters of American history that have not been much celebrated but, rather, have been largely overlooked or ignored. Examples include monuments honoring Cesar Chavez in California, Harriet Tubman in Maryland, and the Stonewall uprising in New York City. Greater Grand Canyon Heritage is another example of this theme – much of the heritage to be preserved is that of a number of Indian tribes with ancestral and contemporary connections to the Grand Canyon, including Havasupai, Hopi, Hualapai, Navajo, several bands of Paiute, Yavapai-Apache, and Zuni.

The Greater Grand Canyon ecosystem has been inhabited by the ancestors of present-day tribes for a very long time, and many places on national public lands continue to be used by members of living tribal cultures. Many places have historic significance. While traditional tribal uses are generally compatible with many other uses of public lands, federal land management agencies have not always been appreciative of tribal cultural values and have often subordinated tribal interests to the interests of other sectors of the public.

Preservation of tribal cultural heritage is a good reason why President Obama should proclaim the Greater Grand Canyon Heritage National Monument, but it is not the only reason. There is also the matter of uranium mining, and its associated environmental degradation, such as water pollution and impacts from road construction. Uranium mining on national public lands is subject to the General Mining Law of 1872, which, in effect, makes uranium free for the taking, i.e., free for corporations with the means to take it. There is no return to the taxpayer despite these minerals being on national public lands, and no accountability for the environmental damage it causes. Uranium mining has been going on in the greater Grand Canyon watershed for decades; the number of active mines, and claims that could become mines, fluctuating with international market prices.

Most of the national public land in the proposed Greater Grand Canyon national monument was the subject of a decision in 2012 by then-Secretary of the Interior Ken Salazar to "withdraw" it for 20 years from availability for new uranium mining claims under the 1872 Mining Law, using authority delegated to the Secretary in the Federal Land Policy and Management Act of 1976. The withdrawal decision was based on several factors, including elevated levels of uranium and arsenic in springs and wells in areas disturbed by mining and the uncertain but possibly severe effects on plants, wildlife, and livestock. The decision also noted that seven tribes continue to use parts of the withdrawal area for traditional purposes, and that they all believe that new uranium mining would interfere with their use of the area's natural resources.

The main legal effect of proclamation as a national monument would be to make the prohibition of new mining claims permanent. Most other public uses would still be allowed, including hunting, livestock grazing, camping, and other forms of outdoor recreation. The proclamation by itself would not preserve all the particular places that are important for the tribes. By recognizing cultural heritage as a core reason for the proclaiming the area a national monument however, President Obama can direct the two federal land management agencies that oversee these national public lands to collaborate with each other and the affected tribes (and other stakeholders) in developing and implementing a management plan that demonstrates genuine appreciation for the cultural heritage of the tribes. Future generations of Americans will be grateful.



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The Salt Lake Tribune

Op-ed: Obama should declare this monument ... in Arizona

By Nazz Kurth

First Published Jul 29 2016 06:48PM • Last Updated Jul 30 2016 03:19 pm

Towering ponderosa pine forests, aspen stands, grasslands and meadows — these are not the landscapes people typically picture when envisioning the Greater Grand Canyon area. Yet they're there, on the public lands that lie beyond the rim. And they provide an incredible opportunity to experience the unexpected, to venture into new areas and to push boundaries.

Of course the area also boasts towering cliffs, deeply incised canyons and clear-flowing springs often associated with the Grand Canyon.

Admittedly, as president of Petzl America, my thoughts gravitate to the area's great climbs, but that opportunity for surprise is what ignites the passion for exploration that is central to Petzl's mission, and to so many other companies that will gather in Salt Lake for the Outdoor Retailer show.

Increasingly it seems Americans are tapping into the pioneering spirit inspired by places like the Greater Grand Canyon, stepping out of their comfort zones to try something new in the outdoors. The result is a thriving, and increasingly important, outdoor economy. In Arizona and across the West, outdoor activities generate millions annually for the local economy and are major job creators.

Some adventurers come just for a visit, but a growing number are deciding to stay. Research has shown that people are increasingly interested in living in areas with outdoor recreation opportunities. What was once perhaps a hobby is becoming a way of life for many — and public lands play a central role.

These are places where everyone can go to play, to connect with one another and with nature. The land itself presents the challenge and the opportunity for growth. But the experience is only as good as the environment. The public lands surrounding the Grand Canyon have tremendous potential for profound experiences. However, a climb with a view of uranium mines or a ride through clear cut forest is profound in a different and tragic way.

While these threats jeopardize experiences for sports enthusiasts, we cannot ignore the broader real and long-term risks to local communities and tribal nations, many of which are already living with the polluted water and toxic legacy of past uranium mining.

It's time to step up and safeguard the natural and cultural resources of the Greater Grand Canyon. The proposed Greater Grand Canyon Heritage National Monument would do just that.

A national monument designation would be good for the environment, good for communities and good for business.

A recent study by the Small Business Majority found that national monuments designated by President Obama have added $156 million per year to local economies.

President Obama should add Greater Grand Canyon Heritage National Monument to his legacy. As a business leader, I know a thing or two about pushing forward practical solutions to help people progress — and this is one of them. We cannot afford to stay static; a national monument is needed to preserve the outdoor experience of these public lands.

Nazz Kurth is president of Petzl America, headquartered in Salt Lake City.

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High Country News

FOR PEOPLE WHO CARE ABOUT THE WEST

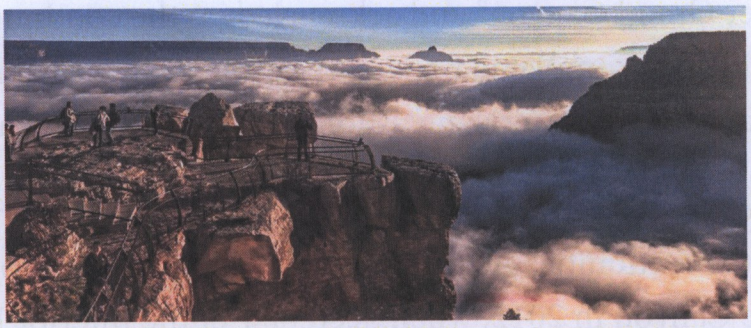
Don't just save the Grand Canyon. Save the wider region, too.

Stephen Trimble | OPINION | June 22, 2016 | *Web Exclusive*

We think we've saved the Grand Canyon. We established a national park that is supposed to remain "forever unimpaired," as the Park Service's enabling legislation put it. But the Grand Canyon is so deeply enmeshed in a spider web of connections to its watershed that a lot of work needs to be done to keep it vital and wild.

The stone ramparts above the abyss look timeless, but they tumble toward the sea under the inescapable power of gravity and erosion. Ponderosa pine forests seem to go on forever across northern Arizona, but their existence depends on the interplay of changing climate, water, insects and fire.

Developers chip away doggedly at the edges of the park, planning massive commercial development at the gateway community of Tusayan and a gondola that will reach deep into the canyon on Navajo land at the remote confluence of the Colorado and Little Colorado rivers. We continue to log rare old-growth ponderosa pine forest on the Kaibab Plateau for no good reason.



The Grand Canyon filled with fog.

Erin Whittaker/National Park Service

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All of these threats signal that it's time to permanently protect the Greater Grand Canyon watershed. With boundaries embracing a total of 1.7 million acres of public lands on the North and South rims, a Greater Grand Canyon Heritage National Monument would block new uranium mines that poison streams and contaminate the springs that are essential to wildlife and to Native American religious observance. The Kaibab Plateau, centerpiece of this monument proposal, remains an unprotected island surrounded by preserved parkland and Native American nations.

Theodore Roosevelt famously said on his first visit to the canyon in 1903, "Leave it as it is. The ages have been at work on it, and man can only mar it." The president was right about our ability to destroy. Roosevelt also understood greed. In his 1903 speech on the canyon's rim, he admonished us, saying that we cannot be "pardoned if we simply treat any part of our country as something to be skinned for two or three years. … Handle it so that your children's children will get the benefit of it."

The key is how best to "handle" the Greater Grand Canyon — the entire landscape that gives this place such integrity. We know we should do no harm. We know we need a clear stage for scientists to save what biodiversity they can, to encourage resilience in the face of climate change, and to map wildlife migration corridors between refuges so we know what lands need protection.

Rep. Raúl Grijalva, a Democrat from Arizona, has one answer to the question of how we can ensure the Grand Canyon's future. In October 2015, he introduced the Greater Grand Canyon Heritage National Monument bill. It has the support of 11 tribes, led by the Havasupai, Hualapai, Navajo and Hopi, Native peoples who consider the Grand Canyon a sacred place and their home. The bill honors the Native peoples' "longstanding historical, cultural and religious connection to the Greater Grand Canyon" and acknowledges the continuity of Native stewardship, "resulting in an accumulated body of traditional ecological knowledge." Such deference to contemporary Native American wisdom in legislative language is unheard of.

If our gridlocked Congress refuses to act on Grijalva's bill, President Obama can choose to do so, thanks to the powers of the Antiquities Act. The president's administration acknowledged imminent dangers to the Canyon in 2012, when Secretary of the Interior Ken Salazar ordered a 20-year ban on thousands of new uranium claims on the public lands surrounding Grand Canyon. Navajo Nation Vice President Jonathan Nez calls uranium mines "a devastation to our people." The monument would make Salazar's moratorium permanent.

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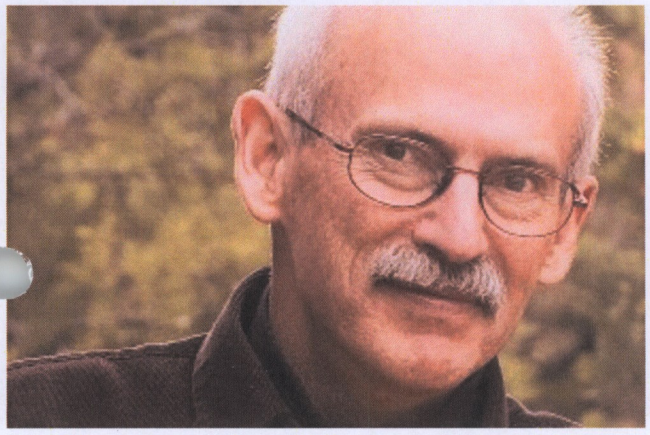
The "Grand Canyon" is an abyss, a river, a rim and an infinitely folded relief map of side canyons. It is time and vastness, luminosity and illumination. Its extravagant complexity reaches far back from the rims and deep into America, defining a Greater Grand Canyon that includes the heritage of 12,000 years of humans living in this storied landscape.

In this centennial year of the National Park Service, Secretary of Interior Sally Jewell has pledged to make national parks "decisively more inclusive places" that feel relevant to Native people. She has asked us to "think big."

President Obama has a chance to act on these goals and honor the integrity of this icon of the irreplaceable. In proclaiming a Greater Grand Canyon Heritage National Monument, Barack Obama would stand with Theodore Roosevelt in fighting greed, acting on behalf of the future, celebrating diversity and democracy, and protecting the exhilaration and refuge bestowed on all Americans by this wild place.



Stephen Trimble is a contributor to Writers on the Range, the opinion service of High County News. *He teaches writing at the University of Utah Honors College and is the author of* Lasting Light: 125 years of Grand Canyon Photography.

Note: the opinions expressed in this column are those of the writer and do not necessarily reflect those of High Country News, its board or staff. If you'd like to share an opinion piece of your own, please write Betsy Marston at betsym@hcn.org (mailto:betsym@hcn.org).

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My Turn: We need a new vision for the Grand Canyon

Krishel Augustine, AZ I See It *8:23 a.m. MST May 2, 2016*

My Turn: Developing public land near the Grand Canyon risks limited water, beautiful landscapes and tribal culture.

My birthday is usually an exciting time of celebration when I take the opportunity to reflect on the previous year and, most importantly, to look toward the future.

Our nation has a big celebration coming up too, on Aug. 25, when the National Park Service celebrates its 100th birthday.

I am hoping this centennial celebration will be a time for President Barack Obama and all Americans to do more than just celebrate our national parks and other public lands, but to develop a vision for public lands conservation in the next century.

As a former "Miss Teen Navajo Nation," I have the utmost respect for my Navajo culture. I come from a family that is very traditional.

Mining doesn't just hurt a tourist attraction

I am the Tangle Clan, born from the Towering House people. My maternal grandparents are the Apache people and my paternal grandparents are the Zuni people. My strong cultural connection helps to keep me centered at heart.

You may know the Canyon as a tourist attraction that draws five million visitors from around the world every year, but for me, it is my second home; the reservation is my first.

This is why I support U.S. Rep. Raúl Grijalva's efforts to protect public lands around the Grand Canyon from new uranium mining and other threats.

"The proximity of mining claims to the Colorado River, which supplies drinking water for some 30 million people, and the danger to the irreplaceable natural wonder of the Grand Canyon calls for urgent action," Grijalva said when he introduced the Greater Grand Canyon Heritage National Monument Act in November.

I agree. Development of the public lands around the Canyon risks Arizona's limited water supplies and — this is important to me — could despoil the landscapes that have cultural significance to my and other tribes.

It is home to sacred cultural sites, rare natural resources, including the Colorado River, and recreational hunting and fishing areas. From the dirt and rocks to the trees and watersheds, this place is steeped in human history and has deep cultural roots.

What Obama must do next

President Obama understands the importance of preserving cultural history. He has protected Chimney Rock in Colorado, the Organ Mountains-Desert Peaks in Las Cruces, New Mexico, and other places with cultural significance to tribes. He restored the name of Mount McKinley in Alaska to Mount Denali, its Alaska Native name.

His administration also recently protected the sacred Badger Two Medicine area of Montana from oil and gas drilling.

As a singer and songwriter, I know my voice can have an impact, which is why I am speaking up for my tribe and others in seeking continued conservation of our heritage on public lands.

Obama could use his authority under the Antiquities Act to protect the public lands around the Grand Canyon and the Bears Ears landscape, and I hope he will do so. But then he must do more.

When the president celebrates the National Park Service centennial, he should outline a vision for his successors to ensure Native people are engaged in the protection of public lands.

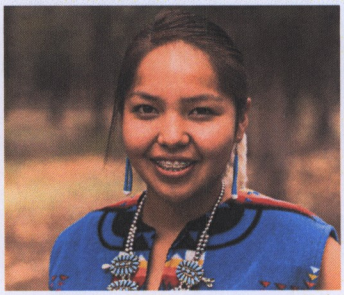
Involve the tribes in this new vision

That could mean greater tribal engagement in interpretation or protection of key tribal resources in national parks, forests and other public lands. That could mean new initiatives to recruit and hire tribal youth in public lands agencies, especially for positions that could use our cultural understanding. That could mean a more inclusive and welcoming

system of public lands that "show honor, respect and gratitude" to the broad diversity of our nation's people.

The contributions and sacrifices of American Indian tribes are etched in the hearts of our people, on the landscape of the Grand Canyon and other public lands we all enjoy.

President Obama must lead the way on a public lands vision that honors our cultural traditions — and safeguards our future.



Krishel Augustine, *"Miss Teen Navajo 2013-2014," is a singer and songwriter. She is*part of the Diverse Environmental Leaders Speakers Bureau*. Email her at* Augustine.Krishel@gmail.com.

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PAYSON ROUNDUP

Grand Canyon As National Monument A Good Thing

by Bob Hernbrode, retired wildlife biologist and former Arizona Game and Fish commissioner

As a wildlife biologist, former Arizona Game and Fish commissioner, and lifelong hunter conservationist, I support the establishment of the Greater Grand Canyon Heritage National Monument. National monuments are those special, publicly-owned lands where conservation, preservation, and restoration of wildlife and wild lands are the overriding objectives. A monument surrounding Grand Canyon National Park stunningly meets these criteria — it gives the land long-term protection from exploitation and adds conservation options to the watersheds draining into the Grand Canyon. It will not move the responsibility for land and wildlife management to the National Park Service. Management and protection of the lands proposed for this monument by Representative Grijalva's HR 3882 will still be the responsibility of the U.S. Forest Service and Bureau of Land Management. Monument status will not move wildlife management lead from the Arizona Game and Fish Department but it will ensure, long term, the department's wildlife trust responsibility to the people of Arizona. A Greater Grand Canyon Heritage National Monument Advisory Board that includes representation from the Arizona Game and Fish Department is established as part of the bill. There is no reason that interest groups, working together, could not negotiate a smooth transition that ensures continuation of sound management practices.

Historically the public lands were seen and primarily managed for extractive uses of mining, logging and livestock grazing. Monument status will limit new mining and ensure that logging and livestock grazing do not harm the important values of the monument lands. The monument does not preclude these uses. Creating the Greater Grand Canyon National Monument represents the changing attitudes and needs of the citizens of Arizona. A national monument is not an idea of a radical environmentalist minority; it is an idea that is supported by the vast majority of Arizona citizenry including hunters and anglers.

Creating a national monument surrounding Grand Canyon National Park preserves the unique features of those federal public lands and also the quality of our Grand Canyon. People who oppose monuments are out of step with the vast majority of Arizona citizens. With monument status these important landscapes will not be cordoned off from the public, nor will they be neglected. Monument status best

serves to offer people the opportunity to learn about important aspects of this spectacular landscape and encourage respectful visitation.

Increasingly, the future of wildlife and land management lies in repairing what we humans collectively have messed up. This mandates that there be active management both by the land managers and the wildlife managers to protect and restore the amazing natural resource features of the Kaibab plateau. But everyone involved should recognize that Arizona's wild land resources are important to a broad cross-section of our citizenry; a citizenry that doesn't always see the world the same. To deal with wildlife issues in the 21st century, everyone, especially the Arizona Game and Fish Commission should be willing to work with a broad coalition of interest groups. Rather than labeling everyone who questions their decisions as radical the commission should be the lead in working with others to preserve the unique features of this part of Arizona. Because monument status offers the most secure long-term future for these lands, our wildlife, and for future generations of Arizonans.

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Arizona Daily Star

Mike Ivison: For vet, Grand Canyon act worth fighting for

By Mike Ivison Special to the Arizona Daily Star Nov 10, 2015

Everything veterans do, they do for America, its people, its culture, its flagship democracy; that which is ours, America the Beautiful, America the Proud, this land mass. It belongs to us. The beauty it holds is finite. We need to protect and conserve our home, not just by fighting those from without, but by defending that which is within.

I recently saw the importance of this lands protection battle on the home front during a trip through the proposed Greater Grand Canyon Heritage National Monument. The area surrounding the Grand Canyon is in great danger as uranium mining companies try to construct new mines in the area.

Together with a group of other veterans, my journey started somewhere along the North Rim. Taking Highway 89 north, we passed through the Navajo reservation, a land filled with much beauty. Wide open spaces, mounds of rock and sediment that weren't exactly hills, or rocks, but somewhere in between, dazzled our eyes. Desert shrubbery, with its own magical appeal at the forefront, canyon-esque mountains in the background.

Upon starting the hike in the North Canyon, I was rewarded with a startling realization: the Grand Canyon is full of both trees and wide open spaces! Immediately, our group was surrounded by forest. At certain points, the forest would open up to a more panoramic view, showcasing splashes of yellow among a sea of green as some of the trees were turning with the start of fall.

On our way into the canyon, we crossed a stream, the music of its trickle a soothing presence to our ears. Shortly thereafter, we hunkered down in a dried up creek bed surrounded by maple and pine trees. The night was spent sharing stories of heroism and valor, tragedy and loss. Vietnam, Afghanistan, wounds both physical and mental. We created a bond that night, one that transcended our military brotherhood, a bond made possible by the magic which is nature, an environment which crosses cultural and demographic boundaries, differences in personality and world view, in which people experience their true self.

Morning came, along with a gradual change from forest to canyon lands, making way for the classic panoramic views for which the Canyon is known. The dichotomy of entrapment and absolute freedom left me feeling insignificant yet fulfilled. Nature had changed us, made us stronger, refined, purged of excess, purified in thought.

An experience like this can only happen because nature exists. As a veteran, I am fighting for America. America is home to a beautiful culture, a people who unite in struggle when faced with obstacles, and a land full of beautiful, unadulterated nature. In my fight, I aim to raise awareness that nature is worth saving. At its root, nature is what bonds us as humans, molds us, shapes us, and makes us grow. Who are we to tamper with it, without conscience, and leave behind a wasteland of devastation and pollution?

What will you leave behind? I, like many other veterans, am fighting for what is left behind.

When veterans come back from war, what will they come back to?

When we pass away and leave future generations in our wake, what will they be left with?

I hope it will be a legacy of protected public lands — areas like the Greater Grand Canyon Heritage National Monument, that can provide solace and meaning to a new generation of veterans.

Mike Ivison is an active duty veteran, rock climber and outdoor enthusiast. Contact Mike at ivism001@gmail.com

NATIONAL GEOGRAPHIC

Our Historic Chance to Protect the Grand Canyon

Posted by **Peter Metcalf** of Black Diamond Equipment on November 24, 2015

I'll never forget the first time I laid eyes on the Grand Canyon.

It was late fall of 1974 and I was driving back east to New York after two months of rock climbing and living in Yosemite Valley, California. I had been behind the wheel of my old VW Bug for most of the day, stopping every so often to walk and take in the views.

As the sun kissed the western horizon, I arrived at the South Rim and jumped out of my car. The panorama unfolded before me as I approached the edge. I was floored. Looking across the yawning gap, with its mighty river and layered colors cooling in the dusk, I felt a slack-jawed, spiritual awe. It reminded me of seeing Yosemite for the first time a few months earlier, but this experience was somehow larger, deeper, and more infinite.

Unfortunately, this magnificent landscape is at grave risk from the effects of uranium mining. While Grand Canyon National Park protects this section of the Colorado River and its banks, the surrounding watershed that directly feeds the river is not protected, and it harbors hundreds of uranium claims, several abandoned mines, and several proposed mining sites.

Nearly 30 million Americans depend on the Colorado River for drinking water, yet uranium mining—notoriously toxic and hard-to-contain—is proceeding within the Canyon's tributaries. Past and present mining have rendered groundwater unsafe to drink, with at least one sample showing uranium levels to be 1,200 times the safe limit, according to a National Park Service report.

Abandoned mines near the Grand Canyon have left a toxic legacy. A 2010 US Geological Survey report found that 15 springs and five wells within the watershed had unsafe levels of dissolved uranium "related to mining processes." More than 500 abandoned mines on the nearby Navajo Nation have left Navajo citizens devastated by organ cancers and other illnesses.

In 2012, the Obama administration passed a 20-year moratorium on new mines within the watershed, but private and foreign mining companies, including one owned by the Russian government, are fighting to have it overturned. Represented by the National Mining Associationthese companies are challenging the ban in the 9th Circuit Court of Appeals. Shockingly, the states of Utah, Arizona, Montana, and Nevada have each filed briefs in support of NMA's action.

Failing to safeguard the Grand Canyon from uranium mining would not only open our country's most iconic landscape to degradation and jeopardize the health and drinking water of millions. It would also be bad economics. An intact and protected Grand Canyon is crucial to the livelihood of Arizona's citizens. In 2013, more than 4 million park visitors spent upwards of $467 million. Statewide outdoor recreation in Arizona generates 104,000 jobs and $787 million in tax revenues.

America has a historic opportunity to protect the Grand Canyon from uranium mining and save this national treasure for future generations. On November 3, Representative Raúl Grijalva (D-AZ) filed legislation that will do just that. The Greater Grand Canyon Heritage National Monument Act would preserve 1.7 million acres surrounding Grand Canyon National Park. Given the unlikelihood of Congress acting, President Obama should use his authority under the Antiquities Act to declare the land a national monument.

I stood there as the sun set. Yellow gave way to pink, vermillion, blue, and finally darkness. I felt very small, but deeply connected to the vast sweep of geologic time, and humbled and inspired by the splendors of our miraculous planet. I've returned to the Grand Canyon several times since, alone and with family and friends. Each time, it reminds me of its incalculable value, challenges my imagination, and invigorates my spirit. We need to seize this chance to protect it.

Next: 6 Painful Lessons I Learned by Hiking the Grand Canyon

Peter Metcalf is the CEO, president and founder of Black Diamond Equipment, a global leader in climbing and ski-mountaineering gear. Metcalf currently serves as a director of the San Francisco Federal Reserve Bank's Salt Lake City office and a board member of the outdoor industry's Conservation Alliance. Prior to founding Black Diamond in 1989, Peter served as the general manager of Chouinard Equipment, a subsidiary of Patagonia, and completed multiple alpine-style first ascents in the Alaska range. Peter holds a BA in Political Science from the University of Colorado.

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theguardian

It's our duty as Americans to protect our national parks for the next hundred years

Rock climber Alex Honnold argues we must do more to defend US national parks from a slew of imminent environmental threats

Alex Honnold
Sunday 22 May 2016 09.00 EDT

Just over eight years ago, I completed a free solo ascent – unroped – of the one of the most beautiful and challenging climbs in the world: a 350 metre crack called Moonlight Buttress in southwestern Utah's Zion national park. At the time, Alpinist magazine called it "one of the most impressive free solos ever achieved."

While I find it hard to articulate exactly why I'm drawn to this type of exposed, unroped climbing, the setting certainly plays a big role. Zion is aptly named: it's a promised land of striking multicolored sandstone cliffs soaring from a green valley below. Though I'm intensely focused when I climb, the gift of doing it in such breathtaking places is not lost on me.

Unfortunately, Zion and other parks and public lands around the US are at risk from a variety of threats. It's easy to assume that these lands are protected, but that's not the case. Especially out west, our shared lands are, as Navajo Nation president Russell Begaye and other tribal leaders recently wrote, "under siege".

In this centennial year of the National Park Service, let us celebrate the parks and lands that are our birthright to use and enjoy. But let us also commit to protecting these places for the next hundred years and beyond — and recognize that defending these commonly held treasures requires our vigilance and effort.

Zion is one of nine Western parks and lands across Utah, Colorado and Arizona where, according to the Environmental Protection Agency (EPA), air quality is threatened by dangerous emissions from two 70s-era coal-fired power plants in central Utah. Harmful pollutants, including nitrogen oxides and air pollution, also threaten the families and businesses that call this region home.

Monitoring studies have shown that visibility at Arches and Canyonlands national park is harmed by human-caused haze 83% of the time, relative to the annual average level of natural haze, due in part to pollution from the Hunter and Huntington plants. In fact, Hunter and Huntington, owned by Warren Buffett's PacifiCorp, are so dirty that they account for nearly half of all the nitrogen oxide pollution emitted by Utah's electricity sector.

Not far to the south, the jewel of our national park system – Grand Canyon national park – is fighting a multifront battle. While the coal-fired Navajo Generating Station in nearby Page, Arizona, is among more than 250 coal-fired power plants nationally that have installed or are installing effective controls to reduce haze pollution, Utah's coal-plants continue to emit dangerous nitrogen oxide pollution unabated. And not only does the Grand Canyon have Utah's Hunter and Huntington plants to contend with, but it's dealing with the legacy of toxic uranium mining within and around its boundaries, as well as the specter of new mining development.

The public lands around the Grand Canyon contain abandoned, active and proposed uranium mines and hundreds of claims. Despite devastating illnesses from uranium mining on nearby tribal lands and poisoned waters within the park, four states have joined mining companies like Uranium One, owned entirely by Russia, to overturn a 20-year ban on new mining issued by former Interior Secretary Ken Salazar in 2012.

Solutions are within reach. In early June, the EPA will rule on the Hunter and Huntington coal plants, choosing between a plan that would reduce pollution using industry-standard technology, and a proposal by Utah that requires no reductions in harmful emissions. The more the agency hears from Americans before that time, the more likely we are to see a positive outcome.

To make the moratorium on uranium mining in the Greater Grand Canyon permanent, President Obama should invoke the Antiquities Act to declare a National Monument. In doing so, he would have the support of tribal leaders and an overwhelming majority of Arizona voters, as well as a blueprint in House Resolution 3882, a bill submitted in November by Arizona Congressman Raúl Grijalva.

There's a business argument to defending our parks and public lands: they make possible America's outdoor recreation economy, which generates $646bn in consumer spending and 6.1m direct jobs.

But something more fundamental is at stake.

These wild places are our national heritage: an immeasurably generous gift from previous generations. They provide all of us, regardless of wealth or creed, the opportunity for personal challenge and spiritual renewal. They give us the opportunity to forge, in a uniquely American way, who we are and what we will become.

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CN Cronkite News
ARIZONA PBS

Supporters, opponents grapple over proposed Grand Canyon monument

By Isabel Menzel | Cronkite News
Wednesday, June 15, 2016

PHOENIX – Sierra Club and Native American tribal leaders are asking the public to urge Arizona elected leaders to designate 1.7 million acres around the Grand Canyon as a national monument to protect it from mining and logging interests.

A national monument can be designated by Congress or the president, and the Obama administration and the Department of Interior have already shown their support. But the move is controversial, with Arizona senators John McCain and Jeff Flake saying Grand Canyon lands are already protected. They say a monument would rob business interests such as the hunting and logging industry.

"This proposal … extends far afield from the intent of the Antiquities Act by seeking to lock away 1.7 million acres of land in Arizona – an area larger than the State of Delaware – from hunting, livestock, wildfire prevention, mining, and certain forms of outdoor recreation and tourism," McCain and Flake wrote in a letter to Obama.

The Arizona Chamber of Commerce and Industry calls the proposal a "monumental mistake."

"Between lands owned and managed by the federal government and those it holds in trust for the Indian tribes, almost 70 percent of all land in Arizona is under the control of the federal government. Privately-owned land is the foundation of our state's economic engine, yet less than 20 percent of land in Arizona is privately owned," the chamber says in a January position paper.

However, a recent poll conducted by the Grand Canyon Trust, which supports the monument, says a majority of Arizona residents who were polled favor the monument.

"I don't think it's a political risk," Laura Varon-Burkhart, a ranger at Montezuma Castle, said at a meeting in May hosted by tribal and environmental leaders. "Eighty percent of people in Arizona support this and these are federal public lands."

According to the Sierra Club, the proposal is also supported by 21 Arizona indigenous tribes, including the Navajo, Hualapai, Havasupai, Hopi, more than 30 state legislators, and Congressmen Raul Grijalva and Ruben Gallego.

Supporters of the proposed Greater Grand Canyon National Heritage Monument met with Arizona residents in May, asking about 30 people to leverage their power as a constituent by talking to Arizona congressional representatives.

"No matter what you think of this proposal, you're not powerless," said Sandy Bahr, the Arizona chapter director for the Sierra Club.

Nearly five million people visit the Grand Canyon every year, according to the canyon website, to hike, fish, take photos or meander down the Colorado River.

Here's what at stake in the proposed Grand Canyon National Heritage Monument, from people and organizations on both sides of the issue:

THE LAND

Supporters who spoke in favor of the monument stressed that it contains the Southwest's largest unprotected old-growth Ponderosa pine forest, the Grand Canyon watershed, and the historic Kanab Creek and Red Butte, which are areas of significant religious and cultural importance to Native American nations.

"We want to protect the remaining old growth, wildlife, cultural values and diverse habitat," Bahr said. "We also want to see fewer signs about not being able to drink the water."

Republican Congressman Paul Gosar, expresses a different view in a statement about an amendment he proposed in 2015 to block the monument.

"A unilateral declaration of the nearly two million acres in the Grand Canyon Watershed as a National Monument would stifle development, kill jobs and erode the extensive cooperation and success that federal and state agencies in Arizona have achieved to date," Gosar wrote.

WILDLIFE

The region offers unique wildlife viewing opportunities, such as potentially spotting rare animals like the Kaibab squirrel, a sub-breed of the animal that has a dark coat and feathery white tail. It lives exclusively in the Kaibab Plateau area.

The area is also home to distinguishing species such as the migratory Kaibab-Paunsagunt mule deer herd, the northern goshawk and the endangered California condor.

However, the Arizona Game and Fish Commission opposed the monument in a 2015 release which states, "the commission expressed concern that the proposed monument was to 'preserve' and in some cases lock away these lands rather than conserve them."

NATIVE AMERICAN TRIBES

Leaders of the Navajo, Hopi, Havasupai and Hualapai tribes supported a bill sponsored by Rep. Raul Grijalva, D-Arizona, to protect the area. Carletta Tilousi, a Havasupai tribal member, said her people are spiritually rooted to an area estimated to have more than 3,000 ancient, Native American archaeological sites many tribes deem sacred. Some of the region's natural features, such as the Red Butte, Yellowstone Spring and Antelope Spring are linked to indigenous stories centered around the creation of earth.

"This nature to us is like a church and sharing it with all different cultures is the most important thing," Tilousi said, adding people need to know about Native American tribes' connection to the Grand Canyon.

"What is my purpose? Where do I go? Where do I pray to heal? All this is a part of our creation stories," Tilousi said, urging Arizona residents to support a monument. "We are taught to care for the earth, the land, the animals. And that's how we are initiated into our life's responsibilities.

"We all have that responsibility to the land and, now, you do too."

THE DEBATE OVER MINING, LOGGING AND FARMING

Both sides of the monument issue battle over the impact on industry.

The state chamber, in the January paper, said commercial logging doesn't threaten forests, wildfires do. And the chamber disputes the impact of uranium mining.

"While proponents of the national monument designation argue that it is necessary to prevent uranium mining in the area around the Grand Canyon, scientists within the National Park Service have called the potential environmental impacts of uranium mining in the Grand Canyon region 'very minor to negligible,' " the report says.

Gosar hosted representatives from the mining, ranching and farming industries at an April meeting to discuss the negative impact of a new monument, according to the Phoenix New Times.

But the Sierra Club and other environment groups said uranium mining has the potential to affect water that sustains millions of people. The canyon is home to more than 125 creeks and springs that feed into the Colorado River, the primary water source for the Southwest.

"We believe that it is such a contamination," Tilousi said. "We just had a 100-year flood 12 years ago that ravaged our canyon home (Supai village.) Whatever's on the top will flow down to our village and contaminate our water. That is our biggest fear."

A uranium mine in the Grand Canyon National Park, the Orphan Mine, has contaminated surface waters and is now fenced off from visitors.

"Back in 1986, the Forest Service conducted an environmental impact statement," Bahr said. "They said, 'the mine in the park really just had a

visual impact.' Well, we know now it has contaminated the soil, the water and it has already cost the American taxpayers $15 million in cleanup costs."

According to Bahr, the monument would not not affect private or state lands, or private property rights and it would not impact existing mining efforts.

"It halts all that and keeps the land as it is," Bahr said.

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grist

Fight over Grand Canyon pits Native Americans against John McCain

By Katie Herzog on Jun 17, 2016

President Obama has already protected over 265 million acres of land and water in the U.S. — more than any other president in history. He's headed out west this weekend to Carlsbad Caverns and Yosemite to celebrate that record, at the same time that there is a battle underway in Arizona to see one more region protected before he exits office.

Sierra Club and Native American tribal leaders have been organizing local supportfor designating 1.7 million acres around the Grand Canyon as the Greater Grand Canyon Heritage National Monument. Rep. Raul Grijalva, a Democrat on the House Natural Resources Committee, has taken up the cause, proposing a long-shot bill to create the monument. Activists argue it would mean better protection for areas that have been harmed by uranium mining (there is a 20-year moratorium on new uranium mining in the greater Grand Canyon region). The Orphan Mine, a former copper and uranium mine in the area, closed in 1969 and is now a highly radioactive waste site.

While conservation efforts are popular among residents — 85 percent support national monuments and a plurality want more to be done for the Grand Canyon area — some lawmakers and business interests are pushing back. Republican Senators John McCain and Jeff Flake have advised Obama against conservation that would "lock away" land from development, even though the designation would only block uranium mining. The opposition is flanked by the Arizona Chamber of Commerce and Industry, which called the proposal a "monumental mistake."

But activists would say that leaving tribal sites and the Southwest's largest old-growth Ponderosa pine forest unprotected would be its own monumental problem.

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Grijalva pushes creation of monument in far northern Arizona

BY ASSOCIATED PRESS | October 12, 2015 @ 12:50 pm

FLAGSTAFF, Ariz. — U.S. Rep. Raul Grijalva is reviving a push to designate a large swath of northern Arizona as a national monument.

Grijalva, a Democrat, said he would introduce legislation next week to create Greater Grand Canyon Heritage National Monument while acknowledging it likely won't get even a hearing in Congress. The goal is to have a template ready that President Barack Obama could consider signing as a proclamation for a new monument, he said.

The proposed 1.7 million-acre monument is a mix of towering cliffs and canyons, grasslands, forest and desert that is popular with hunters, hikers, ranchers and other recreationists. It also includes 1 million acres rich in uranium ore that is temporarily banned from the filing of new mining claims. Grijalva, environmentalists and tribes want to make that ban permanent but have faced stiff opposition from Republicans and the mining industry.

Tribal leaders who joined Grijalva on Monday in a news conference said the creation of a monument would protect the area's water, sacred sites and other cultural resources.

Navajo Nation President Russell Begaye said the tribe has struggled with the effects of uranium mining decades after it ceased on the reservation. He said he'd like to see Obama proclaim the area a national monument, using his

authority under the Antiquities Act and further strengthen his commitment to American Indians.

"We believe this falls right side his agenda," Begaye said.

Grijalva's legislation follows other efforts since 2012 to have the area proclaimed a national monument.

Under a previous proposal, the monument was to be named Grand Canyon Watershed National Monument. Rep. Ann Kirkpatrick held a meeting earlier this year to talk about creating such a monument. Environmental groups weighed in on the region's water, large-diameter trees and wildlife corridors.

The Arizona Game and Fish Commission and sportsmen's groups criticized the effort to sidestep Congress and questioned the expense of running a national monument.

Don Martin of the Mohave Sportsmen Club said Monday he's skeptical of Grijalva's proposal as well.

"Anything that creates a national monument up there on the Grand Canyon is totally not needed, not wanted," he said. "It's just another ploy to lock things up from the American public."

Grijalva said access to recreation and hunting wouldn't change. Whichever federal agency manages the national monument would have three years from its creation to develop a management plan. A council made up of representatives from tribes, the sportsmen community, the Arizona Game and Fish Department, environmental groups, natural resources and science would advise the federal agency.

The U.S. Bureau of Land Management and the U.S. Forest Service now oversee much of the land in the proposal.

CN Cronkite News
ARIZONA PBS

Tribes, Grijalva ask Obama to protect 1.7 million acres at Grand Canyon

By Jessica Swarner | Cronkite News
Tuesday, April 26, 2016

WASHINGTON – Tribal leaders joined Rep. Raul Grijalva, D-Tucson, on Tuesday urging President Barack Obama to designate 1.7 million acres around the Grand Canyon as a national monument, bypassing Congress in the process.

Grijalva said he was calling on the president to invoke the Antiquities Act after becoming convinced that his bill to create the same monument would not get "a real, honest, rational hearing" from a Republican-led House.

Grijalva specifically cited opposition from Rep. Paul Gosar, R-Prescott, and Arizona Republican Sens. John McCain and Jeff Flake, who he said are "on the wrong side of the angels on this one."

None of those lawmakers could be reached for comment Tuesday on Grijalva's remarks, but Gosar has been a blistering critic of the president's use of the Antiquities Act.

After Obama invoked the act in February to create national monuments on about 1.8 million acres of federal land in California, Gosar wrote the leaders of the House Appropriations Committee demanding that they include language in the budget restricting the president's ability to use

that authority. That letter was signed by 30 House Republicans, including three others from Arizona.
"Presidents on either side of the aisle shouldn't have unilateral authority to create massive new national monuments by executive fiat without local public input," the letter stated. "It is, after all, the people living near these national monuments who are most affected by their creation."

The proposed Greater Grand Canyon Heritage National Monument Act would protect 1.7 million acres in the canyon's watershed, prohibiting mining and other natural resources development. It would make permanent a current 20-year moratorium on uranium mining that was imposed by the Interior Department.

Mohave County Supervisor Buster Johnson said he is concerned both by the mining ban, and by Grijalva's attempt to get the president to use the Antiquities Act.

"I was always afraid this might happen," Johnson said. "This act has been used before to skirt the public."

Johnson said mining has the potential to add $29 billion to the economies of Mohave County and Washington County, Utah, and would provide better jobs than tourism could. A national monument designation would block these job opportunities and threaten public access to the federal lands, he said.

But Havasupai Tribe Councilwoman Carletta Tilousi, one of the tribal leaders who joined Grijalva at Tuesday's news conference at the National Press Club, said the monument designation is vital because uranium mining could destroy her tribe's land.

"We are nearing extinction," Tilousi said. "We want my people to remain left alone from international mining companies."

Tilousi said any money generated by mining likely would not help her tribe.

"We fear that international companies will come in, mine uranium, leave a toxic smell in our water and in our air, and we don't want that to happen," she said. "It is not money for us."

Johnson said the mining companies are more careful than that and would be sure to cause "very little disturbance" to the land.

But Coconino County Board of Supervisors Chairman Art Babbott said that while there would be an economic boost from uranium mining, the risks it poses are "not theoretical" and not worth taking. There would certainly be economic benefits from a monument designation, he said.

"I absolutely am a supporter of the objective and the outcomes that the legislation seeks to achieve," said Babbott, who was careful to note that it was a personal position and not the official position of the board. "It's in our economic interest, it's in our environmental interest."

Gosar – who organized a meeting in Kingman earlier this month called "Government Land Grabs: Exposing the Truth" – said the Antiquities Act has been abused by the president as a favor to environmental groups. A presentation at the meeting charged that tribal backing for the monument plan was a "myth" and that environmentalists were really behind it.

But speakers at Tuesday's event included representatives of the Navajo, Hopi and Hualapai, in addition to the Havasupai.

Jackson Slim Brossy, executive director of the Navajo Nation Washington Office, read a statement from Navajo President Russell Begaye that said Obama needs to use executive action to extend protection to the Grand Canyon.

"I stand here, with my fellow tribes, with Representative Grijalva, and request executive action now," Brossy said, reading the statement. "President Obama, come stand with us and support the Greater Grand Canyon National Heritage Monument."

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azcentral THE ARIZONA REPUBLIC
PART OF THE USA TODAY NETWORK

Tribal leaders push for Grand Canyon protection

William V Theobald , The Republic | azcentral.com 3:32 p.m. MST April 26, 2016

WASHINGTON — Arizona tribal leaders brought deeply personal arguments to within steps of the White House on Tuesday for why President Obama should designate a national monument around Grand Canyon National Park.

Edmond Tilousi, vice chairman of the Havasupai Tribe, said he struggled to sleep Monday night as he tried to capture what the Grand Canyon means to him and his small tribe before the Tuesday news conference at the National Press Club, just a few blocks from the White House.

"I have lived in and around the Grand Canyon all of my life, and in later years I saw the wonders of these lands," Tilousi said, speaking slowly and quietly. "It was then I saw the power and the spirit of God."

Rep. Raúl Grijalva, D-Tucson, the ranking member of the House Natural Resources Committee, organized Tuesday's event to draw attention to legislation he proposed to protect 1.7 million acres outside park boundaries.

With that bill unlikely to go anywhere in the Republican-controlled House, Grijalva and the tribes, as well as environmental groups including the Sierra Club, are urging Obama to use his executive authority to designate the Canyon area as a national monument.

Eighty percent of likely voters said they approve of the national monument in a February poll by the Grand Canyon Trust, another supporter of the plan.

Rep. Paul Gosar, R-Arizona, is among the most adamant opponents of the monument designation. He has accused Grijalva of using the tribes as political pawns and said the designation would cost jobs by stifling development and also restrict hunting and timber harvesting.

He has introduced legislation that would put up numerous barriers to any effort by a president to designate a new national monument. The four other Arizona Republican House members are co-sponsors of the bill.

A key goal of those promoting the monument is to ban future mining near the Canyon. In 2012, the Obama administration issued a 20-year ban on new uranium claims near the Canyon.

Troy Honahnie Jr., an environmental-policy adviser to the Hopi Nation, said at Tuesday's news conference that high levels of dissolved uranium have been found in 15 springs and five wells in the area.

Grijalva said he and tribal leaders met previously with administration officials and expected to do so again later Tuesday. He had not talked directly to Obama about the request.

Obama has designated more national monuments than any president, protecting more than 260 million acres of land and waters under the Antiquities Act of 1906. In February, he designated more than 1.8 million acres of California desert as three national monuments.

Tilousi, the Havasupai official, pleaded for Obama to "protect these lands for all generations."

"If these lands and wonders are protected, then and only then I can die happy," he said.

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ARIZONA CAPITOL TIMES
Your Inside Source for Arizona Politics, Government and Business

Tribes, Grijalva ask Obama to protect 1.7 million acres at Grand Canyon

By: Jessica Swarner, Cronkite News May 2, 2016 , 4:00 am

Tribal leaders joined Rep. Raul Grijalva, D-Ariz., on April 26, urging President Barack Obama to designate 1.7 million acres around the Grand Canyon as a national monument, bypassing Congress in the process.

Grijalva said he was calling on the president to invoke the Antiquities Act after becoming convinced that his bill to create the same monument would not get "a real, honest, rational hearing" from a Republican-led House.
Grijalva specifically cited opposition from Rep. Paul Gosar, R-Prescott, and Arizona Republican Sens. John McCain and Jeff Flake, who he said are "on the wrong side of the angels on this one."

None of those lawmakers could be reached for comment on Grijalva's remarks, but Gosar has been a blistering critic of the president's use of the Antiquities Act. After Obama invoked the act in February to create national monuments on about 1.8 million acres of federal land in California, Gosar wrote the leaders of the House Appropriations Committee demanding that they include language in the budget restricting the president's ability to use that authority. That letter was signed by 30 House Republicans, including three others from Arizona.

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come stand with us and support the Greater Grand Canyon National Heritage Monument."

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USA TODAY TMI

Poll: Most in Arizona support Grand Canyon buffer

USA TODAY NETWORK Brandon Loomis, The Arizona Republic 6:19 p.m. EST February 19, 2016

PHOENIX — A new poll suggests that Arizona Republicans opposing a new national monument around the Grand Canyon may be in the minority, even within their party.

The results were released Thursday, only a day after a committee in the state House of Representatives voted to fight the plan.

Among likely 2016 Arizona voters, 80% approve of a statewide plan for a Greater Grand Canyon Heritage National Monument exceeding 1 million acres and banning new uranium mines, according to the poll sanctioned by the Grand Canyon Trust.

The support included 95% of Democrats polled, 84% of independents and 65% of Republicans. More than half — 58% — of the respondents said they "strongly" support a monument

"That's a very broad and strongly felt endorsement that we're getting from Arizona voters," said Dave Metz of the polling firm Fairbank, Maslin, Maullin, Metz & Associates.

The poll of 500 likely voters was taken Jan. 14-17. Metz reported a margin of error of 4.4%.

The polling firm typically works for Democrats. Another poll earlier this winter, in which the firm collaborated with a Republican pollster, found 73% support for the monument plan among Arizona voters.

U.S. Rep. Raul Grijalva, D-Ariz., has proposed a bill to create a 1.7 million-acre Greater Grand Canyon Heritage National Monument that would make permanent a federal moratorium on new uranium claims on either side of Grand Canyon National Park. The monument would cover much of the Kaibab National Forest and the Kaibab Plateau.

The plan has detractors among Republicans in Arizona's congressional delegation. The Arizona Game and Fish Commission also has opposed it, in part because they say it could limit timber management and access for hunting.

Grijalva, though, said his bill guarantees both continued forestry and hunting access.

"We have strong support from hunters and anglers," he said, noting that 76% of poll respondents who identified themselves that way supported the plan. "We can begin to put aside the shrill debate that will occur on this issue."

But Wednesday, the Arizona House Committee on Federalism and States' Rights advanced a bill meant to restrict the size of the monument if it is approved. HB2585, sponsored by Republican Rep. Bob Thorpe, targets a presidential designation of the monument — a route to preservation that many supporters consider likelier than Grijalva's bill, given Republican opposition.

Thorpe's bill would require a state commission to review any designated monument to ensure it covers the least amount of acreage needed to protect individual resources, as he says the 1906 Antiquities Act demands. If the commission found that more lands were included than necessary, then the state attorney general would be required to act to block the monument's designation.

"There's no public input," Thorpe complained in committee. "This is a stroke of the pen by the president, and then all the sudden a huge chunk of our state is off-limits."

Sierra Club representative Sandy Bahr told the committee that no state commission could pin down the resources to be protected or their minimum required acreage.

"I'm not sure how you'd have GPS coordinates on a California condor or a bighorn sheep," Bahr said.

The committee forwarded the bill on a 5-3 vote, with Democrats opposing.

Presidents have successfully set aside massive monuments for more than a century, going back to the one that would become Grand Canyon National Park. Grijalva said Arizona legislators' efforts were pointless.

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"We consume the water. We breathe the air," said Havasupai Tribal Councilwoman Carletta Tilousi. "We would like for that to be pure and clean."

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Poll: Most in Arizona support national monument buffering Grand Canyon

Brandon Loomis , The Republic | azcentral.com 11:25 p.m. MST February 18, 2016

Survey released a day after committee in Arizona House votes to fight plan that would ban mining uranium around national park

A new poll suggests that Arizona Republicans opposing a new national monument around Grand Canyon may be in the minority, even within their party.

The results were released Thursday, only a day after a committee in the state House of Representatives voted to fight the plan.

Eighty percent of likely 2016 Arizona voters approve of a statewide plan for a Greater Grand Canyon Heritage National Monument exceeding 1 million acres and banning new uranium mines, according to the poll sanctioned by the Grand Canyon Trust.

The support included 95 percent of Democrats polled, 84 percent of independents and 65 percent of Republicans. More than half — 58 percent — of the respondents said they "strongly" support a monument

"That's a very broad and strongly felt endorsement that we're getting from Arizona voters," said Dave Metz of the polling firm Fairbank, Maslin, Maullin, Metz & Associates.

The poll of 500 likely voters was taken Jan. 14-17. Metz reported a margin of error of 4.4 percent.

The polling firm typically works for Democrats. Another poll earlier this winter, in which the firm collaborated with a Republican pollster, found 73 percent support for the monument plan among Arizona voters.

U.S. Rep. Raul Grijalva, D-Ariz., has proposed a bill to create a 1.7 million-acre Greater Grand Canyon Heritage National Monument that would make permanent a federal moratorium on new uranium claims on either side of Grand Canyon National

Park. The monument would cover much of the Kaibab National Forest and the Kaibab Plateau.

The plan has detractors among Republicans in Arizona's congressional delegation. The Arizona Game and Fish Commission also has opposed it, in part because they say it could limit timber management and access for hunting.

Grijalva, though, said his bill guarantees both continued forestry and hunting access.

"We have strong support from hunters and anglers," he said, noting that 76 percent of poll respondents who identified themselves that way supported the plan. "We can begin to put aside the shrill debate that will occur on this issue."

But Wednesday, the Arizona House Committee on Federalism and States' Rights advanced a bill meant to restrict the size of the monument if it is approved. HB2585, sponsored by Rep. Bob Thorpe, R-Flagstaff, targets a presidential designation of the monument — a route to preservation that many supporters consider likelier than Grijalva's bill, given Republican opposition.

Thorpe's bill would require a state commission to review any designated monument to ensure it covers the least amount of acreage needed to protect individual resources, as he says the 1906 Antiquities Act demands. If the commission found that more lands were included than necessary, then the state attorney general would be required to act to block the monument's designation.

"There's no public input," Thorpe complained in committee. "This is a stroke of the pen by the president, and then all the sudden a huge chunk of our state is off-limits."

Sierra Club representative Sandy Bahr told the committee that no state commission could pin down the resources to be protected or their minimum required acreage.

"I'm not sure how you'd have GPS coordinates on a California condor or a bighorn sheep," Bahr said.

The committee forwarded the bill on a 5-3 vote, with Democrats opposing.

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Phoenix New Times

Arizona Voters Overwhelmingly Support Grand Canyon National Monument, New Poll Finds

TUESDAY, FEBRUARY 23, 2016 AT 7 A.M.
BY MIRIAM WASSER

Flying in the face of those who claim it would be unpopular to give the greater Grand Canyon watershed national monument status, a new nonpartisan poll finds that not only is there tremendous support for it but that it cuts across geographical and political lines.

"The results were overwhelming, and they demonstrated both strong and broad support [in] Arizona," says Dave Metz of the research firm Fairbank, Maslin, Maullin, Metz & Associates, which polled hundreds of Arizona voters in January.

The pollsters discovered that 80 percent of Arizona voters support or strongly support the Grand Canyon National Heritage Monument, as outlined in a bill U.S. Congressman Raul Grijalva submitted to the U.S. House of Representatives last year.
Grijalva brought together a broad coalition of native tribes, environmental groups, and local stakeholders to design the bill, which if passed, would permanently protect 1.7 million acres of land and prevent any new uranium mines.

"More than half of Arizonans say more needs to be done to protect air, land, and water around the Grand Canyon, and they clearly see establishing that monument as an effective way of reaching that goal," Metz says, adding that "the sentiment that the area around the Grand Canyon needs protection has grown over time."

A similar poll conducted in 2009 found only 43 percent of people supported it, and a poll last year found that 73 percent of Arizonans support it.

Local native tribes and environmental groups have talked about wanting national monument status for the Grand Canyon for years, and Grijalva's efforts to make it a reality have solicited nothing short of a political firestorm among enemies of the bill.

Leading the charge is U.S. Congressman Paul Gosar, who has railed against the monument proposal for months. Gosar claims it would cost hundreds of jobs, destroy the local economy, and hinder sportsmen or other recreational users of the area.
In an interview earlier this year, Grijalva told *New Times* that Gosar's "opposition is based on myths" and that he "needs to own up to the fact that he's on the fringe of every public-land argument we have in this country."

The benefit of this, Grijalva explained, helps "put the opposition of some in context with many . . . It's important to deal with what the public wants and thinks, as opposed to letting this discussion be mired in half-truths, false information, and the sheer cry from opposition that doesn't represent the vast majority of the people in Arizona."

Both Metz and Grijalva say they were impressed by the broad appeal of the monument, as men and women across the state expressed support for the idea of national monuments in general and the Grand Canyon monument in particular.

According to the poll results, there is support for the Grand Canyon monument among:

- 76 percent of men and 84 percent of women,
- 65 percent of registered Republicans, 84 percent of independents, and 95 percent of Democrats,
- 78 percent of people living in Congressional District 1, which is where the proposed monument would be,
- 79 percent of white voters, 86 percent of Latino voters, and 87 percent of all voters of color, including Native Americans,
- 81 percent of people living in urban areas, 83 percent in suburban areas, 79 percent in small towns, and 73 percent in rural areas,
- And 76 percent of hunters and anglers.

Unlike past polls, this most recent one also asked voters how their opinion of elected officials could be influenced by a vote for or against the monument:

"Voters were three times as likely to say they would support a politician who backed the establishment of the monument," Metz says. "So not only do voters indicate that it's a good idea, but they say that they'll be more supportive of members of Congress who act to make the monument reality."

Last year, Grijalva, along with Arizona U.S. Representatives Ann Kirkpatrick and Ruben Gallego, authored a public letterdetailing their support for the monument. In the months since, however, Kirkpatrick has distanced herself from that stance, explaining that she's still considering the statements of many local stakeholders.

But with public opinion clearly on his side, Grijalva says he's ready to continue the fight: "As we go forward, we have strong support from the people in Arizona, the first nations most affected by this monument designation, [as well as] hunters and anglers and people that use our public land.

"I think we can start to put aside the shrill debate that occurs on this issue" and start taking "the steps to build [more] public support."

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ARIZONA Daily Sun

Plan to protect 1.7 million acres at Grand Canyon claims new support

SARA WEBER Cronkite News Feb 18, 2016

WASHINGTON — Backers of a bill that would create a new national monument on 1.7 million acres of federal land around the Grand Canyon touted a new survey Thursday that they said shows broad support for the plan.

The telephone survey of likely voters across the state found 80 percent of respondents said they somewhat supported or strongly supported establishing the Greater Grand Canyon Heritage National Monument, while just 14 percent opposed and 6 percent had no opinion.

"The political firestorm will be shrill, but it's on strong legal ground," said Rep. Raul Grijalva, D-Tucson, who sponsored the bill to create the monument. "The poll helps us to … build support across Arizona and the rest of the nation."

Critics of the plan were not impressed, noting that the release of the poll comes a week after President Barack Obama used his authority under the Antiquities Act to make national monuments out of about 1.8 million acres of federal land in California. That nearly doubled the amount of public land he's protected during his presidency.

"I think with the current attitude in the country, I can't believe that that's what Western voters want," said Mohave County Supervisor Buster Johnson, in response to the poll results. "It's another example of the federal government taking land away."

Johnson said that uranium mining in his county could be worth $29 million, but that the Department of the Interior set a 20-year moratorium on new mines in 2012. He cited it as another example of federal intrusion that can lead to problems at the local level.

"No one wants to see the Grand Canyon go unprotected," Johnson said. "We're just getting far away from the idea of protection. That land could be used to create more jobs."

But Grijalva said his bill was introduced, in part, to protect the land from uranium mining, as well as to help preserve sacred tribal lands. He was joined Thursday by leaders from the Hopi and Havasupai tribes in a conference call to release the poll.

The poll by FM3 — Fairbank, Maslin, Maullin, Metz & Associates — was based on phone interviews with 703 Arizonans from Jan. 14-17, and had a margin of error of plus or minus 4.4 percentage points.

Rep. Ann Kirkpatrick, D-Flagstaff, whose district includes the Grand Canyon, said in an emailed statement that the monument proposal is "an important issue to our entire state, especially to our tribal communities and the people of northern Arizona. … I strongly encourage folks throughout Arizona to study this proposal and voice their opinions."

Grijalva said that since introducing the bill in November he has received a lot of political pushback, particularly concerning recreational activities on the land. But he said the bill includes guaranteed protections for hunting and fishing in the targeted monument area.

To those who have complained about Obama's use of executive authority to create monuments, Grijalva notes that his proposal is a bill that will be considered by lawmakers — although he thinks the president could use his authority if he had to for this monument.

"The Antiquities Act is federal law and we're not there yet," Grijalva said. "Although I think the president would be on comfortable historic and legal ground to use his executive power."

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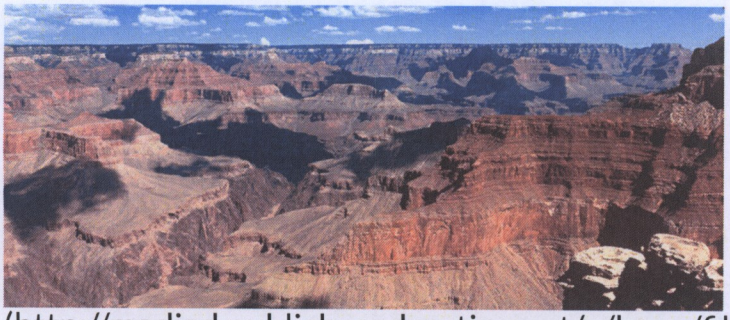
Grand Canyon Monument Supporters Gather More Than Half a Million Signatures

By RYAN HEINSIUS (/PEOPLE/RYAN-HEINSIUS) • JUL 7, 2016

Twitter (http://twitter.com/intent/tweet?url=http%3A%2F%2Fwww.tinyurl.com%2Fzzxjm5y&text=Grand%20Canyon%20Monument%2(

Proponents of the Greater Grand Canyon Heritage National Monument have delivered more than 650,000 petition signatures and comments to the White House. They hope President Obama will set aside 1.7 million acres of public land near the national park before leaving office next year. Arizona Public Radio's Ryan Heinsius reports.



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The Grand Canyon viewed from Pima Point on the South Rim

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The Pew Charitable Trusts and the Center for Biological Diversity, among other groups, say the signatures represent growing support for the national monument. They claim uranium mining on lands adjacent to the Grand Canyon puts the national park's watershed and ecology at risk. Declaring a monument would permanently ban uranium mining there.

More than 20 tribal nations like the Havasupai, Navajo and Hopi, say the designation would protect area sacred and cultural sites. They're also calling for the president to declare the national monument through the Antiquities Act.

Some elected officials, however, like Arizona Congressman Paul Gosar, say such a designation is unnecessary, and would represent a federal land grab. The Arizona Game and Fish Department also opposes the monument, and claims it would hinder wildlife management in the area.

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ARIZONA Daily Sun

Coalition pushes for greater environmental protections for the Grand Canyon

Megan Janetsky, The Republic | azcentral.com *5:14 p.m. MST August 24, 2016*

The eve of the 100th birthday of the National Park Service was not met in Phoenix with chipper choruses of "Happy Birthday" but rather with calls by local and national organizations to protect the Grand Canyon by halting uranium mining in the area.

Members of Environment Arizona and the Grand Canyon Chapter of the Sierra Club, which together form the Greater Grand Canyon Heritage National Monument Coalition, gathered Wednesday in downtown Phoenix to announce their petition to take action on uranium mining and old-growth logging in the Grand Canyon.

With the support of 500 local businesses and a half-million signatures, groups like Environment Arizona and Sierra Club are banding together to send a petition to the Obama administration to create a Grand Canyon Heritage National Monument. Some 6,000 of the signatures were gathered in the past week in Arizona, Nevada, New Mexico and Colorado, according to the groups' spokesmen.

"We're calling out President Obama to establish a national monument which would be north and south of the park," said Bret Fanshaw, state advocate for Environment Arizona. "It would be 1.7 million acres of land. It's already federal land, but it doesn't have some needed protections against some pretty destructive activity, like uranium mining and logging."

In 2012, the Obama administration banned any new claims for uranium mining in the Grand Canyon area for 20 years. This move effectively made about 1 million acres of land outside the Grand Canyon National Park off-limits to any new mining developments. After appeals by the National Mining Association on grounds of federal overreach, the case was upheld.

However, Fanshaw believes the fight to end uranium mining has only just begun.

"While we were able to establish a moratorium on any new uranium mining for 20 years starting in 2012, there are still a few that are operating," he said. "We're

hoping to make that moratorium permanent and then permanently protect these lands with a monument."

The moratorium doesn't stop work at any existing mines in the area. According to the Grand Canyon Trust, four uranium mines operate just miles from the North and South Rims. Fanshaw also said that while the 20-year moratorium was a step, the time goes fast.

Paul Hirt, an Arizona State University professor and a senior sustainability scholar, has seen that time trickle away. Hirt said he has been part of the Grand Canyon preservation movement since his late 20s.

"This effort has been ongoing for over a generation. I actually went to a uranium-mining protest in the early 1980s," Hirt said. "I've been in Arizona since 1975, and I've been trying to help and protect important resources in Arizona for over 40 years."

Hirt listed off historic-preservation dates to ralliers carrying signs like "#YesWeCanyon" and explained that it's not a new issue.

"I was involved with a whole variety of conservation issues starting in the early 1980s," he said. "Uranium mining was a great challenge even then. There was active uranium mining at the South Rim up until 1969."

With high hopes, members of the coalition plan to send the petition supporting the designation of a national monument to the Obama administration on Thursday.

"The Grand Canyon is just one of those places where we can't leave it to government or private corporation to decide what to do with it." Hirt said. "We as citizens have to step in."

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Public Lands Advocates Rally for Grand Canyon Monument

By RYAN HEINSIUS • AUG 25, 2016

President Obama has designated the Katahdin Woods and Waters National Monument in Maine to honor the 100th anniversary of the National Park Service. Public lands advocates rallied in Flagstaff yesterday in hopes the president will declare another such monument near the Grand Canyon. Arizona Public Radio's Ryan Heinsius reports.

Members of the group Environment Arizona gathered at Flagstaff City Hall to support the designation of a 1.7-million-acre Greater Grand Canyon Heritage National Monument. They believe it would protect the park from radioactive pollution by banning uranium mining in the area.

"Uranium contamination in our region is not theoretical," says Coconino County Supervisor Art Babbott, who is also in favor of the plan. "These are our lands, these are common lands, they need to be protected as such, and the values that we hold important to us in this region need to be preserved, and that's exactly what this proposal does."

Twenty Southwestern tribes back the proposal. They say a monument would protect Native American cultural sites in the Grand Canyon.

The debate, however, has been divisive. The Arizona Game and Fish Department, and some lawmakers, say a national monument designation would complicate wildlife management and add another layer of federal control.

Recent polls show a majority of Arizonans support the monument proposal.

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Phoenix New Times

Obama Receives 550,000 Signatures Demanding He Designate Grand Canyon National Monument

BY MIRIAM WASSER

THURSDAY, JULY 7, 2016 AT 5:02 A.M.

View from Crazy Jug Point in the Kaibab National Forest, part of the proposed Greater Grand Canyon Heritage National Monument.

Jessica Pope, U.S. Forest Service, via Flickr

In the latest gesture of public support for the permanent protection of the Grand Canyon watershed, a coalition of environmental groups and tribal leaders announced today that they've delivered petitions containing more than 550,000 signatures to President Barack Obama demanding he create a 1.7-m

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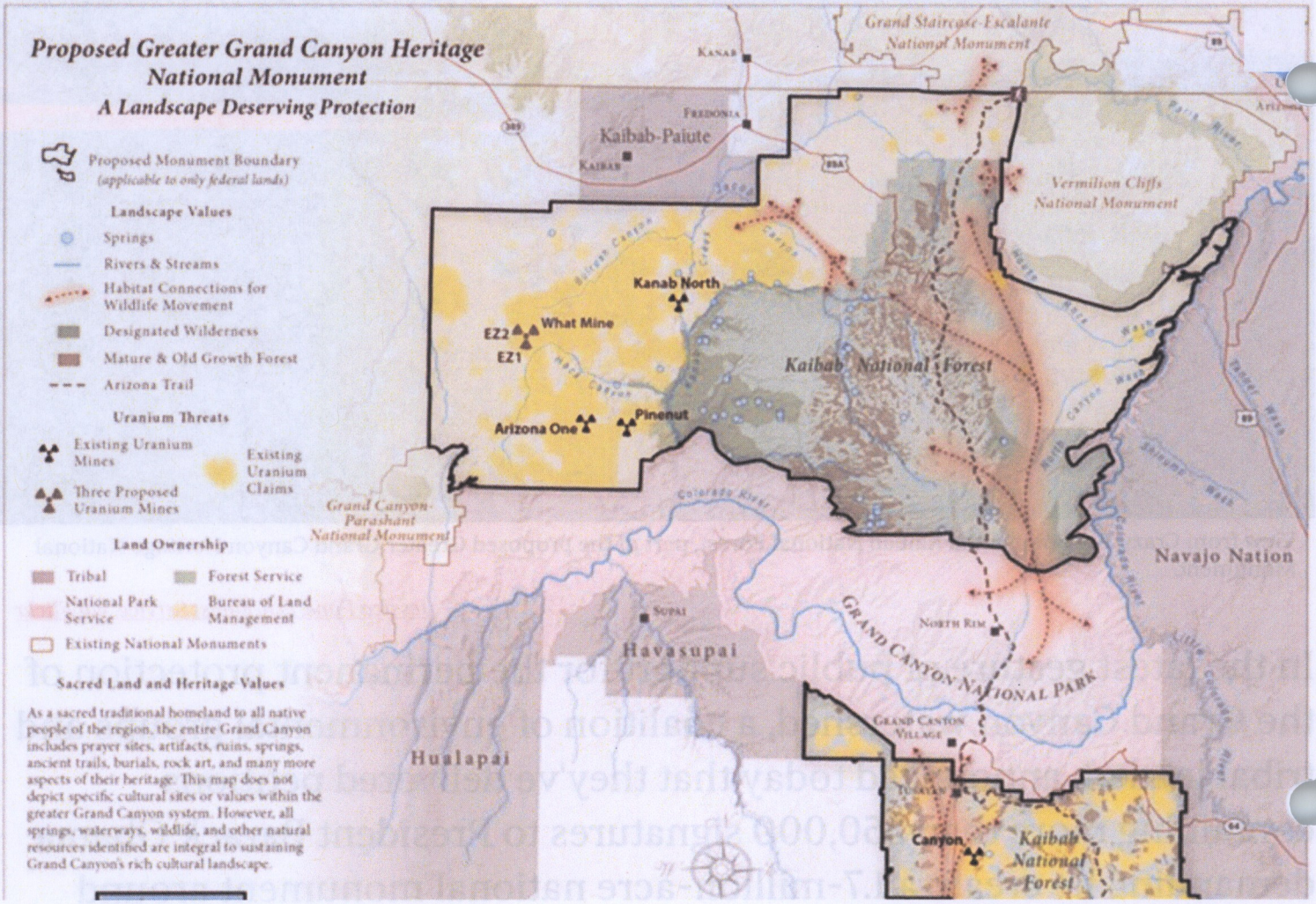
The signatures come from all over the nation and from people with a wide range of interests, according to Celia Barotz, vice mayor of Flagstaff, who says the diversity points to ubiquitous backing for the monument. "I think that the number of signatures supports the argument that the values at stake are so important that people want their voices to be heard," she says.

With a legislative attempt to create the monument led by U.S. Rep. Raúl Grijalva (D-Tucson) stalled in Congress, supporters have turned their attention to plan B: persuading the president to invoke the Antiquities Act and use his executive authority to preserve the lands.

Designating the so-called Greater Grand Canyon Heritage National Monument would permanently protect much of the watershed to the north and south of the park from uranium mining and other extractive industries, while safeguarding recreational and hunting access and preserving one of the most sacred spots for tribes in the American Southwest. The site encompasses the Kaibab National Forest on the north and south rims of the canyon, as well as a swath to the northwest of the forest that is rich in uranium.



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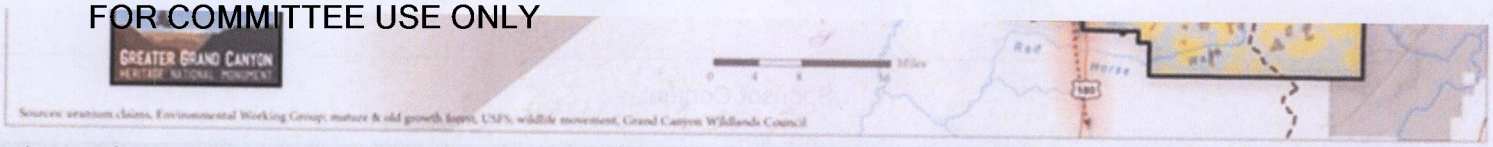

A map showing the proposed Greater Grand Canyon Heritage National Monument.

Courtesy of the Center for Biological Diversity

Public-opinion polls indicate that the monument has overwhelming support in Arizona, and if today's petition delivery is any indication, it's a sentiment matched throughout the country.

"The Grand Canyon is a culturally significant area which sustains life for many tribal people and cultures, [and] it is encouraging to see the outpouring of support from across all walks of life for the [monument]," Shan Lewis, president of the Inter Tribal Council of Arizona and vice chairman of the Fort Mojave Indian Tribe, said in a written statement about today's announcement.

Katie Davis, who's on the staff of the Center for Biological Diversity, one of the groups that has helped collect signatures, agrees. "This is significant because protecting the Grand Canyon isn't just an Arizona issue, it's an issue of national significance. We find it encouraging that everyone is coming forward to support the tribes – it's part of a bigger vision of protecting American heritage," Davis says.

"I don't think that half a million people is something that can just be ignored in D.C. when it comes to conservation and environmental protection," she adds.

Sandy Bahr, director of the Sierra Club's Arizona chapter, says the groups have been collecting and sending in signatures for months, but a milestone such as this seemed a good time to announce their progress.

In Bahr's estimation, the petitions send a strong message to Washington: "Look, we've got strong and growing support for this monument, and the American public and Arizonans would really like the president to take action to protect this area."

Congressman Grijalva evidently concurs. "[C]onserving Native American history and culture, protecting the environment and guaranteeing public access to these lands in perpetuity are each important goals, [and] creating the Greater Grand Canyon Heritage National Monument meets each of those goals and more," Grijalva said in a statement today.

"I firmly believe this administration hears the voice of the people, and I look forward to working with President Obama to protect this land once and for all," he added.

You can read more about the petition here.

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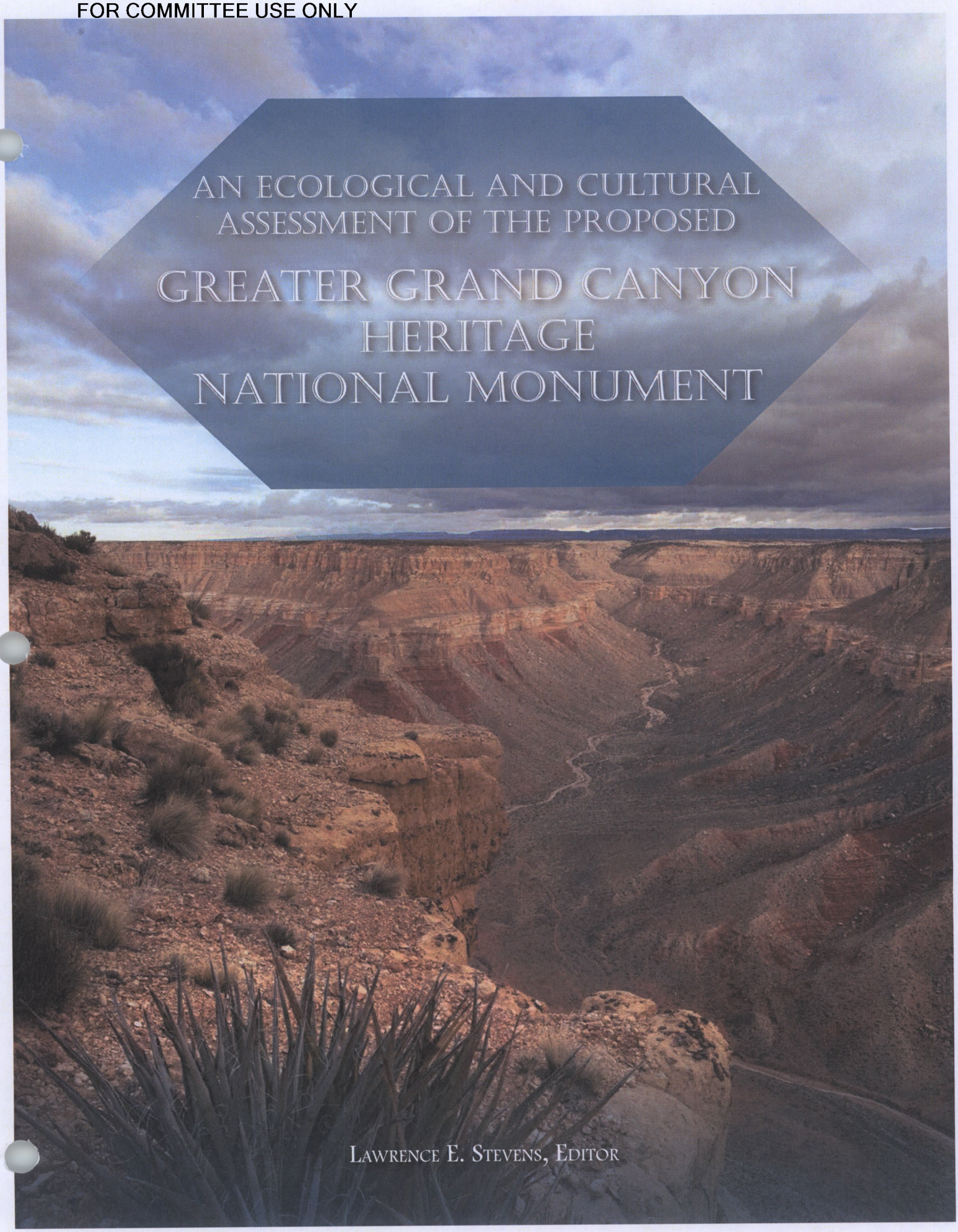

AN ECOLOGICAL AND CULTURAL ASSESSMENT OF THE PROPOSED GREATER GRAND CANYON HERITAGE NATIONAL MONUMENT

LAWRENCE E. STEVENS, EDITOR

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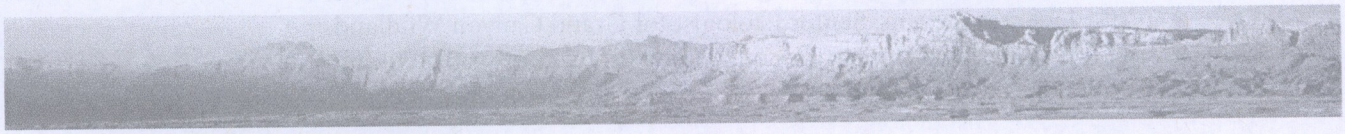
THE NATURAL AND HUMAN HISTORY OF THE PROPOSED GREATER GRAND CANYON HERITAGE NATIONAL MONUMENT



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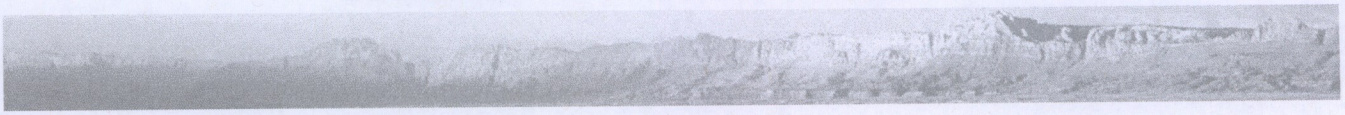

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EXECUTIVE SUMMARY

A VAST, REMOTE, FORESTED LANDSCAPE

The proposed Greater Grand Canyon Heritage National Monument (GGCHNM) includes the Kaibab Plateau, House Rock Valley, and the southern part of the Kanab Creek drainage, as well as a portion of the Coconino Plateau immediately south of Grand Canyon National Park. The proposed monument area spans Grand Canyon and is a vast, arid, largely forested landscape on the southwestern Colorado Plateau. GGCHNM is bordered to the west by the Shivwits Plateau, and to the east by the Vermilion Cliffs. The Utah border and Highway 89A create the northern boundary. The eastern margin of the GGCHNM at the edge of Marble Canyon is distinguished by the enormous East Kaibab Monocline, a grand warping of the Earth's crust that elevates the North Rim of Grand Canyon more than 800 m above the South Rim. The GGCHNM then steps westward down an ecological transition, or ecotone, across a profound geological and biological boundary in one of the world's most iconic landscapes. This western ecotone frames the transition between the Colorado Plateau and the southern US desert biomes.

This report was prepared by scientists and researchers of the Museum of Northern Arizona and presents a detailed analysis of the existing physical, biological, and socio-cultural information on the GGCHNM region. This effort augments excellent syntheses by individual federal and state managing agencies including: the U.S. Bureau of Land Management (BLM; 1990, 1992); Arizona Game and Fish Department (AGFD; BLM and AGFD 1997); U.S. National Park Service (NPS; 1981); and the U.S. National Forest Service (USFS; 2012). We strive to incorporate their reports and scientific studies over the past century into a single overview of the GGCHNM region.

GEOGRAPHY AND CONTEXT

Most of the 6,877 km^2 GGCHNM lies at elevations between 1,500 and 2,700 m. Seen from the air, the Kaibab Upwarp appears as a domed surface, elongated north-south, sloping abruptly up from the east, and gently down to the west. Erosion and dissection across the Kaibab Monocline characterizes the northern portion of GGCHNM. Along its western side, north of the Park boundary, the monument area includes most of the Kanab Plateau and a section of the Uinkaret Plateau east of the Hurricane Cliffs and the Hurricane Fault. To the east of the Kaibab Plateau, GGCHNM includes lands in House Rock Valley and the northern Marble Platform, wrapping around the base of the Paria Plateau and abutting the Vermillion Cliffs National Monument. The GGCHNM region is remote, in large part due to its topographic isolation, its location on the Arizona Strip between the Colorado River and Utah, and because access into the region is seasonal or weather dependent and largely restricted to Highways 89A and 67 and several major dirt roads.

The GGCHNM encompasses public lands, most of it presently administered by the Kaibab National Forest (KNF), BLM, AGFD and NPS. Formal designation and permanent protection for the proposed monument would allow for continued public access, traditional lifeways, rights of way, sightseeing, hiking, wildlife observation, birding, hunting, fishing, and many other activities, including traditional Tribal access and uses. Permanently protecting this area will help conserve and restore grasslands and old growth forests, and protect important archaeological sites, native wildlife, springs and wetlands, endemic species, and wildlife migration routes. The GGCHNM may be jointly managed by the USFS and the BLM. The USFS currently manages

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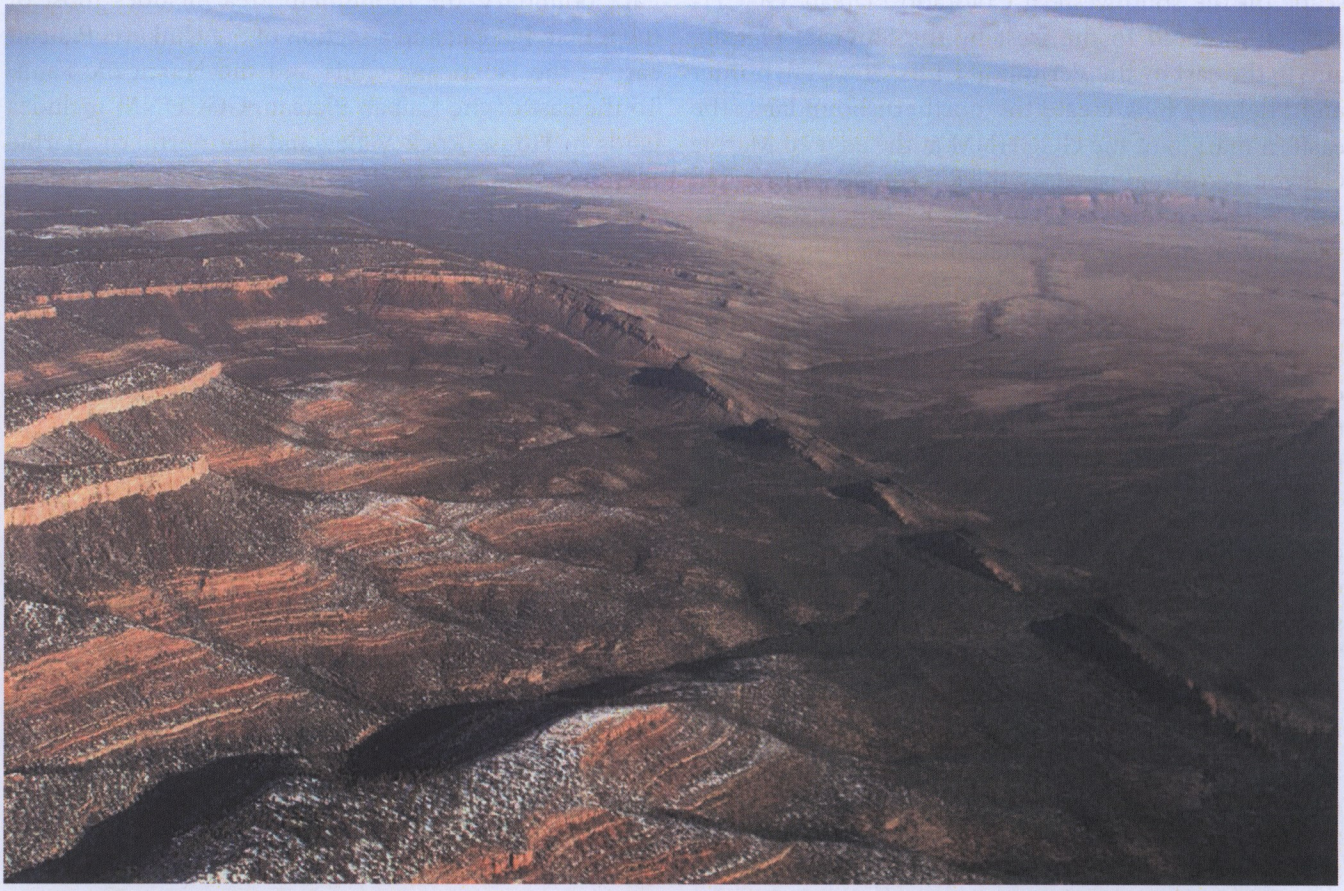
nine national monuments. Although their histories are sometimes complex, four are the result of Presidential proclamations and five are congressionally designated.

SCIENCE VALUES

The information summarized here, and presented in detail in the full report, identifies ten outstanding characteristics of the GGCHNM region, including: 1) its position encompassing the local watershed or drainage surrounding Grand Canyon and the ecotonal transitional boundary from the Colorado Plateau to the Basin and Range Geologic Provinces; 2) its function as a remarkable geohydrological laboratory, with unique springs, seeps, natural ponds and source of headwaters for some of the last remaining pristine streams in the Southwest, 3)its paleoecological significance as a landscape demonstrating vegetation responses to global climate change over the past 50,000 years along a world-class stepped ecotone at the edge of Grand Canyon; 4) its value as a biodiversity hotspot for endemic species and 5) refuge for sensitive and game species; 6) its large north-south escarpment, which serves as a corridor for migratory raptors and other species; 7) its scientific and management value as a study area for the implementation of restoration projects for wildlife populations and landscapes; 8) the existence of artifacts and sites that date back nearly 8000 years; 9) its place in the tumultuous recent human history of the Grand Canyon region; and 10) its vast, remote, little-developed character that provides tremendous scenic, recreational and dark skies value, while acting as a natural buffer for Grand Canyon National Park in the face of human development. As a result of this comprehensive, science-based analysis, it is clear that the national monument proposal being considered is well supported in this remarkable, iconic landscape. The ten outstanding characteristics are described below, along with the importance of landscape connectivity and the protection of the Grand Canyon's watershed and surrounding lands.

Unique Geographical Significance

The proposed Greater Grand Canyon Heritage National Monument (GGCHNM) includes the Kaibab Plateau, House Rock Valley, and the southern part of the Kanab Creek drainage, as well as a portion of the Coconino Plateau immediately south of Grand Canyon



Aerial view looking across the Kaibab Monocline and House Rock Valley with the Vermilion Cliffs and Paria Plateau in the distance. Photo ©Kristen M. Caldon.

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National Park, spanning the Grand Canyon and forming its proximal watershed. Bordered on the west by the Shivwits Plateau, to the east by the Vermilion Cliffs, and on the north by Highway 89A and the Utah state line, the proposed monument captures a piece of western geography that has shaped the distribution of humans and wildlife across the southwest for millennia.

The GGCHNM's geographical significance is also due in large part to the unique geological activity that resulted in the enormous East Kaibab Monocline, which elevates the North Rim of Grand Canyon as much as 800 m above the South Rim and the geological and biological western ecotone that frames the transition between the Colorado Plateau and the southern US deserts. Influencing processes from the movement of water to the evolution of native species, this geographical and geological transition zone is of significant scientific value.

Hydrogeology

The GGCHNM region spans one of the most profound geological features in the United States, the chasm of Grand Canyon. The exposure of Colorado Plateau strata reveals not only the vastness of time that has transpired over Earth's history, but also provides a detailed look into the geohydrology that supports the aquifers and hydrologic cycle of this arid region. As such, the GGCHNM is a geohydrological laboratory, which can be studied to better understand how water moves through the Earth and how aquifers function, especially karstic systems. While the proposed GGCHNM does not, itself, contain many flowing streams, it protects the headwaters of a large number of pristine streams and contains numerous ecologically and culturally significant springs, seeps, and natural ponds. This landscape also provides recharge to regional aquifers that contribute more than 5% of the base flow of the Colorado river.

Mineral resources are relatively few in the GGCHNM, except for uranium, which is deposited in many breccia pipes throughout the region. The present temporary ban on new mining claims is scheduled to end in 16 years, although some mining in the region is underway. The question of whether to allow uranium mining on the periphery of Grand Canyon remains an important social question, one that warrants careful consideration.

Climate Change and Ecotone Ecology

A remarkable paleoecological transformation has occurred in the GGCHNM over the past 50,000 years. The western margin of the GGCHNM roughly coincides with the boundary between the Sonoran/Mojave/Great Basin floristic provinces to the west, with the Maderan province to the south, and the Intermountain province to the northeast. Analysis of ancient packrat middens and cave deposits has revealed that the pinyon-juniper treeline rose 914 m upslope in less than 7,000 years during the Pleistocene-Holocene transition, as a warmer, drier climate developed. These environmental shifts resulted in the mixing of plant species from the surrounding ecosystems and biomes. Environmental and floristic changes, coupled with the arrival of early humans, resulted in the extinction of the Pleistocene megafauna – elephants, camels, mountain goats, large predators, and giant birds that roamed the plateaus and lowlands, prior to natural desertification. On-going concerns over how ecosystems will function in response to global climate changes, can be examined through space-for-time stud-

A panoramic view looking south to the lower plateau. Elevation and vegetation change dramatically from north to south in the GGCHNM. Photo by Kristen Caldon.

ies across the elevation and aspect gradients that are so abundantly expressed in the GGCHNM. Thus, the region is a unique and critically important natural laboratory in which to study and understand these changes.

A Biological and Evolutionary Hotspot

Desert and plateau springs, deep and enormous karst cave systems, and old growth coniferous forests provide refugia and make the Kaibab an important biological hotspot. The Forest Service manages more than 200 springs on the North Kaibab, many of which harbor rare and sometimes unique life forms. For example, the springs and habitats in the North Canyon drainage support at least 6 rare or endemic species of plants and invertebrates, as well as endangered Apache trout. Many Forest springs have been altered by human activities, but can be easily restored. These springs and seeps are hot spots for biodiversity: stoneflies, beetles, and various amphibians require springs wetland habitats.

A Refuge for Sensitive and Game Species

The GGCHNM region supports at least 1500 plant species, an extraordinary but poorly documented entomofanua with several endemic species, one endangered fish species, 6 amphibian species, more than a dozen reptile species, 112 bird species, and 79 mammal species. Several dozen Kaibab plant and animal species are rare or endemic, and are species of concern to the State of Arizona, the U.S. Fish and Wildlife Service (USFWS), the USFS, or other agencies, Tribes, and organizations. The extent of migratory and upland species using the GGCHNM and its role as a corridor, flyway, and refuge is critical to the persistence of those many iconic species and populations.

An Important Migratory Corridor

The long, north-south aligned escarpment of the East Kaibab Monocline has been identified as one of the primary hawk migratory flyways in the Southwest. Cliffs such as these provide migratory pathways for hawks, eagles, and other species, and are well-documented, with more than 20 years of autumn raptor monitoring data available from Hawk Watch International. A large number of raptors migrate through southern Utah and use upwardly-rising air currents that develop as daytime mountain winds along cliff lines. Raptor densities often exceed 30 birds/hr. These observations indicate that the use of escarpments by raptors is commonplace. Continued monitoring is beginning to provide trend assessment capacity, but thorough surveys continue to be needed to improve resolution of the extent, timing and daily variability of raptor migration along the East Kaibab Monocline and across Grand Canyon. The North Kaibab region also provides an important primary movement corridor for Desert Mule Deer, and likely other large mammals, such as Desert Bighorn Sheep, and Mountain Lion from lowland to upland habitats.

Population and Landscape Restoration Ecology

Restoration ecology is being explored and implemented in the region through several different projects. 1) USFS has undertaken springs and forest rehabilitation projects. 2) Endangered California Condors have been released from a site on the Vermilion Cliffs near Marble Canyon, with more than 75 birds presently flying. 3) Pronghorn and Bighorn Sheep population restoration efforts have increased the herd and flock sizes. 4) Non-native tamarisk, an invasive woody tree, has been removed from desert springs along Kanab Creek, and the impacts of tamarisk leaf beetles are being examined throughout northern Arizona. The region has enormous potential for restoration projects to restore old growth forests and their ecological functions. These population and ecosystem management activities demonstrate that the GGCHNM region is an extraordinary natural laboratory in which to test and apply the principles of conservation and restoration ecology.

Exploration and Settlement History

The color and harshness of the GGCHNM region is strongly reflected in its exploration and settlement history. Though the focal point of the region is the Canyon itself, a large portion of its history and development took place in the proposed GGCHNM. Expeditions led by European explorers resulted in the first documentation and interaction with Grand Canyon by those outside American Indian communities. As new settlers moved west from eastern America, early mountain men and pioneers created and maintained trails and villages throughout the proposed monument landscape. Interactions, both peaceful and violent, between American Indian tribes and European settlers influenced the politics and use of the lands and waters in the region. Industries such as cattle operations, mining, and timber harvest popped up, all of which played an important role in the development of local economies. The GGCHNM is a reflection of the dynamic and ever-shifting understanding of the role and influence of human development on the Grand Canyon region, all of which is of great historical importance for all Americans.

Vast, Scenic Landscape that Protects Grand Canyon

The GGCHNM region is a truly vast and largely undeveloped landscape, made more remote and inaccessible due to its geographical features. The Plateau, its escarpment margins, and the surrounding lands, have exceptional regional and global scenic, recreational, scientific, and cultural value. Protection of this region will provide a better buffer from the impacts of human development and climate change, helping to protect Grand Canyon from the onslaught of environmental disruption that so greatly threatens the ecological integrity of the Southwest.

SUMMARY

This landscape analysis indicates that significant geological, biological and human history features and processes exist in the GGCHNM region, and additional research will likely contribute substantial information to understanding the processes and impacts of geological, biogeographic, and global environmental change. The objects, features, and scientific opportunities mentioned herein, coupled with the overall high ecological integrity of most of the landscape, its low human population density and development, and few extractable resources, are values that contribute to the national significance of the proposed national monument.

Protection of these distinctive characteristics of the GGCHNM region will also buffer Grand Canyon National Park from the impacts of rapid population expansion in southern Utah and Nevada, as well as threats just outside the Park. In addition, the proposed National Monument will provide better landscape linkage among the region's Wilderness Areas, protect prominent north-south migration routes, springs, caves, the Kanab Creek drainage, old growth forest stands on the Kaibab Plateau, and sensitive and game populations and their habitats. Much remains to be learned about the GGCHNM region, and future inventories and studies are likely to substantially increase the list of species, identify important, as yet unrecognized, archeological sites, ecological processes, and insights into how climate changes affect or are buffered in complex landscapes. Such research opportunities are only likely to further strengthen the rationale for preserving this geologically, biologically and anthropologically outstanding landscape.

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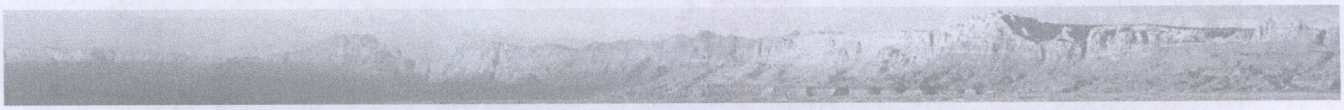
CHAPTER 1



OVERVIEW OF THE GREATER GRAND CANYON HERITAGE NATIONAL MONUMENT

A Vast, Remote Forested Landscape

The proposed Greater Grand Canyon Heritage National Monument (GGCHNM) includes the Kaibab Plateau, House Rock Valley, and the southern part of the Kanab Creek drainage, as well as a portion of the Coconino Plateau immediately south of Grand Canyon National Park (Fig. 1.1). The 6,877 km^2 proposed monument landscape surrounds Grand Canyon and is a vast, arid, largely forested lanscape on the southwestern Colorado Plateau. GGCHNM is bordered to the west by the Shivwits Plateau, and to the east by House Rock Valley, the Vermilion Cliffs, and Marble Canyon. The Utah border and Highway 89A creates the northern boundary. The eastern margin at the edge of Marble Canyon is defined by the enormous East Kaibab Monocline, a grand upwarping of the Earth's crust that elevates the North Rim of Grand Canyon more than 800 m above the South Rim. To the west, GGCHNM steps down an ecological transition, or ecotone, across a profound geological and biological boundary in one of the world's most iconic landscapes.This western ecotone frames the transition between the Colorado Plateau and the southern US desert biomes.

This report was prepared by scientists and researchers of the Museum of Northern Arizona and presents a detailed analysis of the existing physical, biological, and socio-cultural information on the GGCHNM region. This effort augments excellent syntheses by individual federal and state managing agencies including: the BLM (1990), 1992); Arizona Game and Fish Department (AGFD; BLM and AGFD1997); U.S. National Park Service (NPS; 1981); and the U.S. National Forest Service (USFS; 2012), incorporating those data with additional scientific studies over the past century to provide an overview of the GGCHNM region. We summarize scientific information on the region's geography, geology, biology, archaeology, and history. We describe the natural and cultural resources of the region and surrounding lands. This region holds great potential for further scientific study and understanding of regionally and globally important issues related to ecosystem ecology and stewardship, elevation gradients, and climate change.

Ten characteristics may warrant consideration of the GGCHNM region. These include: 1) its position encompassing the local watershed or drainage surrounding Grand Canyon and the ecotonal transitional boundary from the Colorado Plateau to the Basin and Range Geologic Provinces; 2) its paleoecological significance as an ecoregion that has responded to dramatic climate change over the past 50,000 years, producing a world-class stepped ecotone landscape; 3) its biological diversity, particularly life found in rare hotspot habitats (i.e., springs, caves, old growth forests, and desert streams); 4) its function as a refuge supporting species of concern (i.e., endemic, endangered species and game species); 5) its several large escarpments, which serve as a migratory corridor for raptors and other species; 7) its scientific and management value as a study area for the implementation of restoration projects for wildlife populations and landscapes; 8) the existence of artifacts and

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sites that date back nearly 8000 years; 9) its place in the tumultuous recent human history of the Grand Canyon region; and 10) its vast, remote, little-developed character that provides tremendous scenic, recreational, and dark skies value, while acting as a natural buffer for Grand Canyon National Park. We discuss the regional and national scientific and socio-cultural significance of these characteristics, as well as the region's scenic values, its present ecological integrity, its population density and its development history.

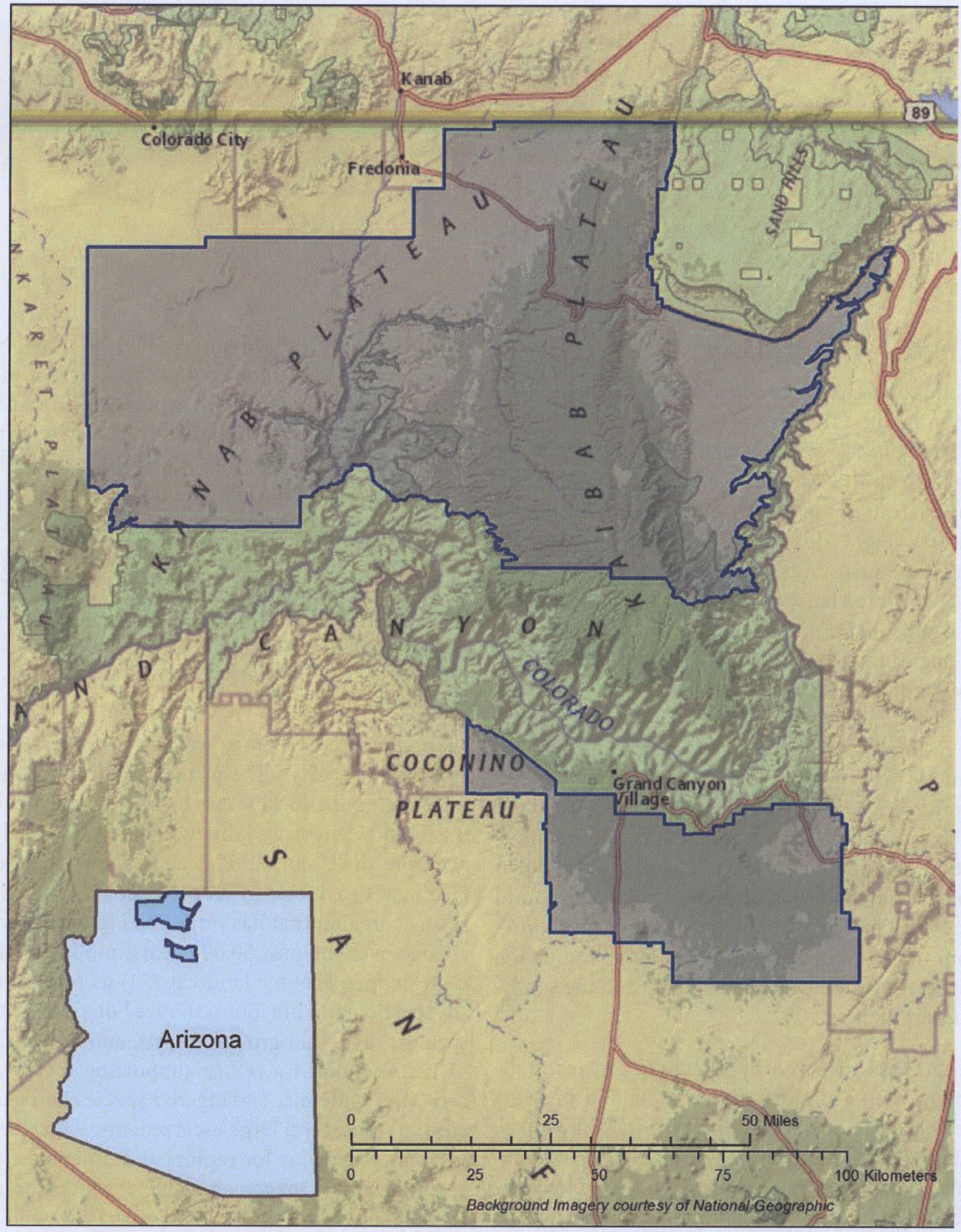

Fig. 1.1 Map of the proposed Grand Canyon Heritage National Monument in northern Arizona.

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CHAPTER 2

GEOGRAPHY AND CLIMATE

LARRY STEVENS AND JEFF JENNESS

Plateau Forests, Escarpments, Canyons, and Low Deserts

Most of the 6,877 km² GGCHNM lies at elevations between 1,500 and 2,700 m. Seen from the air, the Kaibab Upwarp appears as a domed surface, elongated north-south, rising abruptly up from the east, and gently subsiding down to the west. Erosion and dissection across the Kaibab Monocline characterizes the northern portion of GGCHNM. Along its western side, north of the Park boundary, the monument area includes most of the Kanab Plateau and a section of the Uinkaret Plateau east of the Hurricane Cliffs and the Hurricane Fault. To the east of the Kaibab Plateau, GGCHNM includes lands in House Rock Valley and the northern Marble Platform, wrapping around the base of the Paria Plateau and abutting Vermilion Cliffs National Monument.

The GGCHNM region is remote, in large part due to its topography and its location on the Arizona Strip north of the Colorado River, and because access into the region is seasonal and largely restricted to Highway 89A and several dirt roads. From the east, Highway 89A runs up the East Kaibab Monocline to Jacobs Lake. On the west, access is limited to the Fredonia Road (FS Rt. 22), with a maze of smaller forest roads that work west to the headwaters of Kanab Creek. South of Grand Canyon, primary access is provided by Highway 64 from Cameron to the South Rim, and Highways 180 and 64 south to Williams and Flagstaff, 70-80 miles away. Many dirt roads traverse the pinyon-juniper and grasslands that dominate the northern Coconino Plateau.

Land Management

The GGCHNM is administered by the National Forest Service (Kaibab National Forest, KNF), the Bureau of Land Management (the Arizona Strip region, BLM), and the Arizona Game and Fish Department (AGFD; National Park Service 1981; U.S. Bureau of Land Management 1990, 1992). Nationally, the Forest Service manages several national monuments, four of which were designated through acts of Congress, and two of which were designated by presidential proclamation (https://utah.sierraclub.org/content/grand-canyon-watershed-national-monument). Formal designation and permanent protection for the GGCHNM will allow for traditional lifeways, continued public access for sightseeing, hiking, wildlife observation, birding, hunting, fishing, and many other activities, including traditional Tribal access and uses. Permanent protection will allow for continued research opportunities and conservation of natural resources such as old growth forests and grasslands, important archaeological sites, native wildlife, springs and wetlands, and wildlife migration routes. The monument would be jointly managed (like Grand Canyon-Parashant National Monument) by the Forest Service and the Bureau of Land Management. The Forest Service currently manages nine national monuments.

Several other federal and state agencies have jurisdiction over some natural and economic resources in the GGCHNM. The USFWS advises other federal agencies regarding protection of threatened and endangered

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species. Federal jurisdiction of the GGCHNM landscape is authorized under the Federal Land Policy and Management Act of 1976. The Kaibab Band of Paiute Indians occupies the largest nearby reservation, which lies just north of the proposed monument. They, the Shivwits and other Southern Paiute bands, as well as, the Hopi and Zuni Tribes and the Navajo Nation claim cultural affiliation with the north side of the landscape. South of Grand Canyon, the Havasupai, Hopi, Hualapai, Navajo, and Zuni claim cultural affiliation. State and private land ownership is limited, with the largest allotment holders in the region being the Grand Canyon Trust on the North Rim and the Babbitt Ranches south of Grand Canyon. The largest nearby communities are Fredonia, Kanab, Colorado City, and Hurricane on the north side, and Tusayan, and Grand Canyon on the south, with the larger cities of St. George, Page, Williams, and Flagstaff lying outside the region (Fig. 1.1).

Weather and Climate

The climate of the GGCHNM is continental and arid, and is variable and often harsh. Low elevations (below 1,000 m) have mean annual temperatures of 17-19° C, with daily minimum and maximum temperatures normally fluctuating from 11-17°C (Sellers et al. 1985; NOAA 2014).

Total annual precipitation from 1976-2012 averaged 244 mm/year at Phantom Ranch, and with 50-100% greater precipitation on the South Rim (2073 m elevation) and 50-300% more on the North Rim (2590 m; Fig. 2.1), as compared to Phantom Ranch. Precipitation varies greatly among years, ranging from 76-380 mm annually at lowest elevations. About 40% of the annual precipitation falls during the summer "monsoon" rainy season between mid-July and early October. Precipitation is greatest about every five to ten years during strong "El Nino" Southern (Pacific) Oscillation events.

Population Density and Socio-economics

There are few private in-holdings, and the GGCHNM region supports a remarkably small human population. The small towns of Tusayan, Grand Canyon, and Jacobs Lake each support only a small number of residents. We estimated the population within the proposed monument boundary by calculating the weighted sum of all the intersecting census block populations. For example, if a census block lay entirely inside the boundary, we added the entire census block population to the cumulative boundary population. If that census block lay only partially inside the boundary, then we multiplied the block population by the proportion of the census block that lay within the boundary. By this logic a census block with 100 individuals, which only lay 70% inside the monument boundary, would only contribute 70 individuals to the total boundary population. Our calculations are presented in Table 2.1 and Fig. 2.2.

This population analysis indicates that approximately 661 individuals reside in the proposed GGCHNM, that 93% of the census blocks in the landscape have no human inhabitants, and that the population has been declining slightly in recent decades (Fig. 2.3).

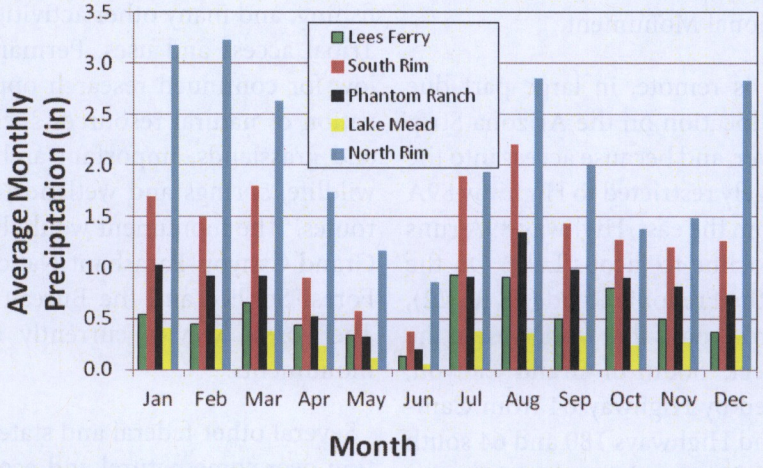

Fig. 2.1: Average monthly precipitation at Lees Ferry, South Rim, Phantom Ranch, Lake Mead, and the North Rim. All stations report a distinctive mid- to late-summer increase in precipitation during the summer monsoons.

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Table 2.1 Human population estimates for the GGCHNM in 1990, 2000, and 2010, along with the number of intersecting census blocks and the total number of census blocks having no reported human population.

Census Year	Estimated Population	Total Number of Intersecting Blocks	Total Number of Intersecting Census Blocks with Population > 0	Proportion of Monument with Census Block Population = 0
1991	708	489	29	69%
2000	701	999	47	88%
2010	661	1178	51	93%

The economics of GGCHNM are driven primarily by outdoor recreation, ranching, guided hunting outfitters, forestry (a salvage lumber mill operates in Fredonia, north of the proposed GGCHNM), federal or state governmental services, and visitor services. The Secretary of the Interior declared a moratorium on new uranium mining in 2012. The limited number of residents in the proposed Monument is overshadowed by the large number of seasonal employees in the lodging and dining services industry, and both are dwarfed by the enormous population of visiting tourists that come to the greater Grand Canyon region each year. Grand Canyon National Park alone attracted nearly 5.5 million visitors in 2015. Several thousand other visitors come to the area annually, either to sight-see, recreate, or hunt on the North Kaibab and, to a lesser extent to visit the Tusayan Ranger District. Thus, overall, the socioeconomics of the GGCHNM area are strongly driven by recreational tourism, and particularly by visitation to Grand Canyon National Park.

A Living Map of the GGCHNM Region

Below is a screen shot of a living map series of the landscape, biota, and forests of the GGCHNM region. These interactive maps are available to the public, and are hosted by ArcGIS Online.

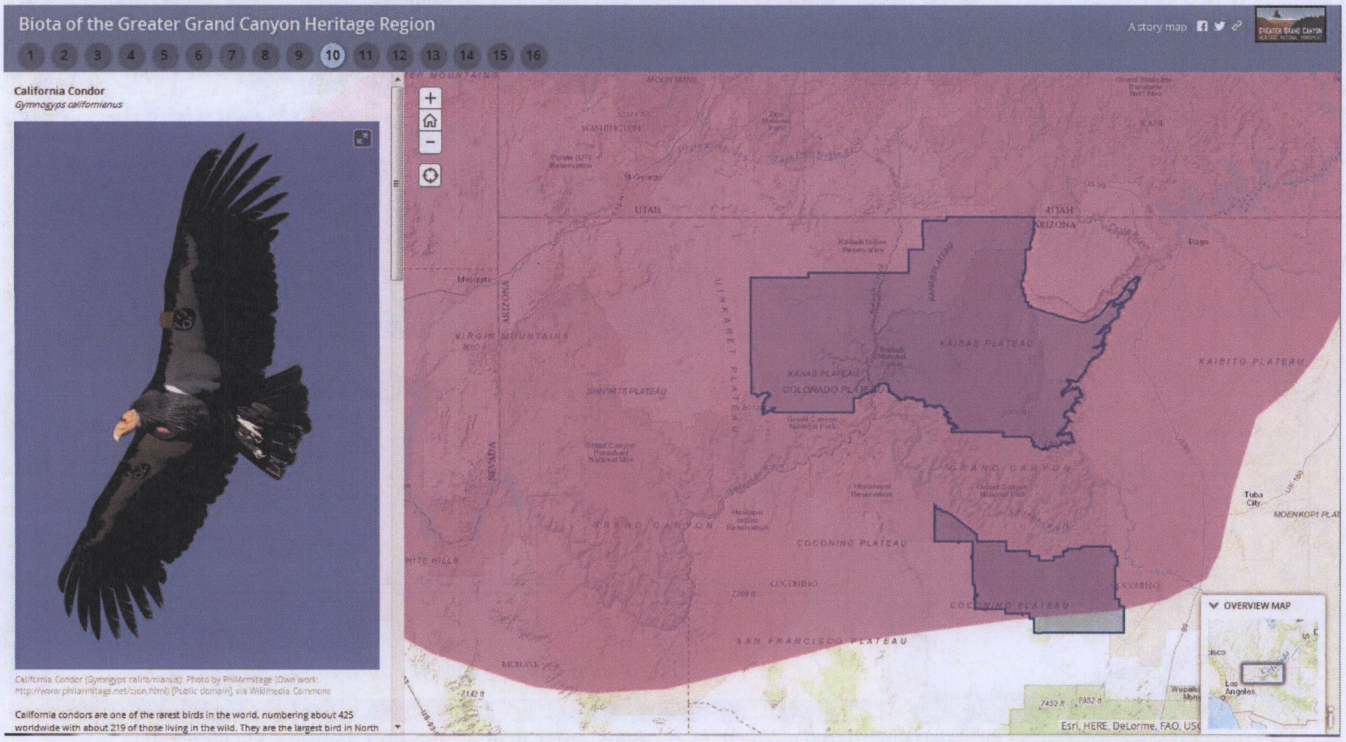

Fig. 2.2 Online interactive maps at http://arcg.is/1VWOXWX, http://arcg.is/1SOmiyj and http://arcg.is/1qZdWMi.

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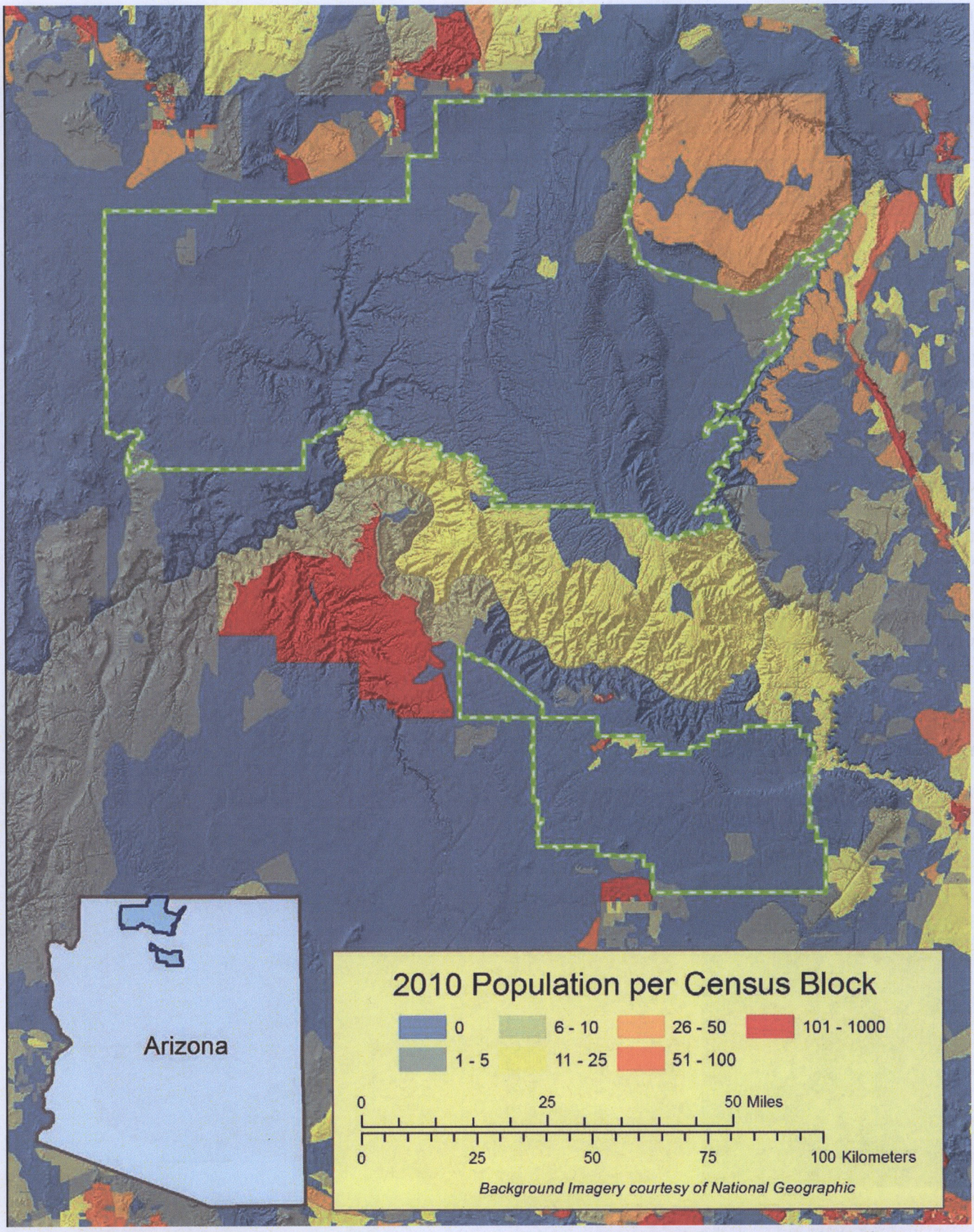

Fig. 2.3 Map of the population of GGCHNM in 2010 (census data coupled with GIS mapping by J. Jenness, SSI Flagstaff).

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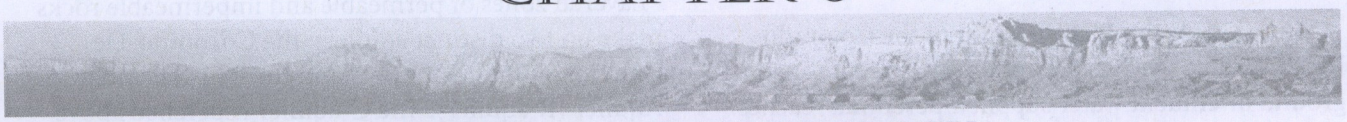
CHAPTER 3



GEOLOGY AND HYDROLOGY

KATIE JUNGHANS AND LARRY STEVENS

INTRODUCTION

The water feature most directly associated with Grand Canyon is the Colorado River, but this well known and highly visible water source derives 5 to 10% of its baseflow from groundwater aquifers lying beneath the proposed GGCHNM. The proposed monument's landscape supports more than 200 springs, where groundwater emerges from the Earth's surface. Springs are remarkably productive, species rich, and economically important ecosystems, but are anomalous among the thousands of hectares of waterless, rocky and dry-forested lands in this arid regions (Shepard 1993). The arid-land springs of the Grand Canyon region support rare desert ecosystems, supply drinking water to Arizona tourist and residents, and have enormous cultural value for the Native American Tribes in and around the region (Ross 2005). The nature of this region's largely karstic aquifers make the region's springs both productive and susceptible to degradation. Springs and their associated watersheds are at risk due to the substantial use of them by humans, the demand for further development in the region, and their susceptibility to degradation. In this chapter we describe the geohydrology of this vast landscape, and present information on how and why it supports such a wide and diverse array of springs.

GEOHYDROLOGY

The North Rim of Grand Canyon National Park is the southern edge of the Kaibab Plateau. The East Kaibab Monocline uplifted the Kaibab Plateau to elevations from 2400 m to 2800 m. The Kaibab Plateau receives an annual average precipitation of 669 mm/year, and is generally about 500 m higher in elevation than the South Rim. It receives approximately 250 mm (10 inches) more precipitation than does the South Rim. Winter storms provide about 60 percent of the Kaibab Plateau's precipitation. Extreme runoff events occur in early and late winter during rain-on-snow events, rapidly recharging the system though faults, sinkholes, and karst aquifers before emerging at springs located below the North Rim (Alpine 2010; Ross 2005). The major springs discharging from the Kaibab Plateau Redwall-Muav aquifer include Angel Spring, Emmett Spring, Roaring Spring, Abyss Spring, Tapeats Spring, Thunder Spring, Vasey's Paradise, Ribbon Falls Spring, and the Fence Fault Springs. Roaring Springs is Grand Canyon National Park's municipal water supply, providing water to over 5.5 million visitors in 2015, as well as to Park and concession employees (Brown 2011). Water derived from the GGCHNM supplies these pristine springs and streams with water, and the streams are among the only remaining pristine watersheds in the Southwest, if not the contiguous 48 states.

Several major structural trends control the regional hydrogeology of the Grand Canyon area. Faults, folds, fractures, and dip angles of bedding plans affect groundwater flow direction. South-sloping topography causes water to flow away from the South Rim, causing emergence of large springs below the North Rim and smaller springs below the South Rim. North-south trending faults exist in the western portion of the region; the Kaibab anticline, the Mesa Butte Fault, and the Havasu-Cataract Syncline dominate in the eastern portion.

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The Kaibab Plateau is one of five plateaus comprising the North Rim of the Grand Canyon (Ross 2005). It occupies approximately 2460 km^2 and is the most elevated portion of the Colorado plateau in northern Arizona (Huntoon 1974). The plateau dips gently westward and is structurally bound to the west by the scarps of the Muav Fault Complex, to the east by the East Kaibab Monocline, to the south by the sheer walls of the Grand Canyon and to the north by a regional dip of the Bright Angel Shale (Huntoon 1970, 1974).

On the Coconino Plateau south of the Colorado River, surface streams are ephemeral except for short ground or effluent water supplied perennial reaches. The Little Colorado River and Havasu Creek are the two largest tributaries which drain to the Colorado River. North Canyon and Kanab Creek are the only two substantial perennial streams on the Kaibab Plateau, but many springs emerge there, and natural perennial and ephemeral ponds abound. Surface streams are scarce because most water infiltrates into the aquifer or is lost though evapotranspiration, except during rare heavy rainfall events. The groundwater recharge potential is high on the Kaibab anticline (Alpine 2010).

Springs locations are strongly controlled by the secondary porosity created by dissolution along fault zones. The rock units which occupy the upper most portion of the Grand Canyon section are the most permeable and allow for vertical movement of groundwater. Almost all discharge occurs in springs over 900 m below the canyon rims where the downward movement of groundwater is prevented by units with relatively less permeability, like the Bright Angel Shale. Groundwater flows laterally atop of this layer with lower permeability and has caused extensive dissolution in the overlying Redwall and Muav Limestones. Groundwater flowing through these layers has caused enlarging of joints and fractures, resulting karst features such as caves, caverns, and solution channels. Groundwater preferentially flows within these features and many of the springs and seeps of the Grand Canyon are located at the contact of these permeable and impermeable layers.

Understanding the flow of groundwater in the study area requires comprehension of the geologic setting, and interaction of tectonic structures, and stratigraphy. Paleozoic aged rocks make up the upper 1200 m of exposed stratigraphy in the canyon. These rocks overlay Precambrian sedimentary rocks which rest upon a basement of metamorphic rocks. The Precambrian rocks have low permeability and are therefore not discussed here because they are not hydrologically significant. The hydrologic properties of the Paleozoic unit may be subdivided into four groups from bottom to top: (1) an impermeable clastic basal unit, (2) carbonates where conductivity is structurally controlled by zones of large permeability, (3) clastic rocks with low hydraulic conductivity, and (4) relatively permeable carbonate and clastic rocks (Huntoon 1974).

Layered zones of permeable and impermeable rocks make up two distinct aquifers: the Coconino-De Chelly Aquifer (C-aquifer) and the Redwall-Muav Aquifer (R-aquifer). The C-aquifer is perched above the R-aquifer and is composed of the Coconino Sandstone (Pc), Permian Toroweap Formation (Pt) and Permian Kaibab Formation (Pk). The R-aquifer is larger, deeper, and is composed of the Cambrian Muav Formation (Cm), Devonian Temple Butte Formation (Dtb), and the Mississippian Redwall Limestone (Mr). The impermeable Bright Angel Shale lies below the R-aquifer, serving as a basal aquitard and key to the R-aquifers existence.

Regional Structure and Stratigraphy

The GGCHNM region is a karstic plateau, with Paleozoic strata exposed near the Colorado River in Grand Canyon (Fig. 3.1; Billingsley 1978, Beus and Morales 1990). This Paleozoic sedimentary sequence of Grand Canyon formations extends through the GGCHNM and it is underlain by high grade metamorphic basement rocks, which are exposed on the floor of Grand Canyon in crystalline inner gorges. These Paleozoic strata extend west to the Grand Wash Cliffs, where they underlie the Miocene to Pliocene aged lake beds, other volcanic flows and colluvium.

The northern GGCHNM lies between the Kanab Plateau on the west and House Rock Valley on the east. The region is structurally bounded by the Hurricane and Toroweap faults (Huntoon 1990): west-facing escarpments formed by these faults are curvilinear and essentially parallel. The areas where the escarpments bend are generally aligned to the northeast, suggesting a relationship to strike-slip faults in the adjacent Basin and Range province. Young, western fault zones along the western edge of the Colorado Plateau link Basin and Range extension to the GGCHNM region. With continued extension and fault movement, they will eventually form ranges and basins, adding to the extent of the Basin and Range province. The Basin and Range/Colorado Plateau transition is of considerable

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interest to modern geologists, and is revealed throughout the GGCHNM region in considerable complexity.

Hydrostratigraphic Units

The R-Aquifer

The strata that underly the GGCHNM region are superbly exposed in Grand Canyon. Here we focus on those that make up the R-aquifer, the largest and most important regional aquifer. The structure of the R-aquifer includes not only the Redwall Limestone and the overlying strata, but also the deeper confining Bright Angel Shale. All are described below. Fig. 3.1 depicts the general stratigraphic column of the strata described below. Schindel (2015) documented characteristics of the Kaibab Plateau and is synthesized below.

Bright Angel Shale

The Bright Angel Shale has a varying and irregular topography, lithology, and sedimentary structure due to its depositional subtidal marine environment where sedimentation varied with a changing high water line. On average, the thickness ranges from 100-120 m. On the eastern portion of the Kaibab Plateau, the Bright Angel Shale intertongues with the overlying Muav formation and ranges in thickness from a few centimeters to 5 m. The main lithological component is illitic clay, with smaller amounts of chlorite, kaolinite, and beds of fine-grained sandstone and siltstone. Striking purple and green color in the Bright Angel Shale are attributed to iron oxide cement, hematitic ooids, and glauconite forming cliffs or steep slopes. As a regional aquiclude, groundwater is forced to flow along top of the Bright Angel Shale and though the overlying R-aquifer. The topography of the R-aquifer is the main control on groundwater flow direction.

Muav Formation

Lying conformably above the Bright Angel Shale is the Muav Formation. Like the Bright Angel Shale, the Muav Formation was also deposited in a subtidal marine environment and due to changing water levels is inconsistent in thickness and lithology. Thinnest in the south and east of the study area, it has an average thickness of approximately 75-115 m. The laminated carbonate units contain intermittent thin beds of dolomite, calcareous mudstone, packstone, and flat pebble conglomerates in sporadic lenses and widespread in thin beds. Groundwater flows along top of the impermeable Bright Angel Shale, preferentially flowing though porous regions of fine-grained sandstone, conglomerates, and fractures. Unfractured rock units are largely impermeable. Groundwater dissolution enhances secondary porosity by creating karst conduits in the carbonate materials parallel and orthogonal to fractures (spaced roughly 0.6-2.4 m apart). Many springs discharge from gushet springs at the contact between the Muav and Bright Angel Shale. The largest springs in Grand Canyon National Park discharge at this contact.

Temple Butte Formation

The Temple Butte Formation was deposited in a westward draining tidal channel. It is present in lenses where channels were eroded into the top of the Mauv Formation. Thinnest in the north and east, it is usually less than 30 m thick though in places it exceeded widths of 120 m. The Temple Butte Formation is composed of limestone, sandstone, sandy dolostone, and dolotsone. Groundwater flows though fractures but, unlike in the Mauv Formation, there is little carbonate dissolution in the Temple Butte Formation and karst features are not present.

Redwall Limestone

This unit is separated into four members: Whitmore Wash Member, Thunder Springs Member, Mooney Falls Member, and the Horseshoe Mesa Member. The Whitmore Wash Member is a fine-grained limestone with 0.6-1 m beds. The Thunder Springs Member is comprised of thin beds 2.5 -10 cm of alternating carbonate and chert and usually appears purple to pink in color. The Mooney Falls Member is predominately limestone beds from 0.6 to 6 m thick, forming much of the sheer Redwall cliffs in Grand Canyon. The Horseshoe Mesa Member is revealed in thin beds of limestone and is discontinuous due to partial erosion prior to deposition of later units.

Laying irregularly above the Muav and Temple Butte Formations is the Redwall Limestone. This unit thickens to the west and forms massive sheer cliffs ranging in thickness from 150 to 250 m in width. Groundwater flow following fractures and faults has resulted in significant karstification in the Redwall Limestone, especially in the lower Mooney Falls and Horseshoe Mesa members. Conduits which discharge large springs in the Redwall Limestone and Muav Formation are oriented in the same direction as fractures in the Redwall Limestone and Muav Formation.

Surprise Canyon Formation

When the Redwall Limestone existed at the surface, erosional features were cut into the Horseshoe Mesa

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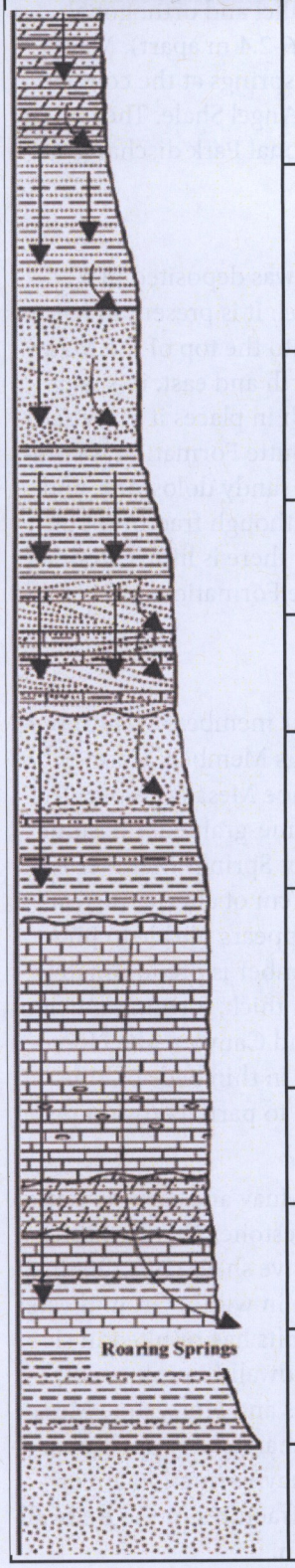
Section	Stratigraphic Name	Thickness (m)	Lithology	Hydrostratigraphy
	P Kaibab Formation	Variable due to erosion	The Harrisburg Member is gypsum dolostone, sandstone, redbeds, chert, and minor limestone. The Fossil Mountain Member is Cherty, fossiliferous limestone and siliciclastic dolomite.	C-AQUIFER Coconino Sandstone is primary water-bearing unit. Upper carbonates have well-developed secondary porosity. From Hart (2002): Transmissivity: 1.34 - 4,690 ft/d Hydraulic Conductivity 0.14 - 81.5 g/d/ft^2 Notes: Kaibab chert beds are impermeable; sandy Kaibab bed K = 2.7 x 10^{-3} g/d/ft^2 (Huntoon 1970). Toroweap massive gypsum K = 0.15 g/d/ft^2 (Huntoon 1970).
	P Toroweap Formation	80-160 m	Fine-to-medium-grained non-crossbedded sandstone inter-bedded with thin beds of evaporites, carbonates, and fine-grained, cross-bedded sandstone.	
	P Coconino Sandstone	90-120 m	Very fine to fine-grained, rounded cross-bedded eolian quartz sandstone with minor amounts of potassium feldspar.	
	P Hermit Formation	100-110 m	Reddish brown siltsone, sandy mudstone, and very fine-grained silty sandstone.	LEAKY AQUITARD Un-jointed rock samples of both Hermit Formation and massive fine-grained sandstone from the Supai Formation are impermeable: groundwater movement occurs along vertical joints and bedding oartings (Huntoon 1970).
	P Esplanade Sandstone	110-110 m	Cross-bedded fine-grained sandstone with thin beds of mudstone and limestone	
	P Wescogame, Manakacha, and Watahomigi Formations	160-170 m	The Wescogame Formation is primarily sandstone. The Manakacha is mixed quartz sandstone and red mudstone. The Watahomigi Formation consists of red mudstone, siltsone, gray limestone, and dolomite.	
	M Redwall Limestone	170-230 m	Overall a thick-bedded, cliff-forming, fine-grained limestone. Horseshoe Mesa Member: thin-bedded, fine-grained light gray limestone. Mooney Falls Member: chiefly pure limestone, with local dolomitization. Thunder Springs Member: alternating thin beds of limestone or dolomite and weathered chert. Whitmore Was Member: fine-grained limestone.	R-AQUIFER Supports base flow to springs >250,000 m^3/d (100 cfs). Muav is the primary aquifer on the Kaibab Plateau. Un-jointed samples of the Redwall, Temple Butte and Muav Fm. are impermeable; groudnwater moves through bedding plane partings, vertical joints or minor porosity of interbedded clastic constituents. Fault zones composed of breccia and fault gouge readily transmit water (Huntoon 1970).
	D Temple Butte Formation	20-70 m	Predominantly dolomite (often sandy) occurring as lenses.	
	C Muav Limestone	80-100 m	Horizontally laminated or structureless carbonate, dolomite and calcereous mudstone, and minor amounts of fine-grained sandstone or siltstone.	
	C Bright Angel Shale	70-80 m	Greenish shale and mudstone, containing thin beds of course-grained sandstone and conglomerate.	AQUITARD
	C Tapeats Sandstone	>100 m	Course-grained sandstone and basal conglomerate with significant quartz cementation.	AQUIFER Minor groundwater flow due to quartz cementation.

Figure 3.1: Generalized hydrostratigraphic column of the North Rim of the Grand Canyon P=Permian, M=Missipian, D=Devonian, C=Cambrian (Modified from Brown 2011).

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member. The Surprise Canyon Formation filled in these features and presently exists in lenticular beds as carbonate layers in these paleovalleys. This formation is likely present within the Kaibab Plateau, but does not exist everywhere in the Grand Canyon (Beus 2003). The fractures of the Redwall Limestone relate to fractures in this formation (Roller 1987). Additionally, the Surprise Canyon Formation is of interest because breccia pipes are associated with it.

Supai Group

The Supai Group lies on top of the Redwall Limestone and is approximately 200-300 m thick, thickening to the east and west. Deposited in a coastal plain under transgression and regression conditions, the resulting lithology and local groundwater flow is varied and complex. This group contains a series of eolian and noneolian carbonate sandstones and red mudstones. The formations, in ascending order, are Watahomigi, Manakacha, Wescogame and Esplanade Formations.

The lower most formation is the Watachomigi Formation, a thinbedded, fine-grained unit composed of dolomite, siltstone, and mudstones. Above the Watachomigi are the Manakacha and Wescogame Formations. These are principally quartz and sandstone beds with thin beds of mudstone and dolomite. Finally, the Esplanade Formation lies atop of the Supai Group as a thick sandstone unit with eolian cross bedding, thickening to the north and west.

Groundwater flowing through these sections of mixed lithologies behaves in irregular ways. Groundwater moves vertically through sand dominated units until it reaches a mudstone or siltstone unit. These less permeable units cause groundwater to travel laterally and lead to discharge on the walls of the canyon. Well-developed joins and faults allow water originating from the top of the Kaibab Plateau to flow rapidly downward. The Supai Formation's mixed lithology, containing intermittent impermeable beds, results in many small perched aquifers which discharge as small springs within this unit.

Hermit Formation

The Hermit Formational is composed of sandstone and sandy mudstone and ranges in thickness from 25 m to 150 m. Beds within this formation are structureless and can be up to 1 m thick. Beds near the base of the unit are predominately sandy, gradually transitioning to mudstone towards the top of the unit. The Hermit Shale is impermeable where unfractured and small springs discharge from these regional aquitards.

Coconino Sandstone

The Coconino Sandstone was deposited in large eolian dunes of variable thickness, ranging from 75-150 m. The beds of this unit are composed of crossbedded fine to medium grained quartz sandstone and range in thickness from 1.5-23 m. The C-aquifer is composed of the Coconino Sandstone, Toroweap Formation and Kaibab Formation. Groundwater moved vertically though theses formation's fractures and laterally across the Hermit Shale aquitard. The C-aquifer lacks karst features and the springs which emerge from it are small compared to the springs of the R-aquifer.

Toroweap Formation

The Toroweap Formation was deposited in fluctuating marine environments, including shallow ocean, tidal flats, sabkhas, and eolian dune fields. This formation reaches a thickness of 150 m in Western Grand Canyon and pinches out entirely to the east (Ross 2005). This variable depositional environment resulted in dramatic changes and complex groundwater flow paths. The Seligman, Brady Canyon, and Woods Ranch Members make up the Toroweap Formation. The Seligman Member is the lower sandstone and evaporate unit. The Brandy Canyon Member is limestone, topped by the evaporate Woods Ranch Member. Some karst development is present in this formation.

Kaibab Formation

The top of the Kaibab Plateau is capped by the heavily karstified materials of the Kaibab Formation. Deposited in a marine environment with fluctuating sea level, this carbonate-siliciclast ramp thins towards the east of the Grand Canyon. Lying atop of the evaporitic gypsum of the Toroweap formation, the Kaibab Formation contains siliciclastic sediments and carbonates mixed with diagenetic dolomites and chert. The two members of the formation are the Fossil Mountain member, which is 75% sandstone or sandy dolostone, and the Harrisburg Member, a mix of gypsum, dolostone, sandstone, redbeds, chert, and minor limestone.

Unfractured chert-containing limestones have no permeability in the Kaibab Plateau. Heavy karstification has created over 2000 identified sink holes on the surface of the formation. This secondary porosity allows for rapid infiltration of precipitation into the subsurface and is responsible for the development of

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uranium-containing breccia pipes. Where the Toroweap and Kaibab Formations are in contact, regions of local impermeability results in discharge of many small springs.

Karstic Setting

Karst is terrain with distinctive hydrology and landforms, and develops in readily soluble materials, such as limestone, marble, and gypsum. Secondary porosity is enhanced by dissolution due to the preferential flow of water along fractures and joints in these rocks. Karst terrains are characterized by extensive underground aquifers, caves, sinkholes, and large springs. Karst carbonate aquifers are highly productive, supplying roughly one-third of the United States with drinking water (Schindel et al. 1996). Karst aquifers with the most extensive secondary porosity are made of dense, massive, pure, and coarsely fractured rocks. Since meteoric waters are the most common cause of dissolution, the majority of karst aquifers are found within tens of meters to the surface elevation (Ford and Williams 2007).

The four modern groundwater basins of the central-eastern part of the Grand Canyon identified by Huntoon (1974, 2000) are the Cataract, Black Mesa, Kaiparowits, and Kaibab Plateau. Figure 3.3 depicts the areas of interest, contained in the Kaibab Plateau, Cataract Basin, and Black Mesa. Kaibab Plateau water discharges from unconfined systems, while Cataract and Black Mesa waters discharge from confined aquifers.

The Cataract groundwater basin drains much of the Coconino Plateau, discharging from the R-aquifer at Havasu Springs. Black Mesa basin is approximately 70,000 km^2, discharging at the Blue Springs complex. These confined aquifers are hypogenic in origin, having formed though a condition called "mixing corrosion" (Ford and Williams 2007). Hypogenic dissolution in the Grand Canyon region occurred below the water table where meteoric waters and deep, upwelling waters mix. Groundwater tends to flow relatively slowly though these isolated pockets of porosity which, unlike vadose karst, lack integrated conduit systems. As a

Figure 3.2: View of stratigraphic layers visible from Gunsight Point. Kanab Creek flows through this portion of the Canyon. Image by Kristen M. Caldon.

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result, springs in these basins tend to have small and consistent discharge.

Due to the Kaibab Plateau's elevation, it receives significantly more precipitation than the other basins. Most of this precipitation drains to five major vadose springs where the plateau is dissected by the canyon. This unconfined aquifer is rapidly recharged though a number of sinkholes, then usually descends to the base of the Muav where it discharges from unconfined caves (Hill 2010). The generally unconfined nature of Kaibab Plateau aquifers are subject to seasonal variation in groundwater supply. Snow melt and heavy precipitation during spring cause groundwater mounds to develop above confining layers and provide increased discharge to springs. Groundwater mounds dissipate during the dry summer and fall season, resulting in significantly diminished or ceased spring and seep discharges (Huntoon 1980).

These water bearing units have been uplifted above the regional groundwater base level as the Colorado River cut down to form the Grand Canyon. The surrounding area is well drained due to the plateau's high elevation and topographic isolation caused by the deep canyon cutting. Therefore, most of the regions discharged water leave the plateau through down dip springs and seeps along the walls of the Grand Canyon (Huntoon 1980). The sedimentary beds in the Grand Canyon dip slightly to the south causing a majority of the R-aquifer's regional groundwater to discharge on the North Rim at the base of the confining Muav Formation though large conduit-driven springs (Huntoon 1995).

The conduits in the R-aquifer can rapidly transport large volumes of water with minimal duration of groundwater storage (Huntoon 2000). During severe rain events, flood waters travel several kilometers between the surface of the plateau and the springs in a matter of days. Comparatively, waters in Cataract Basin and Black Mesa Basin take hundreds to thousands of years to travel similar distances (Huntoon 1980).

The Kaibab Plateau sustains high groundwater recharge rates for several reasons. Standing more than 800 m higher than its surroundings, its physical setting creates an orographic barrier. The associated cooler temperatures and higher precipitation allow for lower evaporation rates compared to its desert surroundings. The Kaibab Plateau has no surface streams despite the lowest ratio between potential evaporation and actual precipitation of any portion of the Grand Canyon (Figs. 3.4, Fig. 3.5). This is possible due to the highly porous units which compose the upper portion of the plateau and allow great opportunity for groundwater's vertical migration and recharge of aquifer systems (Huntoon 1980).

Except for Havasu Springs, springs on the South Rim are generally smaller because recharge rates over the area are lower and groundwater flows southward. Grand Canyon National Park relies solely on the North Rim's Roaring Springs its water source. Despite the importance of this water source, the understanding of groundwater's behavior in the R-aquifer is deficient because of its depth, complexity of flow, lack of wells, and remoteness of discharge points (Schindel 2015).

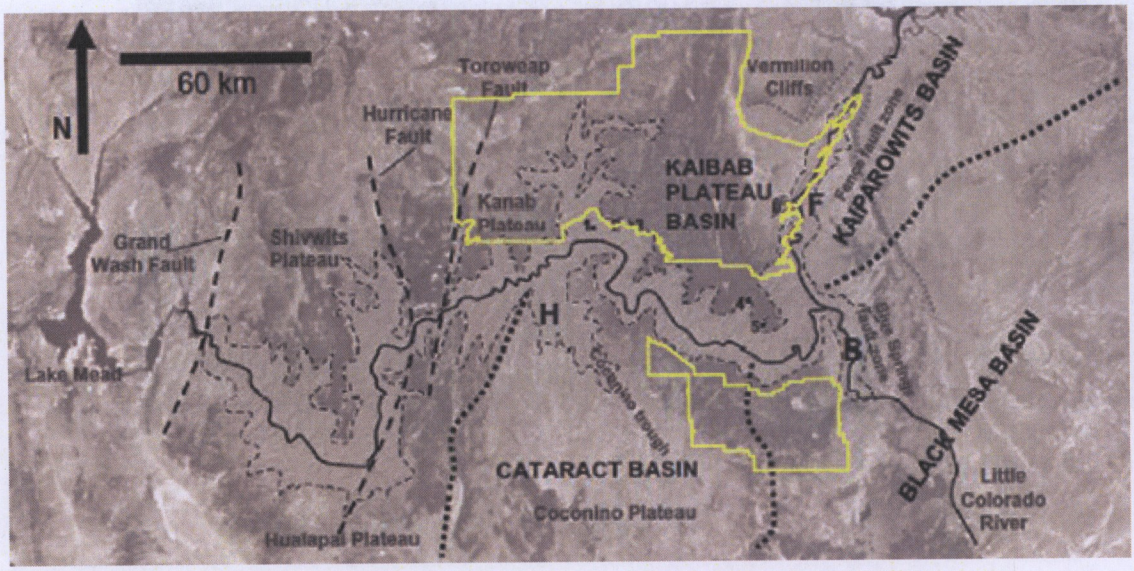

Figure 3.3: Regional geologic structure of the GGCHNM region (after Hill and Polyak 2010).

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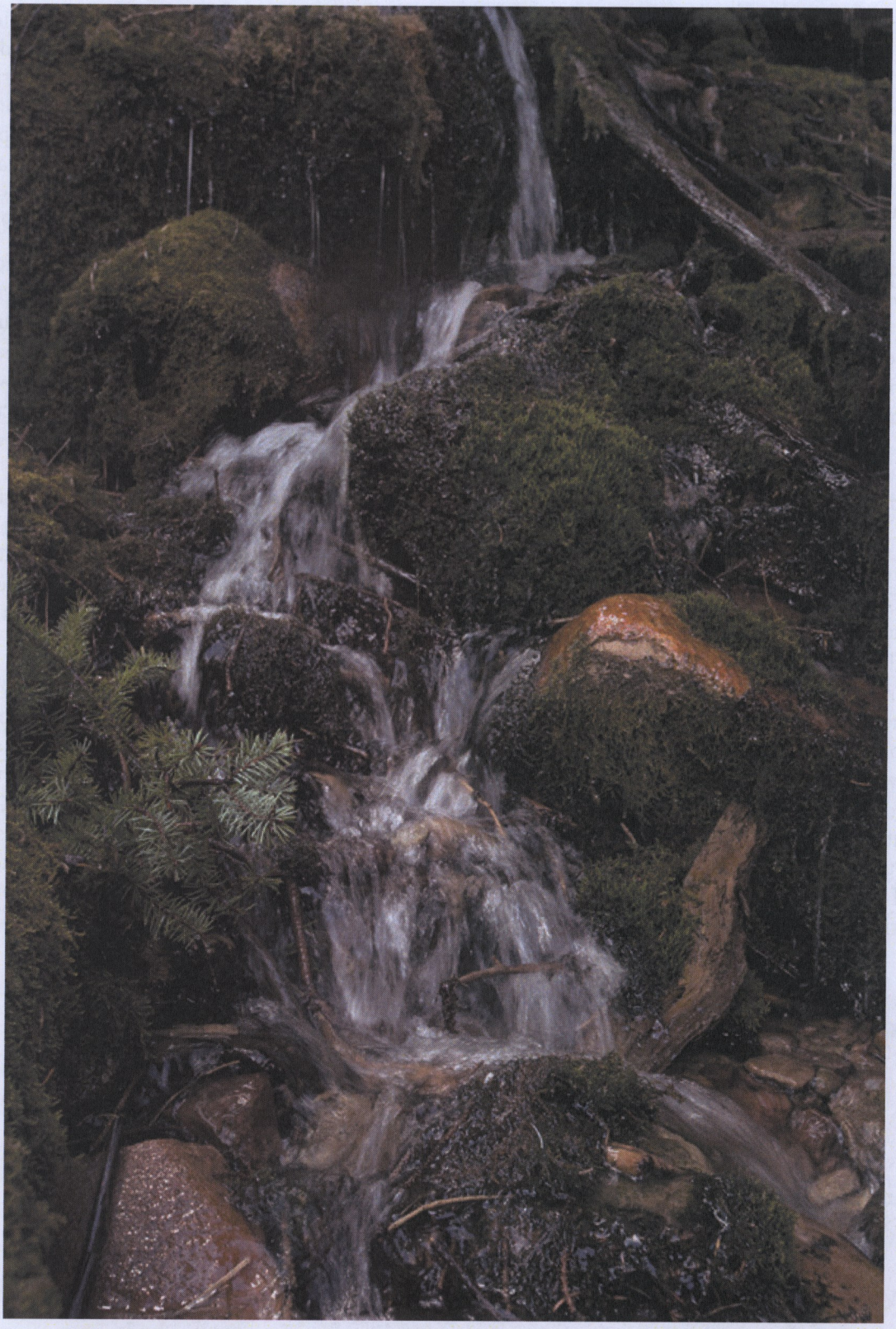

Figure 3.4 North Canyon Spring on the North Rim of the Grand Canyon. The spring emerges from the Coconino Formation. Photo by Kristen M. Caldon.

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Figure 3.5 A Coconino Sandstone wall overhanging Castle Spring in Kaibab National Forest. Water seeps from beneath the stone wall and channelizes into the terrace below. The site could have supported prehistoric peoples due to its solar radiation budget. In more recent years, the walls have been heavily graffitied, leading to a restoration of the site between 2013 and 2015. Image by Molly Joyce.

VULNERABILITY OF KARST AQUIFERS

Karst environments are particularly vulnerable to human impacts compared to other natural settings due to the nature of their hydrologic properties. Karst hydrologic systems are capable of transporting surface water efficiently downward into a numerous, widely spread conduits with geometries that are rarely understood. Water enters the system essentially unfiltered because limestone soils are generally thin, conduits have large dimensions, and rapid transmission of water may limit filtering and die-off of pathogenic organisms.

Although surficial containments and potentially radioactive ore bodies exist 150-350 m above the regional R-aquifer, these contaminates can reach perched groundwater at detrimentally high concentrations (Alpine 2010). Management of these complex and concealed systems requires specialist knowledge and once damaged can be extremely difficult to restore. European Union countries have recently made considerable effort to protect the quality and quantity of karst systems on the European continent (Ford and Williams 2007).

MINERAL RESOURCES

Potentially valuable minerals are rare on the southern Colorado Plateau, occurring in two types of settings (Billingsley et al. 1997): 1) Breccia pipes that form through collapse of limestone solution chambers and contain uranium, and sometimes copper and small amounts of silver, and gold; and 2) Small copper deposits that occur in chert brecchias within the Harrisburg Member of the Permian Kaibab Limestone. That limited amounts of copper were extracted historically from the region indicates that copper is of little economic importance in the region (G. Haxel, written communication). Other minerals of minor economic interest include gypsum, sand and gravel, flagstone, cinders, gas or oil, asbestos, and ornate minerals. However, the remoteness of the region and the condition of existing roads is an obstacle to profitable extraction. While most mineral resources in the region are of minor economic importance, the same cannot be said about uranium.

Uranium is found in the more than 1,300 solution-collapse breccia pipes on both rims of Grand Canyon (Finch no date). These 30-175 m-wide vertical pipes are filled with ceiling spall and broken rock. Breccia pipes initially formed as solution caverns collapsed in Mississippian-age Redwall Limestone. The ceiling collapses propagated the pipes upward 1,000 m or more through overlying Paleozoic and Mesozoic strata, up to the late Triassic lower Chinle Formation. Collapse of the cavern ceiling continues upward into overlaying formations over time, forming rubble-filled columns. The porous breccia pipe materials may become cemented with a variety of minerals, brought in by geothermal water. The uranium ore in GGCHNM brecchia pipes is Mesozoic in age, approximately 200-260 million years old, and was deposited at geothermal temperatures of 80-173°C (Wenrich 1985, Ludwig and Simmons 1988, Wenrich and Sulphin 1988).

Some of the highest grade uranium ore in the United States is located in the many mineralized breccia pipes scattered across the Grand Canyon region. Mining of these breccia pipes began in the 1950s and continued intermittently though the early 1990s, mostly in the Kanab Creek drainage found within the proposed GGCHNM boundary. Nearly 8,500 claims for uranium have been filed, and 1,500 exploratory wells have been drilled. At present there are four mining companies

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active in the region and the three active uranium mines (Arizona 1, Canyon Mine, and Pinenut Mine) (https://miningawareness.wordpress.com/2015/06/07/concerns-with-uranium-mining-in-the-grand-canyon-region-usgs/).

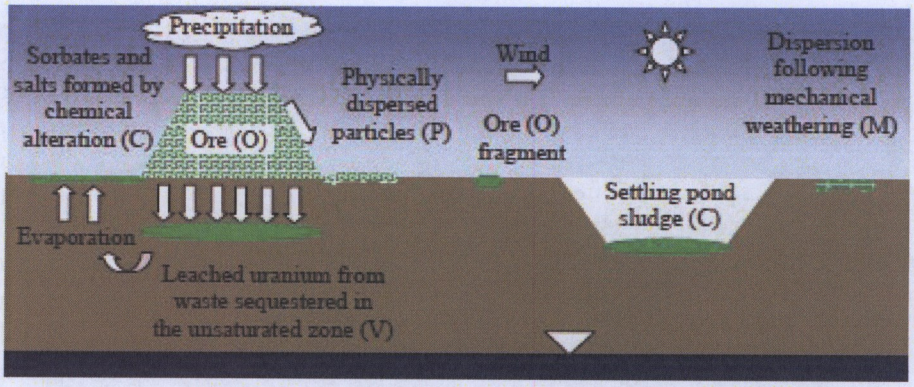

Figure 3.6 Modes of dispersal of stored ore and mined waste at mine sites (Alpine 2010).

Due to the great depth of the uranium deposits, breccia pipe mines in northern Arizona since the 1980s have been underground operations. Employing subsurface tunnels and access shafts, rock is crushed to fist-sized pieces, brought to the surface in vertical shaft mines, and transported to milling operations for mineral extraction and recovery. Large quantities of waste materials are generated though uranium mining because the ratio of usable uranium to mined rock is low, ranging from tenths of a percent to single digit percentages. Waste materials associated with conventional mining are characterized by low-level radiation, heavy metals, and other inorganic and organic materials.

Uranium mining in northern Arizona left waste rock and low-grade ore exposed at the surface before stricter environmental regulations in the mid-1970s. Remobilization of minerals and radionuclides in these materials allowed for contamination of surface water and groundwater (Fig. 3.6). The great number and extent of breccia piping increases the potential for contamination in karst hydrologic systems, along with the accelerated erosion of mineral deposits associated with mining development, and the presence of uranium and arsenic associated with mined sites caused concern about environmental degradation. Features such as fractures, faults, sinkholes, and breccia pipes provide pathways for downward migration of surface waters and groundwater. This process that dissolves trace elements and radionuclides in mineralized zones, transporting them deeper in the subsurface and into groundwater supplies.

In 2009, the U.S. Geologic Survey conducted an assessment of historical and current water-chemistry data for wells, springs, and streams in the Grand Canyon region. In that study, low levels of uranium were detected in almost all natural water samples (95 percent) and historical water-quality data showed that dissolved uranium in areas with and without mining were generally similar - representing the abundance of natural dissolution and erosion of ore deposits in the area. Samples from 15 springs and 5 wells contained uranium concentrations exceeding the Environmental Protection Agencies maximum drinking water standard and were found to be related to natural processes, mining, or a combination of both factors. The groundwater-chemistry relations between concentrations and mining conditions were found to be limited and inconclusive.

Contamination at the surface showed a stronger correlation to mining practices and varied according to physiographic setting, length of time waste materials were exposed at the surface, and effectiveness of reclamation at the site. Wind dispersion of dust caused contamination of soils beyond the mining sites. Surface water spread contaminates across mining sites and beyond into channels and floodplains of stream channels. Experimental simulations of leaching from waste-rock samples found very high uranium concentrations (several hundred to several thousand parts per billion) in some cases.

Contaminates found in natural settings are subject to very large dilution as they mix with their surroundings. The inconclusive groundwater-chemistry results may be a consequence of the travel distance and duration water experiences in this region. Groundwater travels downward approximately 900 m in the Grand Canyon before being discharged, allowing for adequate time for dissolution to occur. Wind and surficial water driven contaminates have a more limited range of dispersion and were thus found more closely associated with mining operations. Though naturally occurring uranium is found throughout the Grand Canyon, the study by the USGS provides evidence that mining practices enhance the susceptibility of increasing environmental uranium contamination.

Threats created public concern included the effects of industrial operations on air, groundwater, and natural

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resources in the Grand Canyon region, especially from increased truck traffic and other operations. In 2012 Secretary of the Interior Ken Salazar announced a 20-year withdrawal of 1.07 million acres of federal land from uranium mining (Daly 2012), a decision that was supported by a Federal District Court in 2014. However, neither the announcement nor the subsequent legal contest reduce the number of claims or prevent existing mining operations from continuing. For example, the Canadian mining company Energy Fuels Resources has been approved to reopen its uranium mining operations at Old Canyon Mine, just 10 km south of the South Rim of Grand Canyon.

RECENT PALEOARCHEOLOGY AND CLIMATE CHANGE

Sediment cores and pollen records over the past 13,500 years were obtained from Fracas Lake (2,518 m elevation) and Bear Lake (2,778 m elevation; Weng and Jackson 1999). They reported that before about 13,000 years ago, the lower elevations of the Plateau were covered by spruce woodland, while upper elevations were covered by tundra. At the conclusion of the Pleistocene epoch 12,900 years ago, Engelmann spruce and subalpine fir forests expanded, but ponderosa pine did not begin to expand into the lower elevations until 11,000 years ago and did not reach the upper elevations until after 9,500 years ago. Spruce, subalpine fir, and ponderosa pine remain in the area, although Engelmann spruce reinvaded the upper elevations after 4,000 yr ago (Fig. 3.7). Based on charcoal in the pond sediments, Weng and Jackson (1999) concluded that forest fires probably facilitated ponderosa pine establishment at higher elevations on the Plateau.

Altschul and Fairley (1989) reviewed the literature on Pleistocene/Holocene paleoenvironmental change on the southern Colorado Plateau, including the Arizona Strip. The arrival of prehistoric humans and Pleistocene/Holocene climate changes are considered the causes of the extinction of Pleistocene megafauna in this region, including elephants, camelids, Harrington's mountain goat, Shasta ground sloth, numerous large predators, and giant *Teratornis* (quasi-raptorial birds). Analyses of packrat middens, plant distribution and general atmospheric circulation models indicated that the jet stream was displaced to the south during the Wisconsin Glacial phase (prior to 12,000 years before present, ybp; Mitchell 1976, Betancourt 1984). Increased frequency of winter storms has likely increased winter precipitation, decreased summer precipitation, and resulted in warmer summer temperatures.

Rapid vegetation change occurred from 12,000 to 8,000 years ago, as boreal spruce, limber pine and dwarf juniper disappeared from lower elevations and species ranges retracted to the upper elevations of the North Kaibab and the San Francisco Peaks. Data from several sites on the southern Colorado Plateau indicate that ponderosa pine, gamble oak, one-seed juniper and, later, pinyon pine, arrived in the region between 10,000 and 7,200 years ago. The present summer monsoon boundary formed during this period, although the present vegetation composition was not fully in place until 2,000 to 3,000 years ago. Geomorphic, palynological and dendrochronological data suggest that droughts were relatively common, with 10-30 yr dry periods from the early AD 200s to the early 900s, increased precipitation from the early 900s to AD 1210, a return to erratic droughts to AD 1500, generally moist conditions from AD 1500 to the mid 1800s, and a return to erratic droughts through the 20th century. Generally, periods of higher moisture availability are associated with pulses of human agricultural activity. While the information assembled is generally applicable to the Kaibab Plateau, much remains to be learned of the region in relation to this general model.

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Figure 3.7 A view of Sieber Point from Saddle Mountain. Photo by Kristen M. Caldon.

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CHAPTER 4

BIOLOGY AND ECOLOGY

LARRY STEVENS

Biomes and Ecosystems

The life zones described by C. Hart Merriam (1893, 1894) in and around the San Francisco Peaks and Grand Canyon regions present a snapshot-in-time of vegetation responses to a highly dynamic and changing climate. In the GGCHNM region, these life zones include, from low to high elevation: the Lower Sonoran desert-scrub; the Great Basin conifer woodland pinyon pine, juniper, and big sagebrush Upper Sonoran Zone; the ponderosa pine-dominated Transition Zone; the montane mixed conifer and aspen Canadian Zone; and the subalpine conifer forest Hudsonian Zone. The GGCHNM does not reach sufficiently low elevations for Sonoran-Mohavean desert shrublands, nor high enough elevations for arctic alpine habitat. Nonetheless, the region supports a tremendous range and variety of vegetation types, which form the ecosystems found in the landscape (Brown 1994). Extensive research on Pleistocene and Recent paleontology in the region has revealed dramatic and rapid responses of vegetation to changing climate, particularly since the end of the Pleistocene epoch (e.g., Martin and Klein 1984; Phillips et al. 1987).

Vegetation

Overview

The vegetation of the GGCHNM region has been the subject of scientific investigations since prior to the turn of the 20th Century (Merriam 1894), and its ecotones and vegetation processes have been the subject of additional botanical studies (e.g., Rasmussen 1941, Harper and Reveal 1977, Meyer 1978, Brown 1994, McLaughlin and Bowers 1998, Moore et al. 1999). This region lies at the interface between the Mojave, Sonoran, Great Basin Desert biomes with the Plateau Rocky Mountain biome. Brown (1994) and more recently McLaughlin and Bowers (1998) described the floristic provinces of the Southwest, identifying the GGCHNM region as supporting elements of all of the above vegetation assemblages (Fig. 4.1). The interactions among these biomes and floristic provinces over time has resulted in the co-occurrence of at least 1,500 plant taxa, with additional species likely to be detected with more detailed inventories. The region is dominated by a few, rather widely distributed vegetation types, including grasslands, pinyon-juniper woodlands, ponderosa pine forest, aspen, and mixed conifer forests. Although low elevations are sparsely vegetated, canyon slopes and few springs support lush riparian vegetation, and forests and large meadows dominate the upper elevations. Some of the GGCHNM plant assemblages are rare, unusual or unique and reflect long-term changes in climate and the region's unique position and biogeographic history.

Desert Vegetation

The Warm-Temperate Mohave Desertscrub assemblage occurs in lower elevations in Kanab Creek. That drainage supports Mormon tea (*Ephedra* spp.), many desert grass species, saltbush (*Atriplex* spp.), and various cacti and other shrubs. Semi-desert Warm-Temperate Grassland vegetation occurs in patches, particularly on north-facing slopes, and that in the Kanab

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Creek drainage. This vegetation type was previously subject to intensive livestock grazing.

Pinyon-Juniper Habitat

The middle elevations of GGCHNM are dominated by junipers and pinyon pines (*Pinus monophylla* and *P. edulis*), which exist in vast woodlands up to elevations of approximately 2,000 m and make up much of the land coverage (Merkle 1952, Holland et al. 1979, Callison and Brotherson 1985, Phillips et al. 1987). The Kanab and northern Coconino Plateaus are dominated by a one-seed and Utah juniper (*Juniperus utahensis* and *J. osteosperma*), as well as pinyon pines (*Pinus spp.*), barbery (*Berberis spp.*). The understory beneath pinyon-juniper stands is typically sparse, with sagebrush (*Artemesia spp.*) and scrub oak (*Quercus turbinella*), which is more drought tolerant than its higher elevation counterpart, Gambel's oak (*Quercus gambelii*; Neilson and Wullstein 1985). Snakeweed (*Gutierrezia sarothrae*), banana yucca (*Yucca baccata*) and various cacti also are common (Dutton 1882, Hoffmeister and Durham 1971). These vegetation assemblages are part of the Cold-Temperate Grasslands, Desertlands, and Scrublands described in Brown (1994).

Gambel's Oak Shrublands and Chaparral Habitat

South-facing slopes on the plateaus and on canyon sides are covered in mixed shrub-, woodland, and chapparal flora, particularly including New Mexican honey locust (*Robinia neomexicana*), manzanita (*Arctostaphylos pungens*), mountain mahogany (*Cercocarpus montanus*), and Gamble's oak (*Quercus gambelii*). The latter species forms large stands on sloping colluvial surfaces and strongly dominates upper elevation hillsides. High desert chaparral covers a small percentage of the GGCHNM escarpment edges, and also is part of the Cold-Temperate Scrublands habitat described in Brown (1994).

Sagebrush Habitat

Large stands of bigtooth sagebrush (*Artemesia tridentata*) occur in natural and chained open areas on the GGCHNM region. Snakeweed is abundant, particularly on grazing-disturbed uplands, and rabbitbrush (*Chrysothamnus nauseosus*) is also common. Great Basin Sagebrush Desertscrub and Plains Grassland make up a minor percentage of the regional vegetation cover (Holland et al. 1979). Sagebrush Meadow habitat dominated by big sagebrush (*Artemesia tridentata*) and other shrubs Snakeweed (*Gutierrezia sarothrae*), banana yucca (*Yucca baccata*) and various cacti also are common (Dutton 1882, Hoffmeister and Durham 1971). This vegetation is part of the Cold-Temperate Grasslands, Desertlands, and Scrublands described in Brown (1994).

Ponderosa Pine Habitat

Ponderosa pine (*Pinus ponderosa*) is a widespread western pine that occurs broadly across the GGCHNM at higher elevations, covering a large portion of the uplands. The upper elevation vegetation of the proposed monument is similar to that in the Rocky Mountains (Rasmussen 1941, Merkle 1962). In addition to its occurrence across the North Kaibab, ponderosa pine often occurs as riparian "stringers" in the small drainages that flow off the plateau: water courses in the upper elevation pinyon pine/juniper habitats are marked by long narrow stands of ponderosa pines. The understory beneath ponderosa pine here includes a typically sparse grass, herb, and mixed shrub assemblage, with Gambel's oak, sagebrush, mountain mahogany, and various grasses. Ponderosa pine has been in the region for approximately 10,400 years (Moore et al. 1999).

Mixed Conifer Vegetation

The highest elevations of the GGCHNM exceed 2,700 m, and are dominated by mixed conifer forest, with many open prairie-like meadows. Common high elevation trees include aspen (*Populus tremuloides*), Englemann spruce (*Picea engelmannii*), and white fir (*Abies concolor*).

Riparian Vegetation

Riparian habitats make up <0.5% of the landscape area in the Grand Canyon region, but support >35% of the plant species that exist there (Stevens and Ayers 2002). Springs make up <0.01% of the overall landscape, but support >10% of the region's plant species. Therefore, riparian areas, particularly those related to springs are disproportionately rich in species.

The general absence of water precludes development of much deciduous or riparian woody vegetation in this region; however, desert Warm-Temperate Riparian Wetlands occur along low elevation creeks and at springs. Those habitats are dominated by sparse Fremont cottonwood (*Populus fremontii*), Goodding's and coyote willow (*Salix gooddingii* and *S. exigua*), but gallery stands of cottonwood or willow do not presently exist on the proposed Monument. Rather, these Mojave Strandline habitats are more strongly dominated by var-

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ious graminoids and herbs, and with peripheral rubber rabbitbrush (*Ericameria nauseosus*), lemonade-berry (*Rhus trilobata*), catclaw (*Acacia greggii*), and other desert grass and shrub species (Brown 1994). Higher elevations support wet meadows, a few perennial streams, and many springs, with aquatic and phreatophytic growth.

Springs vegetation stands out strongly against the non-riparian upland habitats. For example, Big Springs at the Big Springs Ranger Station on the west side of the Kaibab Plateau is a large, cold-water gushet that pours out of the base of the Coconino Sandstone. It supports a lush stand of Gambel's oak, stinging nettle (*Urtica dioica*), and abundant moss, wetland and aquatic plant life. Other GGCHNM regional springs, such as North Canyon Springs, support high concentrations of endemic species of insects and plants. Due to their profuse vegetation and the occurrence of rare species, springs are recognized by the Kaibab National Forest as habitats worthy of special consideration (U.S. Forest Service 2014). However, many springs in GGCHNM have been developed and their water diverted for livestock or human consumption.

Ledbetter et al. (in press) indicate that nearly 200 springs have been documented on the area of the proposed Monument. These Forest springs are known from historical accounts and were hydrologically inventoried during a synoptic study by the Grand Canyon Wildlands Council (2002) and the Springs Stewardship Institute (http://springsdata.org). These studies document information on discharge, vegetation, and human use of springs, >75% of which have been largely or completely developed for human use and livestock watering. However, there are many unmapped springs in the region, particularly those emerging from the base of the Coconino Sandstone in the Kanab Creek drainage. Some of those springs are virtually pristine, and support naturally high densities of wetland plants and invertebrates. These springs have direct hydrologic connections to the aquifers of the North Kaibab. In contrast, there is only one known dry springs ecosystem on the southern portion of the GGCHNM.

The biota of GGCHNM springs has been initially described (Clover and Jotter 1944, Grand Canyon Wildlands Council 2002, Ledbetter et. al. in press). Upper elevation GGCHNM springs support several rare, endemic invertebrates, including several elmid beetles, a unique *Nebria* ground beetle, and a unique stonefly species (presently being described by Dr. Richard Baumann, BYU Monte L. Bean Museum), as well as a remarkable array of wetland wildflowers, including a rare, giant-flowered columbine (near *Aquilegia cerulea*). Lower elevation springs supports cardinal flower (*Lobelia cardinalis*), maidenhair fern (*Adiantum capillus-veneris*), redbud trees (*Cercis occidentalis*), and a host of other wetland species.

Management concerns exist over grazing and the invasion of non-native plant species at springs because these habitats host great biological diversity and are fragile and particularly susceptible to invasion (Stevens and Ayers 2002). Castle Spring on North Kaibab Ranger District was used for more than a century for livestock water. It was recently rehabilitated by a joint US Forest Service, Native American, and NGO team to restore its ecological integrity. Although the geomorphic reconstruction of the site was highly successful, management of the site continues to be challenged by a legacy of non-native weed species invasions. Successful removal of non-native plant species from springs has been accomplished at some springs in the region (Burke et al. 2015), but such efforts are time- and labor-intensive. Both the U.S. Forest Service and the Bureau of Land Management have fenced off springs to reduce livestock grazing, but more stewardship is needed to reduce landscape and resource damage due to introduced hybrid Bison grazing impacts on springs, spring-fed ponds, and fens.

Rare Plants

As Charles Darwin noted, most species are rare, so it is not surprising that a rather large number of plant species in the proposed GGCHNM are rare. However, some of those species are endemic to the region, and warrant special mention (Table 4.1). Prominent among those are the Kaibab Bigelow's Tanseyaster (Asteraceae: *Dieteria bigelovii* var. mucronata), Kaibab bladderpod (Brassicaceae: *Physaria kaibabensis*), listed Fickeisen Plains Cactus (Cactaceae: *Pediocactus peeblesianus* var. *fickeiseniae*), Kaibab Pediocactus (Cactaceae: *Pediocactus paradinei*), Kaibab Mexican Skullcap (Lamiaceae *Scutellaria potosina* var. *kaibabensis*), Kaibab Indian Paintbrush (Orobanchaceae: *Castilleja kaibabensis*), and Kaibab Wright's Birdbeak (Orobanchaceae: *Cordylanthus wrightii* subsp. *kaibabensis*). Of these, only the Fickeisen Plains cactus is federally endangered (http://www.fws.gov/southwest/es/arizona/Documents/Redbook/Fickeisen_Plains_Cactus_RB.pdf).

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Table 4.1: Rare, restricted, or endemic plants of the proposed GGCHNM (list compiled by Glenn Rink, Northern Arizona University Department of Biological Sciences, Flagstaff).

Plant Family and Species Name	Distribution Notes
Apiaceae Pteryxia petraea	endemic to GRCA region
Asteraceae Chrysothamnus molestus	endemic to N AZ
Asteraceae Dieteria bigelovii var. mucronata	endemic to the KP
Asteraceae Ericameria arizonica	endemic to rims of GC
Asteraceae Erigeron lobatus	nearly endemic to AZ
Asteraceae Hesperodoria salicina	GC endemic
Asteraceae Hesperodoria scopulorum	endemic to S CP
Asteraceae Hymenoxys subintegra	probably a KP endemic
Asteraceae Packera quercetorum	AZ endemic
Asteraceae Perityle ciliata	early Jones collection
Boraginaceae Cryptantha atwoodii	endemic to the GC area
Boraginaceae Cryptantha semiglabra	endemic to AZ/UT border
Boraginaceae Ellisia sp.	Goodding specimen at ASC
Boraginaceae Phacelia cephalotes	nearly endemic to Strip and SW Utah
Boraginaceae Phacelia constancei	endemic to southern CP
Boraginaceae Phacelia furnissii	endemic to the AZ Strip
Boraginaceae Phacelia hughesii	endemic to the AZ Strip
Boraginaceae Phacelia pulchella var. atwoodii	endemic to AZ Strip and SW Utah
Boraginaceae Phacelia pulchella var. pulchella	endemic to AZ Strip and SW Utah
Brassicaceae Physaria kaibabensis	KP endemic
Cactaceae Coryphantha missouriensis	probably endemic to N AZ
Cactaceae Pediocactus bradyi	endemic to Marble Canyon area
Cactaceae Pediocactus paradinei	endemic to east Kaibab momocline?
Cactaceae Pediocactus peeblesianus var. fickeiseniae	endemic to N AZ
Cactaceae Sclerocactus sileri	endemic to HR Valley/Vermillion Cliffs
Cyperaceae Carex curatorum	endemic to the CP
Cyperaceae Fimbristylis	Goodding specimen at ASC
Euphorbiaceae Euphorbia aaron-rossii	Grand Canyon/Glen Canyon endemic
Fabaceae Astragalus atwoodii	endemic to AZ Strip
Fabaceae Astragalus beathii	endemic to Cameron area, extends into GGCHNM?
Fabaceae Astragalus castaneiformis	N AZ endemic
Fabaceae Astragalus cremnophylax var. hevronii	GC endemic

Plant Family and Species Name	Distribution Notes
Fabaceae Astragalus cremnophylax var. myriorrhaphis	GCendemic
Fabaceae Astragalus episcopus var. episcopus	endemic to MArble Canyon area/ VC
Fabaceae Astragalus episcopus var. lancearius	endemic to N AZ and S UT
Fabaceae Astragalus humistratus var. tenerrimus	probably endemic to GC rims
Fabaceae Astragalus lancearius	endemic to N AZ and S UT
Fabaceae Astragalus mokiacensis	endemic to N AZ and S NV
Fabaceae Astragalus pinonis var. atwoodii	endemic to AZ Strip
Fabaceae Astragalus preussii var. latus	endemic to N AZ and S UT
Fabaceae Astragalus straturensis	endemic to N AZ and S UT
Fabaceae Astragalus subcinereus	endemic to N AZ and S UT
Fabaceae Astragalus zionis	endemic to N AZ and S UT
Fabaceae Oxytropis oreophila	apparently a CP endemic
Grossulariaceae Ribes quercetorum	odd outlier from CA, but valid specimen
Lamiaceae Salvia davidsonii	NW AZ endemic
Lamiaceae Scutellaria potosina var. kaibabensis	East Kaibab monocline endemic
Onagraceae Camissonia exilis	endemic to N AZ and S UT
Onagraceae Camissonia gouldii	endemic to N AZ
Onagraceae Camissonia multijuga	endemic to S UT, S NV, and N AZ
Onagraceae Camissonia parryi	endemic to N AZ and S UT
Onagraceae Camissonia specuicola	endemic to GC region
Onagraceae Oenothera cavernae	nearly endemic to GC region
Orobanchaceae Castilleja kaibabensis	endemic to KP
Orobanchaceae Cordylanthus wrightii subsp. kaibabensis	endemic to KP
Plantaginaceae Penstemon laevis	endemic to N AZ and S UT
Plantaginaceae Penstemon linarioides var. viridis	AZ endemic
Plantaginaceae Penstemon pseudoputus	endemic to AZ Strip and S UT
Poaceae Imperata brevifolia	GC is an important refuge for this grass, which probably used to be more common and widespread
Polygonaceae Eriogonum corymbosum var. thompsoniae	endemic to AZ Strip and S UT
Polygonaceae Eriogonum darrovii	nearly endemic to the AZ Strip
Polygonaceae Eriogonum heermannii var. apachense	endemic to AZ, reaches its northern limit at GC
Polygonaceae Eriogonum heermannii var. sulcatum	endemic to GC region and S NV
Polygonaceae Eriogonum jonesii	endemic to areas around GC
Primulaceae Primula specuicola	CP endemic, reaches its souther limit in GC
Rhamnaceae Ceanothus martinii	reaches its souther limit on KP
Rosaceae Ivesia arizonica var. arizonica	endemic to GC region and S NV
Rosaceae Rosa stellata subsp. abyssa	endemic to GC region and S NV

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Fickeisen Plains Cactus *Pediocactus peeblesianus* var. *fickeiseniae* (Backeberg) Kladiwa

This small, low-growing cactus species is found only on Kaibab limestone soils on the southern Colorado Plateau. It occurs in small, isolated populations. On the Arizona Strip, it occurs between Mainstreet Valley to the west and House Rock Valley to the east. South of the Colorado River on the Plateau, it occurs from Cataract Canyon east to Gray Mountain and the Little Colorado River. It may be declining due to livestock grazing and drought, as well as non-native species invasion.

Kaibab Indian Paintbrush *Castilleja kaibabensis* N. Holmgren

This herbaceous perennial is endemic to the Kaibab plateau occupying rocky knolls, usually in the driest, most exposed sites in open meadows at 2500-2740 m (Fig 4.1). It grows in fine silts and clays and rocky, gravelly meadow soils derived from weathered Kaibab limestone in the driest, most disturbed sites in open meadows (AGFD 2003). This paintbrush is remarkable in the variety of color variations it displays in the same population: pale orange, pale red, yellow, soft pink and dull white may all intermingle. *C. kaibabensis* blooms in July and August exhibiting the above mentioned array of colors.

This plant closely resembles *C. linearifolia* and *C. integra*, but differs in having bracts divided with fairly acute-tipped lobes and rounded tip, no white, wooly-hairs on stem, and flatter leaves (Grand Canyon National Park, online).

Kaibab Sedge *Carex curatorum* Stacey

This sedge is found only on the Colorado Plateau at elevations ranging from 900-1,300 m. It forms tufts, and droops elegantly at hanging gardens and along stream banks. It can be distinguished from similar Carex species by having easily dispersed seeds (achenes) and by not having sheaths and bases apparent from the previous years' growth (Ball and Rezinicek).

Fauna

Invertebrates

The proposed GGCHNM and surrounding area is one of the entomologically least-studied landscapes in the nation, with the primary entomological attention paid to butterflies. Waltz (1998) recorded 31 species of butterflies and skippers in 5 families on Mt. Trumbull to the west of GGCHNM. The butterflies of the North Kaibab Plateau have been investigated for several years by Mr. Richard Zweifle of Kanab, Utah, who reports that the most commonly encountered species include: *Colias eurytheme*, *Abeis nicippe*, *Plebejus melissa*, *Vanessa cardui*, *Nymphalis antiopa*, and *Junonia coenia*. Kaibab Plateau dragonflies also have received some attention: Stevens and Bailowitz (2009) report several dozen species in the region, with *Coenagrion resolutum* regionally restricted to perennial North Kaibab ponds.

Fig. 4.1 Kaibab Indian Paintbrush, growing in the meadows near Deer Lake, Kaibab National Forest. Photo by Molly Joyce.

Several endemic invertebrate species are known from the GGCHNM, particularly in and around North Canyon. Not only does that drainage support endangered Apache trout (*Oncorhynchus apache*), but also an endemic riparian *Nebria* (Carabidae) ground beetle, a new species of stonefly (being described by R. Baumann of Brigham Young University), and a population of the North Rim endemic Schellbach's Fritillary (Nymphalidae: *Speyeria hesperis schellbachi*). Meadows at the headwaters of that drainage also support the en-

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demic Kaibab Variable Tiger Beetle (*Cylindera terricola kaibabensis*), which is tightly restricted to a few North Rim meadows. The endemic Kaibab Monkey Grasshopper (Eumastacidae: *Morsea kaibabensis*) occurs along the east flank of the Kaibab uplife in middle elevation meadows, but is rarely encountered. These and likely other endemic invertebrate taxa exist on and around the proposed monument.

Kaibab Variable Tiger Beetle Carabidae: *Cylindera terricola kaibabensis* Johnson

Adults of this elusive tiger beetle are 8-15 mm long and the body is long and thin with relatively parallel outer elytral (first pair of wings) edges (Fig. 4.2). Colors range from copper-green to blue-green with narrow, yellowish maculations (markings) that are usually connected. This subspecies is restricted to a few grassy meadows on the Kaibab Plateau of northern Arizona (Stevens and Huber 2004, Pearson, et. al. 2006).

Adults are active during the warm days of summer and feed on soft-bodied invertebrates. They wait, motionless and alert, but ready to sprint after passing prey. These beetles are easily alarmed by movement or vibrations, and fly when approached to within about 2.5 m (Stevens, pers. observations). Their flight is erratic and they usually land in a clump of grass, disappearing immediately.

Larval Kaibab Variable Tiger Beetle have not been studied but are likely similar to those of other members of the subgenus *Cylindera*. General characteristics include a large, flattened head, massive mandibles, and a pronounced dorsal hump on the thorax. They construct vertical burrows in which they wait for passing prey (primarily other invertebrates; Pearson et al. 2006).

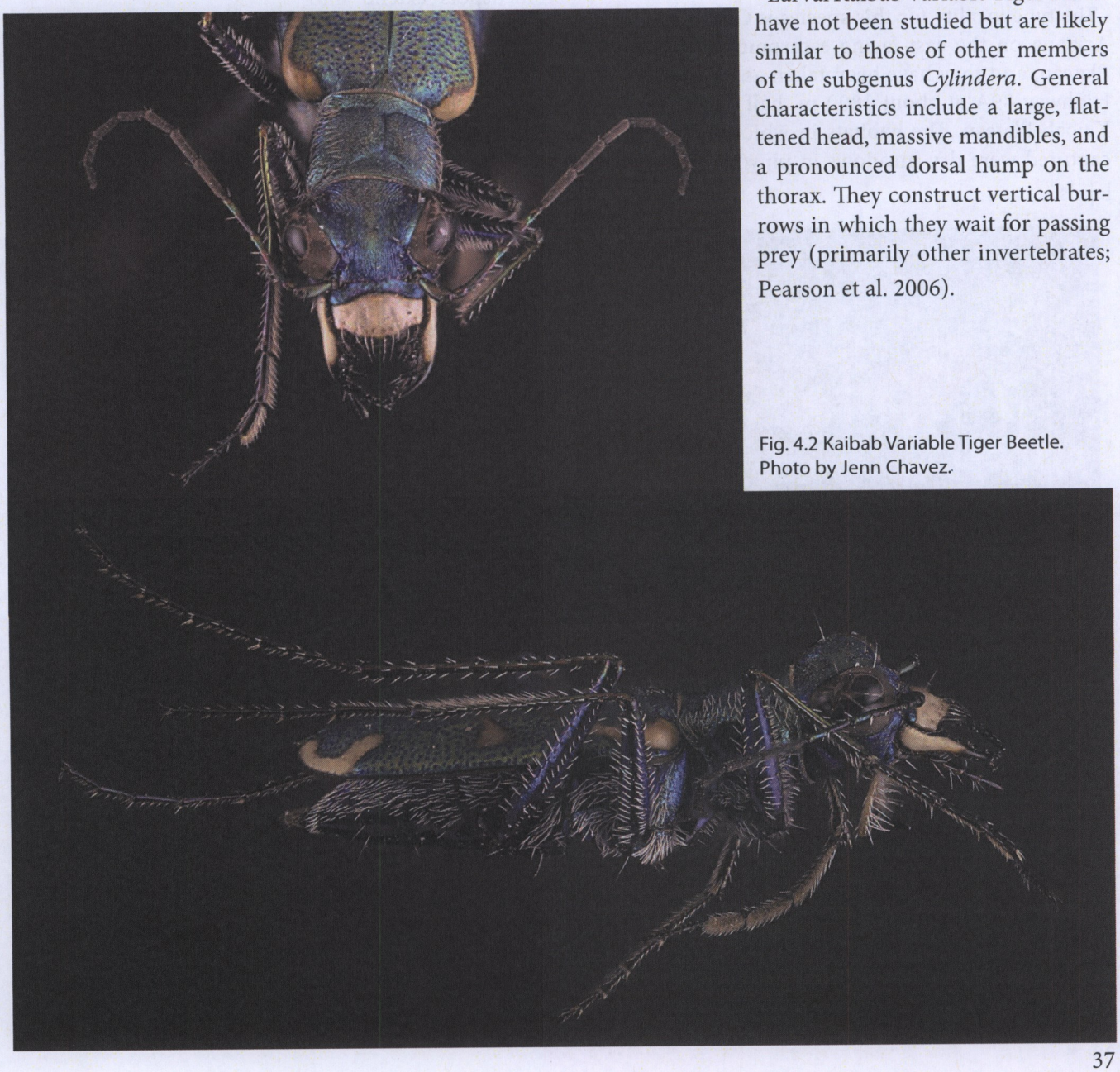

Fig. 4.2 Kaibab Variable Tiger Beetle. Photo by Jenn Chavez.

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Kaibab Monkey Grasshopper Eumastacidae: *Morsea kaibabensis* (Rhen and Grant) Otte

Monkey grasshoppers are distinguishable from katydids and crickets by their short stubby antennae and oddly long, gangly legs (Fig. 4.3). The head is long and set at an angle to the thorax. Many of these species are brightly colored, while some resemble leaves or sticks. The hind legs are thin and elongate, with distinctive spines on the lower half of the tibiae. At rest, many species sit with their hind legs splayed out sideways. The antennae are shorter than the front femora and the majority of species are wingless. Their family feeds on a variety of plant types ranging from grasses and sedges to desert shrubs and ferns.

The type locality for this species is Coconino County, Arizona on the east-facing escarpment of the Kaibab Plateau, and they have been taken as far south as near Highway 89A at about 1800 m, half way up onto the Kaibab Plateau. The habitats in which they have been captured were dry meadows in pinyon-juniper woodlands.

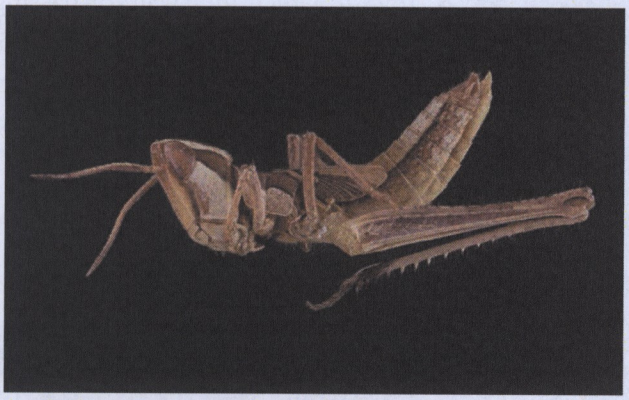

Fig. 4.3 Kaibab Monkey Grasshopper, *Morsea kaibabensis*). Photo by Jenn Chavez.

Persephone's Darner Aeshnidae: *Aeshna persephone*

The larvae of this large darner dragonfly inhabit ponds and slow-moving streams, and move about by pumping water backwards through their abdomens. The larvae are elongate, buff-colored, and have a conspicuous extendable lower mandible.

Adult Persephone's Darners are large, robust dragonflies two wide, yellow-green lateral stripes on the thorax, and having lateral blue spotting very small to absent on abdominal segments 7-10 (Fig. 4.4). The cerci are palmate and wedge-like. Persephone's Darner hindwing length varies from 48-52 mm, and their total body length varies from 72- 75 mm. Persephone's Darner is similar in appearance to the slightly smaller *Aeshna palmata* Hagen, and within their range of overlap they can be difficult to separate. *A. palmata* has a hindwing length of 43-47 mm, a total body length of 67-70 mm. It has narrower yellow to blue-green stripes on the thorax and on the abdomen the lateral blue spots extend into segments 7-10. Also, its cerci are palmate (Needham et al. 2000).

Fig. 4.4 Persephone's Darner. Photo by Doug Danforth.

Persephone's Darners fly mostly in the late summer and fall and are likely to have just one generation per year. The larval stage has not been well studied, but they probably occupy slow portions of desert mountain streams, where they prey on soft-bodied insects, tadpoles, and perhaps small fish. The adults are notoriously difficult to catch because they fly erratically, follow shadow lines as they patrol, and sometimes rise 10-15 m above the ground (Stevens, pers. obs.).

Persephone's Darner is endemic to the American Southwest and northwestern Mexico. On the southern Colorado Plateau, it has been detected between 1200-2300 m elevation. Persephone's Darners have yet to be found on the Kaibab Plateau, but are found south in Grand Canyon and immediately to the north in Grand Staircase Escalante National Monument in Kane County, Utah. Therefore, they are expected to occur on the North Kaibab Plateau. Their rarity on the Kaibab Plateau may primarily be due to the natural scarcity of suitable habitat. This species has been found in and along partially shaded desert mountain streams, and also has been documented in open riparian settings near perennial streams. It has rarely been reported away from water in this region, and is almost always confined to middle elevation canyons with permanent or semi-permanent flow.

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Kaibab Indra Swallowtail Papilionidae: *Papilio indra kaibabensis* Bauer

A large, iconic black swallowtail, the adults of this regionally endemic subspecies have constellations of sky blue dots arranged in tight patches in a band on both the upper and lower side of the hind wing, and a light yellow band on the underside of the hind wing (Fig. 4.5). This subspecies occurs in mountainous terrain, and is largely restricted to inside Grand Canyon just below the rim; however, it occasionally occurs on to the south of Grand Canyon and has been detected as far to the southeast as Cameron, Arizona (Garth 1950; Stevens 2012). Previously reported as flying in midsummer, it recently has been found near Saddle Mountain as early as mid-April. Mature caterpillars are large and black and light coral banded, with yellow spots. They feed on members of the parsley family.

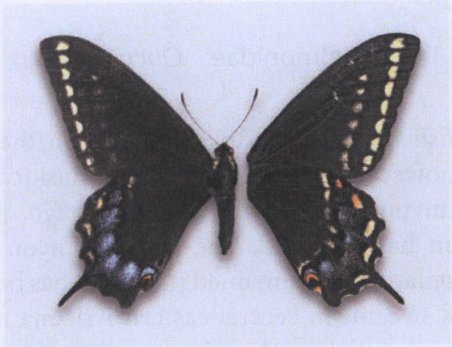

Fig. 4.5 Kaibab Indra Swallowtail. Photo by Tom Cheknis.

Grand Canyon Ringlet Butterfly: *Coenonympha tullia furcae* Barnes and Benjamin

This small, buff-colored satyr butterfly has a single dark eyespot near the upper corner of the forewing, and a mottled faun and white pattern on the underside of the hind wing (Fig. 4.6). It flies in abundance in June along the South Rim of Grand Canyon, and occasionally wanders into the forests to the south. It flies in a highly erratic fashion through forest glades, providing only a brief glimpses to those aware of it. The species to which it belongs is widespread throughout the West, but is highly variable regionally, with numerous subspecies described (Garth 1950). Mature caterpillars are small and inconspicuous, and are reported to feed on grasses.

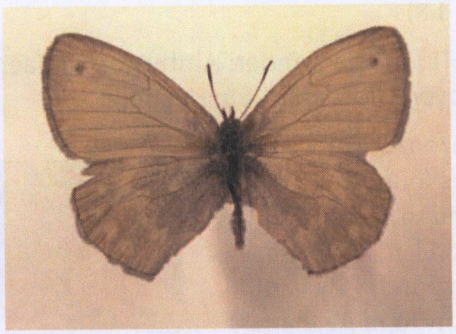

Fig. 4.6 Grand Canyon Ringlet butterfly. Photo by Tom Cheknis.

Schellbach's Northwestern Fritillary Nymphalidae: *Speyeria hesperis schellbachi* Garth

This is a large, showy, rust and black brush-footed butterfly, with dark axes on the upper wings and silver spots on the underside of the hindwing (Fig. 4.7). It is found only along the North Rim of Grand Canyon and the East Rim of Kaibab National Forest (Garth 1950). Like all fritillaries, its larvae feed on violets. They emerge from the egg in autumn and immediately go into winter dormancy, not beginning feeding until the following spring.

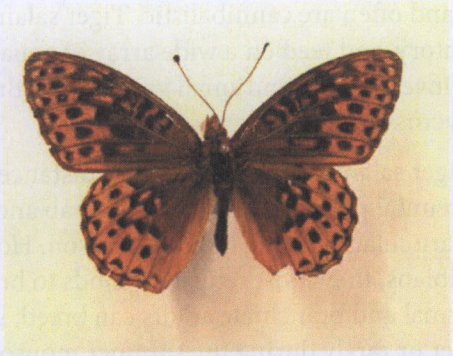

Fig. 4.7 Schellbach's Northwestern Fritillary butterfly. Photo by Tom Cheknis.

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FISH

Apache Trout Salmonidae: *Oncorhynchus apache* (Miller)

Native fish no longer naturally occur on the Kaibab Plateau; however, Apache Trout were translocated into North Canyon Creek nearly a century ago, and that population has persisted. The North Canyon Apache Trout population has remained pure, and has been used to restock streams in central eastern Arizona in which hybridization with introduced rainbow trout took place.

Herpetofauna

The amphibians and reptiles of the GGCHNM include 8 amphibians and 35 reptiles. The amphibian species primarily occupy wetland habitats, while most of the reptiles are upland taxa, although Terrestrial Garter Snakes are commonly encountered in ponds and along slow-moving streams. Tiger salamanders are also present (Fig. 4.8)

Arizona Tiger Salamander: Ambystomatidae: *Ambystoma mavortium nebulosum* Hallowell

Fig. 4.8 Tiger Salamander. Photo by Larry Stevens.

The Arizona Tiger Salamander is found above about 1500 m on the southern Colorado Plateau, where it occurs in ponds (Fig. 4.8). It can grow to more than 30 cm long and is dark gray or olive in color irregular yellow or greenish markings. It can be confused with the widely-introduced barred tiger salamander ("water dogs"; *A. m. mavortium*), which has decimated native salamander populations. Neotenic larvae and gilled adults (branchiates) can remain aquatic, and often are cannibalistic. Tiger salamanders are predatory, and feed on a wide array of aquatic and riparian invertebrates and small vertebrates (Brennon and Holycross 2006).

Adult tiger salamanders wander long distances away from perennial ponds on the North Kaibab and elsewhere, particularly during the rainy season. However, as amphibians, they must return to ponds to breed. Both normal and branchiate adults can breed, in either late winter or rarely during the summer monsoon period. Eggs are laid singly or in small masses and often are attached to underwater sticks or vegetation. We have found their eggs under the ice in February in ponds on the North Kaibab, along with mature endemic Kaibab fairy shrimp (Brachinectidae: *Branchinecta kaibabensis* Belk and Fugate). Tiger salamander females can produce up to 2000 eggs each year, and the young hatch within about two weeks, and mature in about two months, unless conditions favor the young remaining in the neotenic form.

Avifauna

We found evidence of at least 121 bird species on and around the North Kaibab and Tusayan Districts. Whereas the bird fauna of Grand Canyon is rather well known (e.g., Brown et al. 1987), that of the Kaibab has been less thoroughly documented. Regional avian studies that provide good background information include those by: Birek et al. 2009; Chambers and Kalies 20112; Blake's (1981) work on 92 bird species he detected on and around Mt. Dellenbaugh; Huey (1939); Rasmussen 1941; Behle 1943; Behle et al. 1958; Wauer and Carter 1965, 1967; the Arizona Breeding Bird Atlas (2006); and our own observations.

The East Kaibab Monocline serves as a major raptor migration route across Grand Canyon. Hawk Watch International and Grand Canyon National Park partnered for 17 years, documenting the intensity of raptor migration at Yaki and Lipan Points on the South Rim (http://hawkcount.org/month_summary.php?rsite=578). The hawk migration takes place from late August into early November. The most common hawks observed are: Sharp-shinned, Cooper's, Red-tailed, Swainson's Hawks, American Kestrel, Osprey, Northern Harrier, with Golden and Bald Eagle, Peregrine and Prairie Falcon, Ferruginous Hawk, Northern Goshawk, and the endangered California Condor.

Northern Goshawk *Accipiter gentilis* (Linnaeus)

The Northern Goshawk is the largest accipiter in the nation. Possessing a long tail and broad rounded wings enables them to maneuver quickly through dense forests. This species is slate gray above and has dense gray barring on the chest. It has a dark gray head with a conspicuous light eyebrow, flaring behind the eye and separating the black crown from a variably gray back. Its barrel shaped chest is white with fine gray barring; appearing light gray at a distance. The tail is gray with black transverse bars. Eye color ranges from yellow, orange, to fiery red in older birds (gray in nestlings). When hunting it perches silently then descends rapidly, taking prey as small as squirrels and as large as grouse, crows, and rabbits.

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Northern goshawks occur year-round in the mountains of Arizona. They typically nest in mature or old growth forests, usually above 1800 m, and often select larger tracts of forests. The population on Kaibab Plateau exhibits one of the highest breeding densities known. Their nest is a bowl of sticks lined with bark and greenery high in a tree. These nests contain 1-5 bluish-white eggs (Squires and Reynolds 1997). The female incubates the eggs for 28-38 days and then broods the nestlings, which are fed by both the male and the female. The young begin flying at 35-42 days and become independent at about 70 days (Arizona Game and Fish Department 2013).

California Condor *Gymnogyps californianus* (Shaw)

California condors are one of the rarest birds in the world, numbering about 425 worldwide, with about 219 individuals living in the wild. They are the largest bird in North America, having a wingspan of nearly 3 m and weighing up to >10 kg. Adults are primarily black except for triangle-shaped patches of bright white underneath their wings. These patches are visible when condors are flying overhead and are a key characteristic to positive identification. Males and females are identical in size and plumage. The bare heads of condors are grayish-black as juveniles and turn a dull orange-pink as adults. Condors are members of the New World vulture family and are opportunistic scavengers, feeding exclusively on dead animals such as deer, cattle, bison, rabbits, and large rodents.

Condors do not build nests; instead, an egg about 5 inches in length and weighing around 10 ounces is deposited on bare ground in caves and rock crevices. They typically lay a single egg every other year. The egg hatches after 56 days of incubation and both parents share responsibility for incubation and for feeding the nestling. Young condors leave the nest when they are 5 to 6 months old.

Condors were extirpated from the region early in the twentieth century, and nearly went extinct. However, they were brought back through a captive breeding program and, beginning in 1995, were re-released into the wild. At present, about 73 condors soar over northern Arizona and southern Utah. Many of the condors from northern Arizona and southern Utah frequent Grand Canyon, especially during the summer. They come from all four captive breeding locations. But more importantly, a number of them come from wild nest caves in and around the Grand Canyon. A tag chart and condor update is online at: https://www.nps.gov/grca/learn/nature/california-condors.htm#CP_JUMP_720673.

The leading cause of condor death in the wild is lead poisoning from spent lead ammunition. Each year 45-95% of the condor population tests positive for lead exposure. A recent press release from the Peregrine Fund reported that trapping and testing results revealed 55 of the 73 condors tested over the winter and early spring showed unsafe levels of lead in their blood. Nearly one-third of those birds had extreme, life-threatening toxicity levels. Over the years, lead poisoning has accounted for just over 50 percent of all condor deaths. As part of an effort to reduce lead exposure in condors, AGFD has provided free non-lead ammunition to big game hunters in Units 12A, 12B, 13A, and 13B (the areas condors frequent most during the hunting season). Hunters responded with 80 to 90 percent voluntarily using non-lead ammo or removing their gut piles to benefit condors (Arizona Game and Fish Department online).

MAMMALS

Like most other faunal groups, the mammals of the GGCHNM region are known from only a few scientific studies. Hoffmeister and Durham (1971) and Hoffmeister (1986) listed the mammal species of the region, and distribution and biogeographic anomalies in the region. At present, at least 79 mammal species are known in the GGCHNM. These include 19 species of bats, numerous rodents, Desert Mule Deer and hybrid Bison, as well as numerous meso-predators, such as Long-tailed Weasel, Gray Fox, Coyote, Skunk, Raccoon, Bobcat, and Mountain Lion, and the rare American Black Bear. On the GGCHNM south of Grand Canyon, collared peccary are beginning to colorize the Coconino Plateau. Several predacious species, such as Plains Gray Wolf (*Canis lupus youngi*), Jaguar (*Felis onca*), Grizzly Bear (*Ursus arctos*) that once dominated the food web of the region, have been extirpated or driven to extinction creating significant disruptions to trophic processes in GGCHNM ecosystems.

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Desert Mule Deer Cervidae: *Odocoileus hemionus* Rafinesque

Ungulate populations have been of enduring subsistence and economic interest to residents and game managers (AGFD) of the GGCHNM region (Fig. 4.9). Desert Mule Deer can grow to be exceptionally large on the Kaibab Plateau. Lack of summer water probably prevents mule deer from remaining at low elevations during the summer; however, they use snow as a water source during the winter, following it downslope as it falls and upslope as it melts. Bostick (1988b) reported two historical cycles of deer population growth on the southern Shivwits to the west of GGCHNM, which occurred with the onset of intensive livestock grazing and the extirpation of native predators. The Kaibab deer population increased in the 1910s and crashed later that decade, the increased again in the 1940s and crashed in the 1950s, and then increased again in the 1960s. Therefore, including the mule deer population rise and crash recorded by Rasmussen (1941), at least three population cycles of desert mule deer occurred over the past century. The primary forage for mule deer on southern GGCHNM points and canyons is cliff rose, which is closely cropped throughout the year. Bostick (1988b) concluded that high deer population levels about 35 ± 10 years (prior to 1988) caused a die-off of cliffrose and sagebrush on the Parashant grazing allotment.

Fig 4.9 Desert Mule Deer.

Desert Bighorn Sheep Bovidae: *Ovis canadensis nelsoni* Merriam

Like pronghorn, desert bighorn sheep were essentially extirpated from the Arizona Strip by the early 1900s, except in lower Kanab Creek and along the southern Grand Wash Cliffs (Fig. 4.10). Bighorn sheep populations are believed to have been more abundant and more widely distributed historically. These animals are

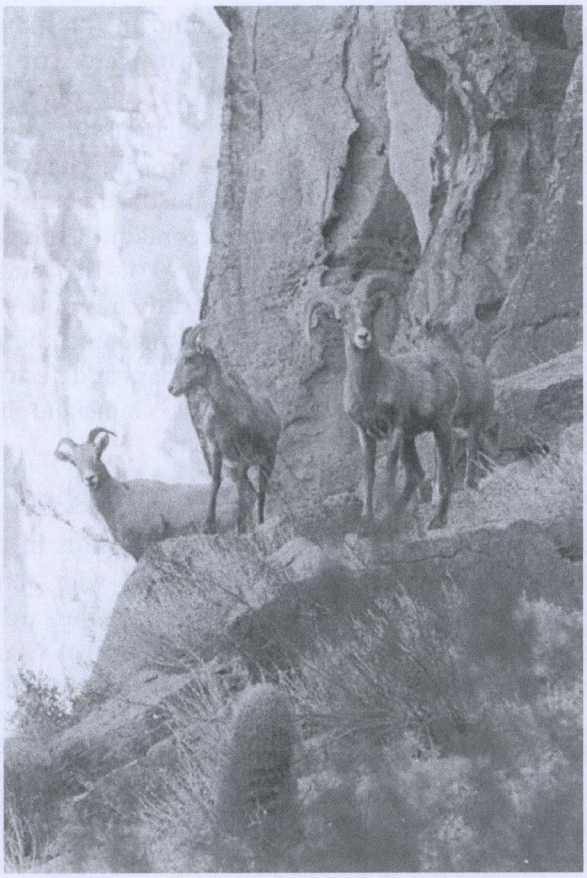

Fig. 4.10 Bighorn sheep perched alongside a cliff face, Grand Canyon National Park. Photo by Larry Stevens.

highly valued by the public for wildlife viewing, photography, and hunting opportunities. Since the late 1970s, the BLM and the AGFD have been cooperatively working to re-introduce desert bighorn sheep. Several of these re-introduction efforts have been successful (U.S. Bureau of Land Management 1997). Populations of desert bighorn occupied the Virgin and Beaver Dam Mountains and the Grand Wash Cliffs, and the total population on the Arizona Strip exceed 500 on BLM administered lands. Augmented water sources (guzzlers) may have helped some of these translocation efforts.

Pronghorn Antilocapridae: *Antilocapra americana* Ord

Pronghorn occur across western US, with ranges from 65 km^2 to 250 km^2 (Yoakum 1980). Pronghorn mostly range from 900 to 1800 m elevation, but move higher (to 2700 m) in summer in the Southwest. Arizona pronghorn make much more use of woodland and forest habitat than expected, but their use of these habitats is not well known.

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Pronghorn require 0.75 - 1.5 kg of forage/day (dry mass) and up to 1 kg/d on the range (Severson and May 1967, Schwartz and Nagy 1976), and their diet is opportunistic and selective, taking browse year-round, with forbs dominant in spring and summer, and grasses used only in early growth periods (Autenreith 1978, Allen et al. 1984). The success of the pronghorn restoration program has allowed the AGFD to issue hunting permits during the past two decades.

The pronghorn population on the Arizona Strip has declined over the past 50 years, but it has been augmented over the past several decades by the Arizona Game and Fish Department (1978). Pronghorn on the Strip numbered 150-200 head by 1998. Pronghorn occurred on the GGCHNM and surrounding region until at least 1916 (Knipe 1944, Cox and Russell 1973). In 1965 55 Montana pronghorn were released on the Arizona Strip, but the success of the release was not apparent until 1974, when 11 animals were spotted during aerial surveys. The number had increased to 81 animals by 1977.

Kaibab Northern Pocket Gopher Geomyidae: *Thomomys talpoides kaibabensis* Goldman

This is a small species of pocket gopher and the subspecies, *kaibabensis*, is distinguished by being smaller yet. A prominent black patch around and behind each ear and chestnut coloring on top of the head distinguish it.

This gopher lives on the Kaibab plateau, in the soils of high mountain meadows surrounded by Ponderosa pine or spruce-fir. In those meadows grow a variety of grasses, weeds and shrubs providing food for at least part of the year. Gestation period is about 18 days, eyes and ears of young do not open until about 26 days after birth. Adult fur grows in at about 3 months of age (Hoffmeister 1986).

Kaibab Squirrel Sciuridae: *Sciurus aberti kaibabensis* Merriam

This tassel-eared squirrel lives naturally only on the Kaibab Plateau of northern Arizona. It is distinguished from the conspecific Abert's or Tassel-Eared Squirrel that lives south of Grand Canyon by its blackish belly and a tail that is white above and a bit shorter. It was once considered to be a fully different species, but is now considered to be a subspecies of Sciurus aberti, the Tassel-eared Squirrel. There is usually some chestnut brown on their head and back. The ear tufts grow longer with age and may extend 1-2 inches (25-50 mm) above the ears in winter, but are much shorter in summer (Hoffmeister 1986).

Habitat for this squirrel is the ponderosa pine forest where it lives and builds its nests of pine needles and twigs. It feeds on seeds, bark, and twigs of the trees, as well as on subterranean mushrooms. This squirrel's primary food sources are ponderosa pine seeds from pine cones. Young squirrels are born in late spring to early summer (Hoffmeister 1986). The Kaibab squirrel is an excellent example of allopatric speciation – post-Pleistocene colonization and isolation allowed the two lineages to drift apart.

Mountain Lion: Felidae: *Puma concolor concolor* (Linnaeus 1771)

Mountain lions are large, widespread, solitary cats and are top predators (Fig. 4.11). They are found across the New World, most often in topographically complex terrain. Mountain lions are sit-and-wait predators, feeding on a wide array of mammals, birds and other vertebrates (Hoffmeister 1986). Their populations are declining throughout their range, particularly because of overhunting, and mountain lions have been largely eliminated from portions of their native range, such as southwestern Arizona and in the eastern United States (except in Florida, where it is an endangered subspecies). The GGCHNM region is the last stronghold for mountain lions in Arizona. Here, they feed on deer, elk, bighorn sheep, and smaller mammals, including other predators. Mountain lions generally kill one large prey animal every 10 days. Male lions are larger than females, and can reach a mass of 150 lbs. Both sexes are solitary, highly territorial, and require large home ranges: male collared lions in the Grand Canyon region occupied 124 to 185 mi^2 ranges, while females occupied 76 to 172 mi^2. Mountain lions wander widely within their territories, and individuals have been documented traversing Grand Canyon to hunt on the rims. Individuals can live for more than 10 years, but life spans are usually much shorter due to hunting pressures. Female mountain lions can breed at 3 years of age, and can produce three spotted young, which gradually lose their spots but remain with their mother for 18 months. Year-round hunting of these top predators is permitted by the Arizona Game and Fish Department (2016), and 250 and 350 animals are killed each year. About 12% of those killed are taken by predator control agents.

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Fig. 4.11 Mountain Lion photo courtesy of http://www.flickr.com/photos/dbarronoss/ / CC BY-NC-ND 2.0.

American Bison Bovidae: *Bison bison* Linnaeus

Bison are not native to Arizona, arriving in 1906 when Charles Jones brought them to the Kaibab Plateau in northern Arizona and cross-bred them with cattle (Fig. 4.12). He hoped to create a more robust breed, the "cattalo". When this effort failed the herd was sold to and maintained by the state of Arizona at House Rock Valley Wildlife Area, east of the Kaibab Plateau (AZ Game and Fish Department 2015). As a result of drought beginning in the late 1990s the herd began to migrate back to the Kaibab plateau. Today there are over 400 bison on the plateau, mostly in Grand Canyon National Park (The Guide, 2015). These large herbivores are impacting water sources, devouring and trampling sensitive vegetation and compacting fragile soils. Grand Canyon National Park is working closely with state and federal managers to attempt to reduce the bison's negative impacts (The Guide 2015).

Fire And Forest Health

Much of the North Kaibab is a ponderosa pine forest on which fire suppression, grazing and logging have altered forest structure and composition for more than a century. The pre-Euro-American fire frequency was high, but fire suppression has allowed doghair thickets of young pines to proliferate, and fuel loads to accumulate. Although this appears to be the normal condition for ponderosa pine forests throughout the Southwest, the North Kaibab supports rare stands of old growth forest, which support many characteristic species and are worth protecting from anthropogenically intensified fire threats.

A Living Map of the Biota of the Proposed Monument

We present a living map showing examples of the biota that are of special biological and cultural significance to the proposed Grand Canyon Heritage National Monument (Fig. 4.13). Explore this map online at: http://arcg.is/1SOmiyj.

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Fig. 4.12 Bison at the entrance to Grand Canyon National Park's North Rim. Photo by Jeri Ledbetter.

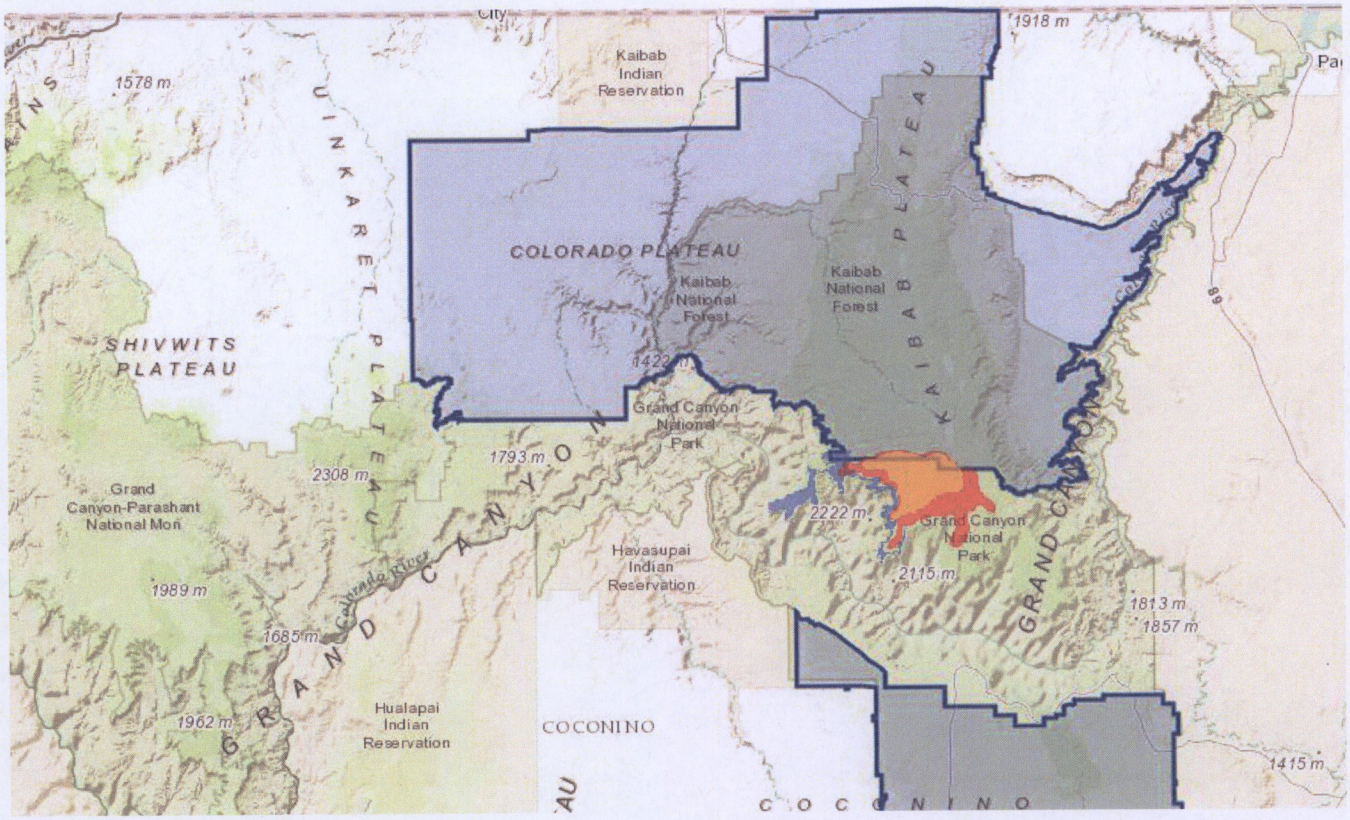
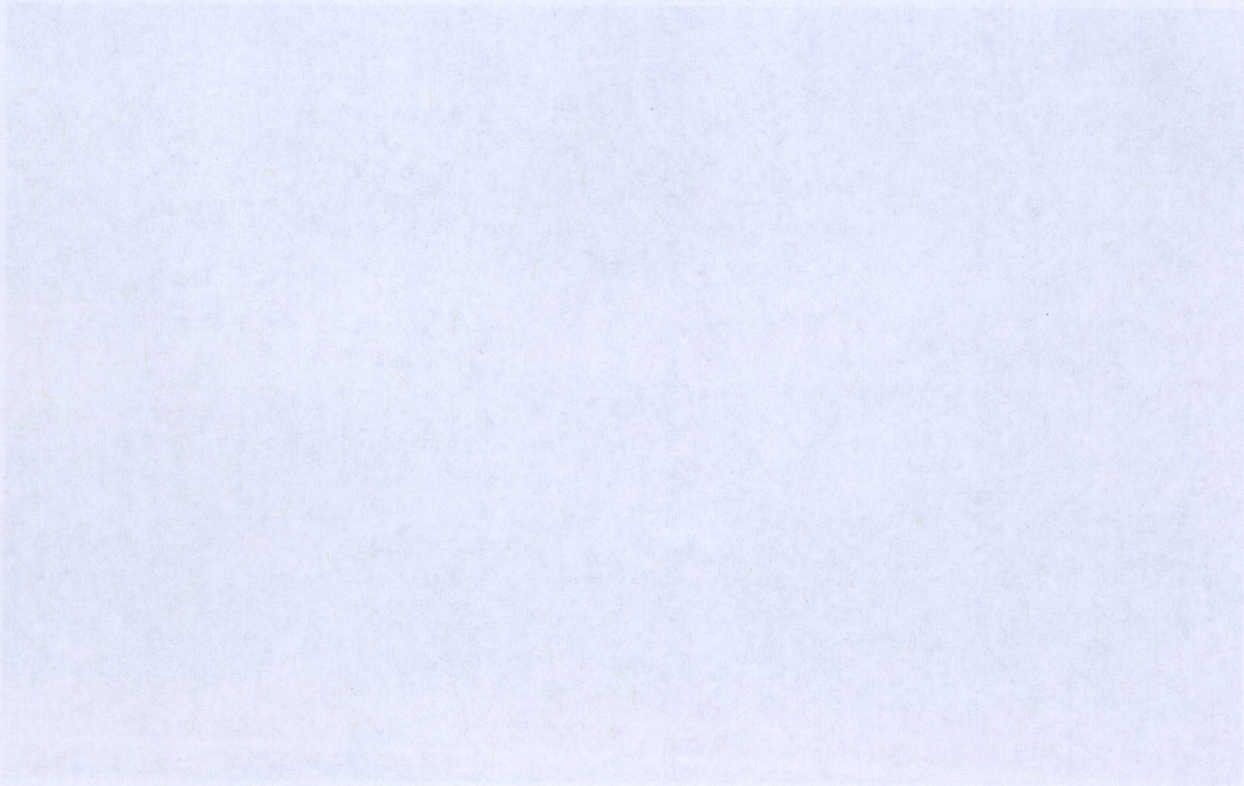


Fig. 4.13 Range map of Bison within the proposed Grand Canyon Heritage National Monument. Map produced by Jeff Jenness.



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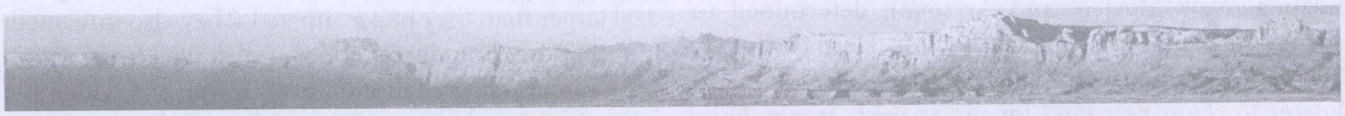
CHAPTER 5



HISTORY OF EXPLORATION AND SETTLEMENT BY ANGLO-EUROPEANS

MOLLY JOYCE AND LARRY STEVENS

INTRODUCTION

Dramatic changes began to occur in the proposed GGCHNM region following the arrival of Europeans. Captain Lopez de Cardeñas first set eyes on the landscapes of the Mesa lands and Grand Canyon in 1540, guided to the rim by members of the Hopi tribe (Udall 1987). Typical of early Spanish exploration, the geological formation of the Grand Canyon and its small groups of indigenous cultures were of little interest to explorers like Cardeñas and Francisco Vazquez de Coronado. The purpose behind their exploration of the northern territories of New Spain was to discover the Seven Cities of Cibola. Thus, the remarkable chasm and its desolate surroundings were no more than a footnote in their journals. For the next 236 years, the region continued on in obscurity until Silvestre Vélez de Escalante and Francisco Atanasio Domínguez crossed the Kaibab Plateau searching for a water route to the Spanish Missions of Monterey, California. From this point, recognition of the region evolved relatively quickly. This chapter summarizes the 500 years of European exploration and settlement in the proposed Greater Grand Canyon Heritage National Monument – a history that is intimately tied to that of the Grand Canyon. Here we highlight the evolution of perspectives held by the men and women, explorers, scientists, artists, politicians, and settlers that transformed the region from an obscure southwestern landscape to one of the most culturally defining monuments on Earth.

Between 1500 and 1775 the Grand Canyon and the Kaibab Plateau remained virtually untouched and was avoided by early Spanish explorers and Anglo settlers, largely due to political objectives and cultural predispositions of the Spanish crown in the 16th-18th centuries. Spain rejected secularization and disapproved of scientific ideas that spread across Europe during the Age of Enlightenment (Pyne 1998). During the 16th-18th centuries, Spain retained its orthodoxy and acted as the epicenter of the Counter-Reformation, despite accelerated exploration of the New World and intensifying scientific curiosity amongst other European nations. Despite Spain's capacity for naval exploration, its capacity to absorb discoveries within the context of natural history was constrained by religious conservatism. Thus, the first Europeans to set eyes upon the geological wonder were also among those most ill-equipped to appreciate its significance. Focusing exploration on the discovery of Central and South American civilizations, Spanish explorers such as Captain Lopez de Cardeñas, Silvestre Vélez de Escalante, and Francisco Atanasio Domínguez placed little role in the Grand Canyon region, recording the giant gorge as an obstacle to be avoided and circumnavigated.

Because of this, it took almost 400 years of exploration and geopolitical contests to transform the region of the GGCHNM into its present state. Transferred from the hands of Spain to Mexico, and finally to the United States,with strong influences of Native Americans, Mormons, and the U.S. government, it now represents a complex cultural landscape. Investigating this history reveals that complexity and multidimensional historical significance. From a geological obstacle to imperialist

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Spanish explorers, to a federally protected Wonder of the World, the region has played an enormous role in the lives and cultures it now supports.

Early Spanish Explorers

The story of how the Spanish conquistadors reached the Grand Canyon began 12 years before they set eyes on it. In 1528, Pánfilo de Narváez set out on an expedition to explore northern New Spain (present day Chihuahua, New Mexico, and Arizona), determined to surpass the infamy of his competitor, Hernan Cortés. Narváez left Cuba with 300 Spanish soldiers and 500 horses to claim new land for the Spanish crown. Hurricanes in the Gulf of Mexico shipwrecked the expedition in Florida, and survivors were attacked and hunted by Alabaman and other southeastern Indian tribes. The expedition barely made it on foot to Galveston Island, and only four of the original 300 survived. One of these men was Álvar Núñez Cabeza de Vaca, who became the first European to explore the American Southwest. The one with the most dramatized tales of survival, Cabeza de Vaca trekked across Texas, making first contact with Southern Plains tribes. By 1536, he had walked from Galveston Island, across south Texas encountering Karankawa, Tonkawa, and other Southern Plains tribes, as well as Zuni, and other Puebloan cultures. His journey took him across southern New Mexico and Arizona to Baja California, and down the west coast to Culiacan. Upon reaching Mexico City, Cabeza de Vaca recorded and published an account of his journey, the first ethnographic documentation of North American Indians. This report inspired several Spanish expeditions including that lead by Francisco Vazquez de Coronado and his search for the Seven Golden Cities of Cibola. Without Cabeza de Vaca's account, exploration to the northern deserts of New Spain would have been delayed by decades or centuries.

On February 23, 1540, Coronado set out from Compostela, the capital of Nueva Galicia, with 300 Spaniards and 1,000 Indians. Amongst his party was Captain Garcia Lopez de Cardeñas. The expedition had reached Cibola in August of 1540 and conquered the Pueblo city of Hawikuh, the first city captured by the expedition (Winship 1904). From Hawikuh, Cardeñas and a small group of soldiers detached from the main expedition to explore regions to the northwest. Members of the Hopi tribe led the men through the Mesa lands of northeastern Arizona, bringing them through the southern GGCHNM region to the South Rim of Grand Canyon.

As the first Europeans to see the Cañon del Colorado, Cardeñas made little note of the Canyon in his journal. He and his party greatly underestimated the depth of the Canyon, believing the monolithic formations to be "boulders," and the Colorado River to measure a mere 2 m wide (Winship 1904). For three days the party looked for paths to descend to the river for water. Unsuccessful, he assigned three of his men to scout a trail. After many hours, the men returned, unable reach the river. They informed Cardeñas that the Colorado was a great deal larger than they had estimated. They also informed him that the "boulders" Cardeñas observed from above were in fact taller than the Great Tower of Seville, the tallest building in the world in 1540, standing at nearly 90 m tall. The Hopi guides that led the party to the Rim of the Canyon possibly knew of ways to reach the River, but it is likely that they refrained from showing Cardeñas these routes. Seen by Cardeñas as an obstacle, he and his party returned to Coronado 80 days later and continued their trek to the northeast (Winship 1904). A total of 236 years passed until Europeans revisited the region.

The Escalante-Domínguez Expedition

As the Continental Congress of America declared its independence from England and Captain James Cook launched his third voyage to explore the Pacific Ocean, Juan Bautista de Anza was establishing missions and presidios along the coast of California, and the interior of northern New Spain remained unexplored. Silvestre Vélez de Escalante and Francisco Atanasio Domínguez, both Franciscan priests, launched an expedition to establish an overland trail connecting the inland settlement of Santa Fe with the Spanish presidio of Monterey, California.

The Domínguez-Escalante expedition set out from Santa Fe taking a northern route through Colorado, trekking across northern Utah and along the Great Basin. Harsh winter storms forced the expedition to return southeastward to Santa Fe, circumnavigating the mountains of southwest Colorado. By October 22, 1776, the expedition crossed the Kaibab Plateau, traveling from west to east (Fig. 6.1). They entered the valley where Marble Canyon Trading Post and Lodge are located today, coming up into the valley between the Echo and Vermilion Cliffs (Warner 1995). The expedition was running low on provisions, horses were dying, and the terrain slowed their progress. After crossing the eastern edges of the plain, the expedition descend-

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ed "a very high ridge, steep and full of rubble," making camp beneath a "high cliff of gray (tawny?) rock, naming the spot San Benito de Salsipuedes," ("San Benito, get out if you can"; Warner 1995). The tall gray cliffs were the Chinle Shale near present day Lees Ferry. In this part of the Grand Canyon, they encountered camps of Indians, whom Escalante called Sabuaganas (Uinkaret Paiute), and with whom they shared Catholic doctrine (Warner 1995). Based on their journals, the Sabaguanas were not responsive to their teachings.

By November 1776 they reached the Hopi village of Oraibi, one of the oldest human settlements in North America, and is located on Third Mesa in Northeastern Arizona. Leaving Arizona, they returned to Santa Fe by January 3, 1777, having never made it to Monterey (Warner 132). The Spanish expeditions of Escalante-Domínguez and Cardeñas revealed the limited level of importance that Spain placed on northerly exploration. Of all expeditions throughout the Southwest, only two expeditions mentioned Grand Canyon, although those brief forays have become some of the most cited parts of their explorations (Pyne 1998).

Fur Trappers

The absence of attention paid to the region was due, in part, to Spain's international policies during the 18th century. New Spain stretched from the Yucatan to the northern borders of Utah, and Nevada, and from the Mississippi River to the Pacific. As the United States, England and France encroached, the borders slowly shifted, and by the beginning of the 19th century, Spain actively blocked further intrusion by the United States; consequently, few Anglo-Americans crossed the land now proposed as the GGCHNM after 1776. After the Mexican Revolution in 1821, the interior of western North America suddenly opened to the United States Fur trappers rushed into the American Rockies and were among the first to observe and record the American West (Fig. 6.2). James Ohio Pattie, a trapper from Taos, New Mexico, documented his journeys through the GGCHNM and Grand Canyon region in his *Personal Narrative*, one of several trapper accounts that glorified the American West and its wilderness (Pattie 2006).

In his vague accounts, Pattie described the area surrounding the Canyon as desolate and prison-like (Pyne 1998). He was amongst the few trappers to even note the Canyon in his memoirs. The Canyon's immense scale forced trappers to avoid it, taking routes farther north along the northern Kaibab Plateau and along the Old Spanish Trail (derived from the Domínguez-Escalante expedition, Fig. 6.2) - a region more plentiful in game. As a result, fur-trapper memoirs recorded their stories in the region that lies within the GGCHNM, lending to the significance of this geographical area. As the 1800s continued, new forces at work in the eastern United States would bring more white settlers to the plateaus overlooking Grand Canyon, continuing to shape the regions historical prominence.

American Exploration and Mormon Settlement

Throughout the 1840s, the Old Spanish Trail (Fig. 6.2) was a frequently used corridor by fur trappers and explorers, and prospectors who were drawn west to California - growing the Canyon's reputation in recorded history. Following Mexican Independence, and despite passage by trappers and gold miners, it remained an enigma to the world's imagination until 1848. Along with the California gold rush (1849), one of the most

Fig. 6.1 Historical Marker dedicated to the Escalante-Domínguez expedition that passed through Houserock Valley, south of Vermillion Cliffs in 1776. Photo by Molly Joyce.

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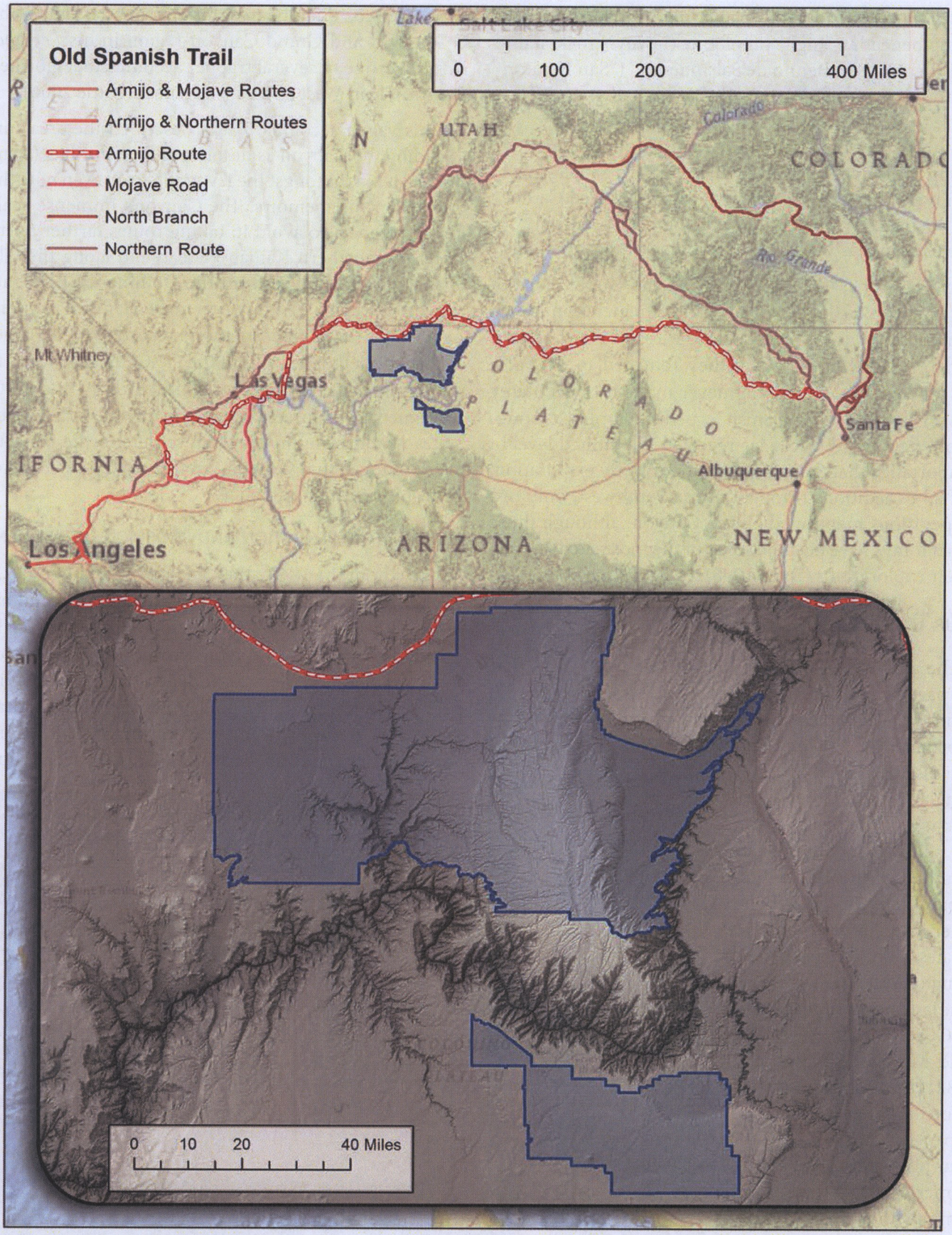

Fig. 6.2 Map depicting the Old Spanish Trail, the official trail established by Escalante and Domínguez. The Armijo Route passes along the northern border of the proposed GGCHNM, and the Escalante-Domínguez journal of their expedition describes visiting areas near Marble Canyon and the Vermillion Cliffs. Map produced by Jeff Jenness.

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significant political events to affect settlement in the American West included the Treaty of Guadalupe Hidalgo. Following the end of the U.S. Mexico War in 1848, the Treaty placed the Canyon and its surrounding country in the middle of a vast new territory belonging to the United States. No longer a remote desert of northern Mexico, 1.36 million km^2 now fell under U.S. jurisdiction, opening it to people seeking new opportunities west of the Mississippi River.

Facing religious persecution in Illinois and Missouri, Mormon frontiersman left their homes in Illinois and began exploring the unsettled region south of Salt Lake City in 1847. From the Wasatch Front to the deserts of the eastern Sierras they sought sites that would sustain settlements for the state of Deseret (the proposed but never recognized state of the Church of Jesus Christ of Latter-day Saints). Colonization of Deseret was successful, particularly across Utah, but the southwestern Colorado Plateau remained less populated than the areas surrounding Salt Lake City. Indigenous tribes, such as Navajo and Paiute, resisted the advancing settlement of Mormon colonists. Relations between the groups grew hostile, developing into violence. Nonetheless, pioneering families and frontiersman established themselves on the Plateau.

As members of the church pushed beyond the settlements of St. George and Cedar City (established in the 1850s) they came into contact more frequently with "Lamanites" - their term for American Indians (Rusho 1981). As a result of the conflicts, Brigham Young encouraged settlers to share the Mormon doctrine with these tribes (Rusho 1981). Upon settling in a new region, missionaries made it their work to evangelize to Paiute, Ute, and Hopi. Generally, their teachings were ignored, as many of these groups had already rejected the teachings of Catholic missionaries more than 70 years before. It was not until the Utah War that relations between Mormons and tribes became more amicable.

Brigham Young ordered Jacob Hamblin, perhaps the most famous and recognized of the Mormon frontiersman, to establish peace treaties with Navajo and Hopi in an effort to rebolster relations and missionary efforts, and lead the Southern Paiute mission in Santa Clara, near modern day St. George. Also known as the "Buckskin Apostle," Hamblin was able to successfully established alliances with many of the tribes along the Colorado. However, many groups refused his efforts, including the Hopi. On his return to the northern reaches of the Plateau, he and his men crossed the Colorado River at the mouth of the Paria river in 1864 (present day Lees Ferry). Further attempts to evangelize to tribes in the region resulted in violent encounters, including one between Hamblin's party and a group of Navajo in 1865. With tensions also growing between the Deseret and the Untied States, Young encouraged Mormon settlers to abandon the region.

As the Utah War progressed, Young encouraged Hamblin to convince native groups to support the Mormon side. Hamblin made attempts to discourage Navajo bands from raiding Mormon settlements in southern Utah, but he was unable to find any Navajo groups due to hostile relations between the Navajo and the U.S. Army. The United States Army Corps of Topographical Engineers was ordered to survey newly acquired U.S. territories.

Multiple expeditions navigated the GGCHNM region throughout the 1850s, in part to identify a route for the transcontinental railroad, but also to establish supply routes for U.S. troops in the intensifying Utah War (also known as the Mormon War). The Ives Expedition, 1857 to 1858, was sent by the War Department. Led by Lt. Joseph Christmas Ives, they explored the Colorado River. Starting up the mouth of the Colorado River in an iron-sided steamboat called "The Explorer," the expedition explored upriver up near present day Hoover Dam. There the steamboat struck a rock and was incapacitated (Hughes 1978). Abandoning "The Explorer," the expedition trekked overland across Arizona, south of the Grand Canyon. The expedition produced early maps of the Grand Canyon, and now-famous depictions of the region drawn by F.W. Egloffstein.

On September 11, 1857, a party of Arkansas emigrants known as the Baker-Fletcher party left Salt Lake City and, at the suggestion of Hamblin, continued along the wagon trail to Mountain Meadows (in southwestern Utah). A Mormon militia led by John D. Lee (a Mormon leader from Illinois) split the party up and then killed the men, women and children. The event became known as the Mountain Meadows Massacre. Lee attempted to divert blame to Paiute Indians, but rumors circulated confirming Lee's involvement. Fir his crimes, Brigham Young excommunicated Lee from the Mormon Church and sent him to establish a river crossing along the Colorado River. Lee founded the crossing at present day Lees Ferry, along with a ranch known as Lonely Dell Ranch. Following court orders in 1874, Lee was arrested, convicted in 1876, and executed by military shooting in 1877. Emma, Lee's 17th of 19 wives, took

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over the ferry's operations until the Mormon Church bought it from her in 1879 and granted the rights to Warren Johnson.

With tense relations between Mormons, Navajo and other indigenous tribes, as well as the U.S. Army, Hamblin and his men kept watch over plateaus and valleys south of their settlements in St. George. When the Ives Expedition embarked, their presence on the river was not overlooked by Hamblin. He and a small group of men went to investigate the expedition and its motives. They encountered Ives and his men in 1858, before Ives crashed the Explorer. Nothing came of their encounter, despite Hamblin's suspicions of Lt. Ives' purpose for exploring the Colorado River. Hamblin continued monitoring the region and worked to improve relations with tribes, even after the Utah War ended.

The Havasupai, whose historical territory included the banks of the Colorado River in the summer and the plateaus of the South Rim in the winter, were granted their reservation in 1882. It now lies on the southern boundary of present-day Grand Canyon National Park, southwest of Grand Canyon Village, and west of the proposed boundary of GGCHNM. As a tribe with direct ties to Grand Canyon and its surrounding landscape, the Havasupai befriended some early white settlers like Hance and William Wallace Bass, showing them places of interest within the Canyon. Bass, who had moved to Williams in the early 1880s, first saw the South Rim in 1884. He built a homestead and established copper and asbestos mining claims in the Canyon. Like Hance, Bass realized the business opportunities in tourism Canyon and he converted to guiding tourists through the Canyon (Hughes 1978). Hance established the first trail to the North Rim of the Canyon, and often took visitors to see Supai village. He built a 60-mile stagecoach road from Williams, AZ to the South Rim and his homestead-turned-hotel became a destination for tourists, artists, geographers, and geologists, among others. The Fred Harvey Company and the Santa Fe Railroad eventually bought Bass out in 1923, around the same time that Harold and Nina Bowman founded Jacob Lake Inn on the North Rim.

The Grand Canyon and its surrounding plateaus became more heavily visited after ambitious businessmen, such as Fred Harvey and investors of the Atchison, Topeka, and Santa Fe Railroad followed the lead of Hance and Bass and capitalized on the tourism industry that now defines the region. The Fred Harvey Company, with the help of Bucky O'Neill and eastern investors,

Fig. 6.3 North of the Grand Canyon's North Rim, the East Kaibab monocline is exposed, due west of Marble Canyon and Lees Ferry. Photo by Kristen M. Caldon.

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developed the rail line to the South Rim in 1901 and built lodging there (Hughes 1978). Rumors, stories, and paintings of the Colorado Plateau's unsurpassed beauty reached the East Coast and tourists included artists and natural scientists, as well as heads of state, such as Theodore Roosevelt.

Theodore Roosevelt

Until the turn of the 20th century, the Grand Canyon region largely passed unnoticed by Spanish, Mormon, and American explorers, and had been avoided by trappers and frontiersman. It was the last of America's great landscapes to be mapped and still remains incompletely explored. However, it was among the first of America's landscapes to be formally protected. With Theodore Roosevelt's first visit to the South Rim in 1903, the region helped launch a new era of conservation. "Leave it as is," stated Roosevelt. "You cannot improve it. The ages have been at work on it and man can only mar it" (Newman 2011). In the years following his first visit, Roosevelt made several hunting and wilderness expeditions along the Canyon's North and South Rims, as well as into the Canyon itself. He commented on the great abundance of wildlife, and its unique appearance and austere beauty.

Roosevelt proclaimed the Grand Canyon and its surrounding forests as a National Game Preserve in 1906 and as a National Monument 1908 (Newman 2011). He praised the beauty of the Kaibab Plateau – from the abundant wildflowers and towering pines, to Great Horned Owls and juncos. Some species he had no name for such as a "long-crested, dark-blue jay," known today as the Steller's Jay, and "the handsomest squirrels I have ever seen – with `black bodies and bushy white tails," unmistakably the Kaibab Squirrel, endemic to the Kaibab Plateau (Newman 2011). In contrast to the geological observations of Powell and Gilbert, Roosevelt made several important, critical observations about the ecology of the region, observations which continue to influence conservation efforts. In the few short years following its designation as a National Monument, Roosevelt noted an observable shift in the wildlife populations of the Kaibab Plateau. In his account of a cougar hunt in 1913, Roosevelt commented on the increasing numbers of the "chief game animal of the Colorado Canyon reserve… the Rocky Mountain blacktail, or mule deer," also known as the Kaibab desert mule deer (Newman 2011). Attributing this to a decrease in human hunting of deer as well as the killing off of cougars, Roosevelt documented a pivotal moment in the federal govern-

Fig. 6.4: View from the Saddle Mountain Trail, overlooking Nankoweap Trial, originally established by John Wesley Powell as a route to the river. Photo by Kristen M. Caldon.

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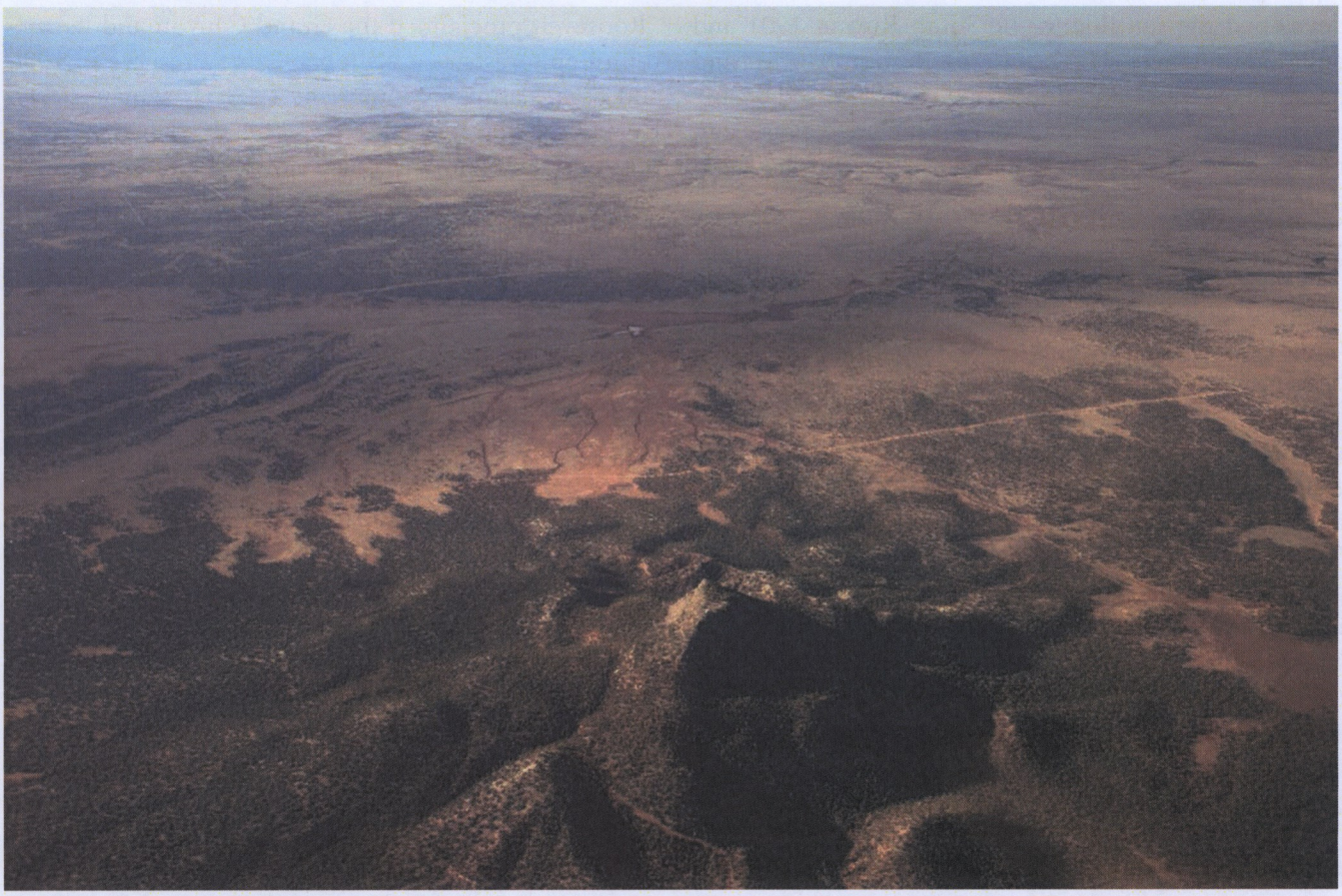

Fig. 6.5 An aerial view of the original Grand Canyon Airport at Red Butte. Photo by Kristen M. Caldon.

ment's role managing wildlife on public lands (Binkley 2006).

At the time of his cougar hunt in 1913, the region was under designation as a National Monument. With a decrease in human hunting (mostly native peoples), and an increase in the number of cougars killed by rangers and hunters, species like the Kaibab deer and other game underwent a massive population explosion (Binkley 2006). Grand Canyon game warden, Uncle Jim Owens, reportedly killed between two and three hundred cougars during his tenure. Although it is easy to see that he did not understand the ecological importance of the big cats, he did admire their deadly skill as hunters, commenting on their social and predatory behaviors. Roosevelt maintained the opinion that removal of predators was an ecological service, enabling every man to better experience wild nature (Newman 2011). As a result of these early land discussions, the Canyon region and the animals and peoples who historically inhabited it during this early period of conservation underwent a drastic reconfiguration.

Almost two decades prior to its designation as a National Monument, the federal government declared the area as the Grand Canyon Forest Reserve (1893). The area encompassed the Havasupai reservation and created a barrier between the Havasupai and the forests where they had hunted for game, gathered for other foodstuffs, and grazed horses (Hughes 1978). The Tribe was not able to hunt beyond the reservation borders without game permits.

Transition of the Grand Canyon region from a Forest Reserve to a National Monument, and finally to its designation as a National Park in 1919, ultimately protected Grand Canyon and some of its wildlife from what Roosevelt called "selfish exploiters of the public domain" (Newman 2011). However, the initial impacts of these decisions resulted in massive population fluctuations of Kaibab deer and their natural predators. Overgrazing of aspen, continued predator control, and an increase in human hunting in the 1920s also had major impacts on deer and other wildlife species (Binkley 2006).

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Tourism and development continued to increase after designation as a National Park. The cable car built by David Rust at Bright Angel Creek in 1903 was replaced in 1921 by a swinging bridge, and increased automobile traffic inspired Harold and Nina N. Bowman to open Jacob Lake Inn and filling station on the North Rim in 1923. Nina's grandfather, Franklin B. Woolley, authored the summary report of the 1866 cavalry exploration of southern Utah and northern Arizona in 1866 – an area that encompassed St. George, the Kaibab Plateau, and the mouth of the Green River (the chief tributary of the Colorado River). The report included the first official description and map of the Kaibab Plateau. Franklin's brother, Edwin D. Woolley Jr., as one of the first white men to see Grand Canyon from the North Rim. He predicted that people would come from "all corners of the globe and pay large sums of money to gaze at (this true) wonder of the world." Edwin guided the first automobile trip to the North Rim in 1913. He built a road along the way and shipped gas from the nearest filling station in Salt Lake City, a distance of 320 miles. Henry Bowman, Harold's father, also played a major role in improving automobile access to the Grand Canyon, building the first road from Kanab, Utah to Mt. Carmel.

By the time Harold and Nina established their lodge in 1923, nearly 60 years of exploration, settlement, development, and legal battles had elapsed. The Jacob Lake Inn "was quite an experiment at first," stated Harold. "If we could sell a barrel of gas in one day, we thought we had had good business." It was not until the mid-1930s, after Navajo Bridge was constructed across the Colorado River at Marble Canyon and the crossroads of Highway 89A and Highway 67 south of the North Rim were completed, that their business was able to prosper.

The 1920s marked a decade of development and increased visitation to the South Rim as well. After completion of the rail line to the South Rim, and Bass improved his road to the South Bass area, tourists came by train and automobile to the southern portion of the proposed GGCHNM. In 1927, Parker Van Zandt created a runway and built an airplane hangar near Red Butte south of Grand Canyon Village. He launched the first air tours of the Grand Canyon and secured inves-

Fig. 6.6 Ponderosa Pine dominates the forests of the proposed monument, and has played a seminal role in the history of the region. Photo by Jeri Ledbetter.

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Fig. 6.7 Steller's Jay. Photo by Molly Joyce.

tors such as Henry Ford. Amelia Earhart and Charles Lindbergh both landed their planes at that airport. The aerial tour company, Scenic Airways Inc. remained open until the 1960s, when a more central airport was completed at Tusayan.

Summary

Grand Canyon is the focal point of tourism and visitation in northern Arizona, and the history of exploration and settlement continues to profoundly affect the landscape. From Cardenas and Escalante, to Lee, Roosevelt and modern entrepreneurs, these explorers and settlers shaped economic development along the Canyon's Rims. The history of the proposed GGCHNM has been a grand debate on balancing economic and environmental concerns over this vast, rich, scenic landscape, a discourse produced through the lives and actions of Native Americans, explorers, politicians, authors, and artists. Understanding the significance of this enormous suite of ecosystems, few could anticipate 5 million tourists would be drawn to the region annually in the 21st century.

American perception of the Grand Canyon changed dramatically over the past 500 years. People no longer cross the southwestern states with goals of imperialism, ignoring the natural and cultural significance of the GGCHNM landscape. Instead, the myth and grandeur of the region gradually dawned upon them. It has passed through generations of men and women whose personal ties to the Canyon evolved from exploration to settlement and by opportunistic pioneers, to recreation, pleasure seekers and those hungry for reconnection to the natural world. Hunting, logging, mining, damming, and tourism have altered the GGCHNM over the course of history, and the region continues to play an integral role in land and natural resource conservation philosophy and policy.

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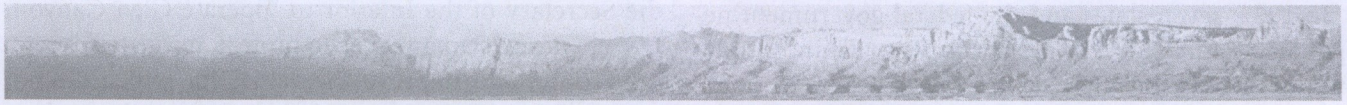
CHAPTER 6



LANDSCAPE CONSERVATION HISTORY

KIM CRUMBO AND KATIE DAVIS

Introduction

Concerns over degradation of the natural values of the Grand Canyon region led to the establishment in 1893 of a forest reserve surrounding Grand Canyon. In fact, between 1882 and 1886, Senator (later President) Benjamin Harrison introduced three Grand Canyon National Park bills that evidently included the North Kaibab (Morehouse 1996:39). In 1903, Theodore Roosevelt visited the region and pronounced: "The Grand Canyon fills me with awe. It is beyond comparison—beyond description; absolutely unparalleled throughout the wide world... Let this great wonder of nature remain as it now is. Do nothing to mar its grandeur, sublimity and loveliness. You cannot improve on it. But what you can do is to keep it for your children, your children's children, and all who come after you, as the one great sight which every American should see" (Hughes 1979:66). Roosevelt did much to protect the Grand Canyon, but he could scarcely foresee the ensuing century of struggle that lay ahead to preserve this great American treasure.

By 1905, Congress and President Theodore Roosevelt recognized that forests like the Kaibab should be set aside "for the wild forest creatures" ...[to] afford perpetual protection to the native fauna and flora" (U.S. Congress 1905). In 1906, and in accordance with earlier Congressional authorization, Theodore Roosevelt established the Grand Canyon National Game Preserve for "the protection of game animals... recognized as a breeding place therefore..." That designation, while still on the books, has proven ineffective in preserving the full spectrum of native species and their habitat, especially large carnivores and the Plateau's old growth forests and grasslands.

Two decades after Roosevelt's Game Preserve designation, "Ding" Darling, the head of the U.S. Biological Survey, proposed creating a vast wildlife area on the Arizona Strip. At least one rancher, Preston Nutter, expressed enthusiasm for the idea (Price and Darby 1964:251). As usual, the principal opponents, ranchers (with at least one exception, Mr. Nutter) and loggers, blocked these conservation efforts (Morehouse 1996).

In 1908, Theodore Roosevelt, exasperated by faint-hearted congressional reluctance to protect the Grand Canyon, proclaimed the area a national monument, laying the foundation for the National Park but leaving out most of the forested Kaibab Plateau (Morehouse 1996:37). Efforts to protect the lands surrounding Grand Canyon continued with recommendations for an enlarged, five million-acre national monument including not only the North Kaibab and Tusayan Ranger Districts adjacent to Grand Canyon, but portions of Utah's Dixie National Forest (Morehouse 1996:40).

The Act of Congress, signed by President Woodrow Wilson, established Grand Canyon on February 26, 1919, three months after the end of World War I, in which 16 million humans perished. In 1927, Congress enlarged the Park to include portions of the North Kaibab forest (Hughes 1979:90). In December 1932, Herbert Hoover, of all people, established a 273,145-acre

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Grand Canyon National Monument in the Toroweap region of western Grand Canyon (Morehouse 1996:73; Hughes 1979:90).

Traditional opponents to Park additions (logger, ranchers and hunters) emerged again in 1930 and by 1937, adversaries informed Arizona's Senator Hayden that ranchers opposed "loss of any more grazing range" (Morehouse 1996:75,76). Yet, greater threats to the Canyon lay just over the horizon.

In 1922, seven states and the federal government negotiated and signed the Colorado River Compact, defining the relationship between the upper basin states, where most of the river's water supply originates, and the lower basin states, where most of the water demands were developing (Law of the River 2012). At the time, the upper basin states were concerned that plans for Hoover Dam and other water development projects in the lower basin would, under the Western water law doctrine of prior appropriation, deprive them of their ability to use the river's flows in the future. The compact established Lee Ferry as divider between the Upper and Lower Basins (Hughes 1979:97).

One outcome of the compact, the U.S. Geological Survey headed by Claude H. Birdseye, lead an expedition down the Colorado River through Grand Canyon in 1923, intent on locating potential dam sites (Hughes 1979: 97; Lavender 1985: 58-65).

In 1950, the Bureau of Reclamation completed a grandiose scheme recommending two major dams in Grand Canyon National Park (Crumbo 1994). Marble Canyon Dam, planned for just below Red Wall Cavern at Mile 39.5, would have flooded 609 km of river up to near the base of Glen Canyon Dam, wiping out one of the world's most enchanting river canyons. A second dam, Bridge Canyon Dam at Mile 236, would have flooded 95 miles of river, including Lava Falls and the lower section of Havasu Creek.

As late as 1966, many considered the dams inevitable, but in June of that year, the Sierra Club paid for full-page advertisements in the New York Times and Washington Post: "Only You Can Save the Grand Canyon from being Flooded—For Profit" (Crumbo 1994). In 1968, after much debate, deceit and political maneuvering, Congress passed, and President Lyndon B. Johnson signed, Public Law 90-537 prohibiting the study or construction of hydroelectric dams in Grand Canyon without congressional approval.

On January 20, 1969, his last day in office, President Johnson created Marble Canyon National Monument (Hughes 1979:106). Finally, in 1975, President Ford signed the Grand Canyon Enlargement Act, embracing Marble Canyon and Grand Canyon (Toroweap) national monuments, and protecting the entire Canyon from Lees Ferry to the Grand Wash Cliff.

Water Flows

The Grand Canyon Protection Act of 1992 requires the Secretary of the Interior to "operate Glen Canyon Dam …in such a manner as to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park… including, but not limited to natural and cultural resources and visitor use." While this Act does not directly influence management of the proposed GGCHNM, it emphasizes the importance of Grand Canyon in regional land management.

Forest Management

Surrounded by desert and isolated by canyons, forests on the Kaibab Plateau have a unique evolutionary history (Keith 2003, Weng and Jackson 1999). The distribution of major forest vegetation types on the plateau generally follows gradients of temperature and moisture that correspond with elevation (Rasmussen 1941 – Figure 1). Ponderosa pine forest intermixes with pinyon-juniper woodland near canyon rims, and it is prominent up to approximately 8,200 feet above sea level, where it transitions to forest dominated Douglas-fir and spruce species. Quaking aspen is ubiquitous and transitional among all forest types on the Kaibab Plateau.

Old growth forests that feature large, fire-resistant ponderosa pine and Douglas-fir trees are less abundant today than when Europeans settled the region. Industrial logging removed more than 90 percent of old growth structure from ponderosa pine forests in the American Southwest by 1990 (Bailey and Ide 2001, Covington and Moore 1999, USDA 2007). Old growth is more abundant on the Kaibab Plateau due, in part, to its remoteness from commercial infrastructure and relatively short logging history (Sesnie and Bailey 2003). In fact, outside of designated wilderness areas, there is no other forested landscape in the Southwest that contains more old-growth trees and old-growth forest structure

Forest inventory data collected in 1982 and 1990 on the northern Kaibab Plateau near Jacob Lake, Arizona, showed that approximately 53 percent of ponderosa pine forest exhibited old growth structure (Sesnie and

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Bailey 2003). Contiguous old growth stands were even more common before 1940, when the U.S. Forest Service developed its first timber management plan for the Kaibab Plateau. Extensive timber harvest in the second half of the 20th century replaced old growth forest with even-aged stands dominated by small trees on approximately 45 percent of the plateau (Sesnie and Bailey 2003: 44-46; Figure 4).

In this regard, ponderosa pine forest structure and composition on the Kaibab Plateau changed in a qualitatively similar fashion to what occurred elsewhere as a result of human management (Covington and Moore 1999). However, the highest density of northern goshawks reported in North America occurs on the Kaibab Plateau primarily because the remaining late seral forest offers relatively abundant nesting habitat (Reynolds and Joy 1998). Objects of scientific interest on the plateau include the remaining old growth forest and associated wildlife populations that are more abundant on the Kaibab Plateau than anywhere else in the American Southwest.

Evidence from fire scars in live trees indicates that frequent, low-intensity surface fires were characteristic of ponderosa pine forests in the period from approximately 1700 to present (Swetnam and Baisan 1996). Fulé and others (2000) reported a mean fire return interval of six-to-nine (6-9) years in ponderosa pine forest on the southern edge of the Kaibab Plateau where lightning strikes are most common. At other plateau locations, mean fire return intervals ranged from five-to-19 years (Fulé et al. 2003, Wolf and Mast 1998). Fires generally occur in dry years, particularly when preceded by one to three years of high precipitation (Swetnam and Baisan 1996, Fulé et al. 2000).

Fulé and others (2002a, 2002b) noted spatial gaps in ponderosa pine forest stands comprising patches of about two (2) hectares or less where crown fires stimulated quaking aspen, indicating a mixed-severity fire regime (Odion et al. 2010, Williams and Baker 2012). According to Rasmussen (1941: 254), "The aspen attains its maximum development above the yellow pine, but areas and scattered groups are present in many parts of' the association. This species apparently forms a primary seral stage in the forest succession near the upper border of the community but it is also found in a variety of local situations."

Mixed conifer forest is transitional between ponderosa pine and spruce-fir communities. With inherently diverse composition and structure, mixed conifer forest exhibits an intermediate fire regime including low-severity and stand-replacing fires that maintain a patchy mosaic of vegetation over broad scales (Odion et al. 2014, Williams and Baker 2012). According to Fulé and others (2003: 483-484), the fire regime of mixed conifer forest varies by slope and aspect:

> *The transition zone studied here, changing from surface to stand-replacing fires, may be the most complex case for fire regime reconstruction. [E]ven if we were fully able to reconstruct the details of every fire from 1700 to 1879, the pattern of severe burning did not appear to be stable over the spatial and temporal scale of the study. These considerations imply that managers may be best advised to view the historical condition in high-elevation southwestern forests as a relatively general guide to reference conditions, in contrast to the more specific and temporally stable reference data available for lower-elevation ponderosa pine forests.*

Elevated densities of small, shade-tolerant, and fire-sensitive tree species like white fir may be an artifact of fire suppression in mixed conifer forest (Fulé et al. 2003), but the effect of fire suppression is not uniform across the Kaibab Plateau.

Frequent disturbance by lightning-ignited fires shaped the structure and composition of conifer forest on the Kaibab Plateau for at least 10,000 years before European settlement. A mixed-severity fire regime with short area rotations coincided with the invasion of ponderosa pine into mesic, spruce-dominated formations as regional temperatures increased at the beginning of the Holocene (Weng and Jackson 1999: 196-197).

Fire disturbance patterns occur in disequilibrium with current climate (Allen et al. 2002). The last decade of the 20th century and first decade of the 21st century were the warmest of the past millennium (Seager and Vecchi 2010). Xeric conditions that prevailed ~6,000 years ago may offer a better analogue to the emerging climate than what prevailed in the past few centuries (Mock and Brunelle-Daines 1999, Seager et al. 2007, Weng and Jackson 1999). Continued warming will necessitate restoration approaches informed

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by reference conditions drawn from deeper time than what existed when Europeans settled the area (Noss et al. 2006, Swetnam et al. 1999, Whitlock et al. 2003).

The relatively intact forests of the Kaibab Plateau are highly adapted to natural fire disturbances (Allen et al. 2002, Falk et al. 2006, Fulé et al. 2002b). Additionally, due to its remoteness and limited private acreage, the Kaibab Plateau contains few developed areas and is notable for its absence of structures or established human communities that have the potential to be disturbed by fire. This unique ecosystem presents significant management opportunities to accomplish restoration of natural disturbance processes, and provides ideal conditions to study and observe these phenomena.

Fire should be used to accomplish restoration objectives where it has been artificially suppressed by human management (Brown et al. 2004, DellaSala et al. 2004, Odion et al. 2014). Sustainable forest management will emphasize fire resilience as natural disturbances increase in frequency (McKenzie et al. 2004, Seager et al. 2007, Seager and Vecchi 2010, Weng and Jackson 1999, Westerling et al. 2006, Williams et al. 2010). Fire resilience will be especially important to conservation and recovery of sensitive wildlife species including northern goshawk, Kaibab squirrel, and Mexican spotted owl.

Fulé and Laughlin (2007) studied fire effects to conifer forest structure and composition on the Kaibab Plateau. Use of naturally-ignited wildfires in 2003 caused significant reductions of tree density, canopy cover, and fuel load on burned sites compared to sites that did not burn. "Thinning effects" of fire in ponderosa pine forest, even after fire had been excluded since 1880, was consistent with restoration objectives (Fulé and Laughlin 2007: 144). Therefore, the Kaibab Plateau presents the Forest Service, other state and federal agencies, and scientists with a rare chance to implement and study fire-based restoration projects, while protecting old growth forest characteristics, well into the future.

Natural Quiet

Aviators have found the Grand Canyon irresistible since at least 1919 when an Army Air Service pilot braved the canyon's depths by descending about 2,000 feet below the rim (Hughes 1979:100). Expansion of air travel led to construction of an airport in 1965, just outside the Park at Tusayan town (Hughes 1979:104. The airport soon became the state's third busiest as the Canyon's once immense silence filled with the whine of aircraft. Often, only the roar a large rapid could mask the often constant aerial drone, while it was not uncommon to find a helicopter hovering directly over the pools of Deer Creek Falls, or along the face of Thunder River. Not all approved. "The prevalence of airplanes and helicopters in and above the Grand Canyon," wrote Edward Abbey "are a distracting, irritating nuisance which should no longer be tolerated by anybody," and many agreed (Crumbo 1994). Public dissatisfaction resulted in passage of the 1987 National Parks Overflights Act. The Act required the agencies to "provide for substantial restoration of the natural quiet and experience of the park and protection of public health and safety from adverse effects associated with aircraft overflight." The fight to restore natural quiet continues to this day, although increases in overflight frequency have been proposed.

The Grand Canyon Watershed Protection Act of 2011

During the first session of the 112th Congress, Representative Raul Grijalva introduced legislation to protect Grand Canyon's immediate watershed outside the Park from additional uranium mining claims and subsequent mining impacts, as described above. The legislation failed to pass, but at public insistence the Secretary of Interior withdrew from future mining claims 1.7 million acres surrounding Grand Canyon National Park. As described in the Mineral Resources section of Hydrogeology Chapter 2, many uranium mining claims exist in the region and two are in or nearly in operation.

The withdrawal order was only for 20 years, and recently some lawmakers introduced legislation to overturn the Secretary's decision demonstrated Congress' unwillingness to provide long-term protection of the natural values critical to the region's economic and environmental welfare. At the time of this writing, at the mining industry has filed least four lawsuits seeking repeal of the withdrawal. Conservationists, led by the Sierra Club and Grand Canyon Wildlands Council are leading the charge to convince the President to follow Theodore Roosevelt's example and fulfill the vision to permanently protect the Grand Canyon on a grander and ecologically complete scale.

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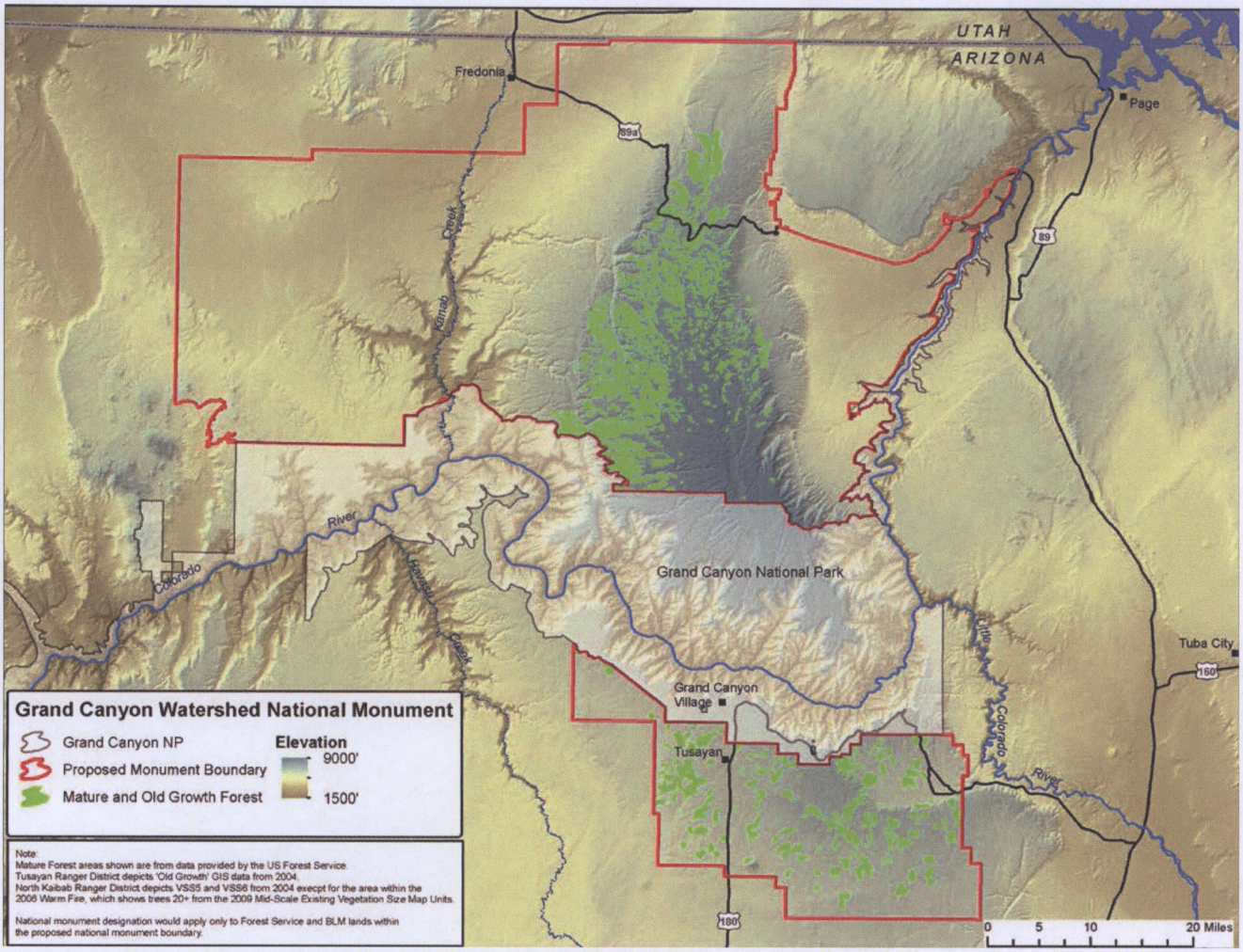

Fig. 7.1 Map showing the location and distribution of mature and old-growth forest structure on the Kaibab Plateau. Produced by the Center for Biological Diversity.

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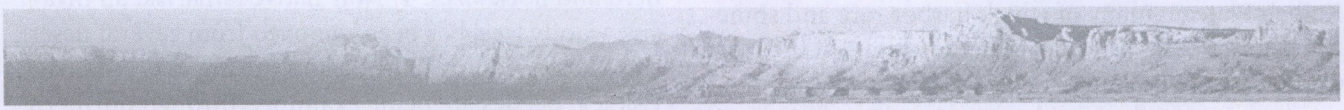
CHAPTER 7



TEN NOTABLE SCIENCE CHARACTERISTICS OF THE GGCHNM

Unique Geographic Significance

The proposed Greater Grand Canyon Heritage National Monument (GGCHNM) includes the Kaibab Plateau, House Rock Valley, and the southern part of the Kanab Creek drainage, as well as a portion of the Coconino Plateau immediately south of Grand Canyon National Park, spanning the Grand Canyon and forming its proximal watershed. Bordered on the west by the Shivwits Plateau, to the east by the Vermilion Cliffs, and on the north by Highway 89A and the Utah state line, the proposed monument captures a piece of western geography that has shaped the distribution of humans and wildlife across the southwest for millennia.

The GGCHNM's geographical significance is also due in large part to the unique geological history that resulted in the enormous East Kaibab Monocline, which elevates the North Rim of Grand Canyon more than 800 m above the South Rim. The geographical position of the GGCHNM encompasses the transition between the Colorado Plateau and the southern US desert biomes, influencing everything from the movement of water to the evolution of native species, this geographical and geological transition zone is of significant scientific value.

Remarkable Hydrology

The GGCHNM region spans one of the most profound geological features in the United States, the chasm of Grand Canyon. The exposure of Colorado Plateau strata reveals not only the vastness of time that has transpired over Earth's history, but also provides a detailed look into the geohydrology that supports the aquifers and hydrologic cycle of this arid region. As such, the GGCHNM is a geohydrological laboratory, which can be studied to better understand how water moves through the Earth and how aquifers function. While the proposed GGCHNM does not, itself, contain many flowing streams, it protects the headwaters of a large number of pristine streams and contains numerous ecologically and culturally significant springs, seeps, and natural ponds.

Climate Change and Ecotone Ecology

A remarkable paleoecological transformation has occurred in the GGCHNM over the past 50,000 years. The western margin of the GGCHNM roughly coincides with the boundary between the Sonoran/Mojave/Great Basin floristic provinces to the west, with the Maderan province to the south, and the Intermountain province to the northeast. Analysis of ancient packrat middens and cave deposits has revealed that the pinyon-juniper treeline rose 3,000 feet upslope in less than 7,000 years during the Pleistocene-Holocene transition, as a warmer, drier climate developed. These environmental shifts resulted in the mixing of plant species from the surrounding ecosystems and biomes. Environmental and floristic changes, coupled with the arrival of early humans, resulted in the extinction of the Pleistocene megafauna – elephants, camels, mountain goats, large predators, and giant birds that roamed the plateaus and lowlands, prior to natural desertification. On-going concerns over how ecosystems will

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function in response to global climate changes, can be examined through space-for-time studies across the elevation and aspect gradients that are so abundantly expressed in the GGCHNM region.

A Biological and Evolutionary Hotspot

Desert and plateau springs, karst cave systems, and old growth coniferous forest provide refugia and make the North Kaibab an important biological hotspot. The Forest Service manages more than 200 springs on the Kaibab Plateau, many of which harbor rare and sometimes unique life. The springs and habitats in the North Canyon drainage support at least 6 rare or endemic species of plants, invertebrates and endangered Apache trout. Many forest springs have been altered by human activities, but can be easily restored to ensure they remain hot spots for biodiversity: stoneflies, beetles, and various amphibians require springs wetland habitats.

A Refuge for Sensitive and Game Species

The GGCHNM region supports at least 1500 plant species, an extraordinary but poorly documented entomofanua with several endemic species, one endangered fish species, 6 amphibian species, reptile species, 112 bird species, and 79 mammal species. Several dozen Kaibab plant and animal species are rare or endemic, and are species of concern to the State of Arizona, the U.S. Fish and Wildlife Service, the U.S. Forest Service, or other federal agencies. The extent of migratory and upland species using the GGCHNM and its role as a corridor, flyway, and refuge demonstrate how critical the proposed monument landscape is to the persistence of those many iconic species and populations.

An Important Migratory Corridor

The long, north-south aligned escarpment of the East Kaibab Monocline has been identified as one of the primary hawk flyways in the Southwest. Cliffs such as these provide migratory pathways for hawks, eagles, and other species, which are well-documented. A large number of raptors migrate through southern Utah and use upwardly-rising air currents that develop as daytime mountain winds along cliff lines. The North Kaibab region provides a primary movement corridor for Desert Mule Deer, and likely other large mammals, such as Desert Bighorn Sheep, and Mountain Lion (*Puma concolor*) from lowland to upland habitats.

Population and Landscape Restoration Ecology

Restoration ecology is being explored and implemented in the region through several different projects. 1) The U.S. Forest Service has undertaken springs and forest rehabilitation projects. 2) Endangered California Condors have been released from a site on the Vermilion Cliffs near Marble Canyon, with more than 75 birds presently flying. 3) Pronghorn and Bighorn Sheep population restoration efforts have increased the herd and flock sizes. 4) Non-native tamarisk, an invasive woody tree, has been removed from several desert springs along Kanab Creek, and the impacts of tamarisk leaf beetles are being examined through northern Arizona. Overall, these population and ecosystem management activities demonstrate that the GGCHNM region is an extraordinary natural laboratory in which to test and apply the principles of conservation and restoration ecology.

Archaeology and Cultural Anthropology

Much of the current understanding of GGCHNM region archaeology is based on small-scale, superficial surveys, rather than on broad or detailed assessments. However, existing research has revealed Paleoindian artifacts from the region dating to perhaps >6,000 BC; quarries, campsites and chipping areas dating from the Archaic period (ca. 2500 to 300 BC), as well as numerous house sites dating to the Basketmaker II to Pueblo III periods (ca. AD 500-1150); and Southern Paiute occupation (ca. AD 1250-1880). Pictograph sites, caves (including some with feathered arrowshafts, sandals, and woven baskets) and rockshelters containing elaborate rock art have been discovered. These sites and remains are considered by contemporary American Indians to be significant cultural properties. Conservation and further inventory and study of these sites and remains will elucidate the complex relationships between early humans in the GGCHNM and Grand Canyon regions. These sites and remains are considered by contemporary American Indians as significant cultural properties.

A History of Exploration and Westward American Expansion

The color and harshness of the GGCHNM region is strongly reflected in its exploration and settlement history. Though the focal point of the region is the Canyon itself, a large portion of its history and development took place in the proposed GGCHNM. Expe-

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ditions led by European explorers resulted in the first documentation and interaction with Grand Canyon by those outside American Indian communities. As new settlers moved west from eastern America, early mountain men and pioneers created and maintained trails and villages throughout the proposed monument landscape. Interactions, both peaceful and violent, between American Indian tribes and European settlers influenced the politics and use of the lands and waters in the region. Industries such as cattle operations, mining, and timber harvest popped up, all of which played an important role in the development of local economies. The GGCHNM is a reflection of the dynamic and ever-shifting understanding of the role and influence of human development on the Grand Canyon region, all of which is of great historical importance for American Indian tribes and the American people.

A Vast, Scenic Landscape that Protects Grand Canyon

The GGCHNM region is a truly vast and largely undeveloped landscape, made more remote and inaccessible due to its geographical features. The Plateau, its escarpment margins, and the surrounding lands, have exceptional regional and global scenic, recreational, scientific, and cultural value. Protection of this region will provide a better buffer from the impacts of human development and climate change, helping to protect Grand Canyon from the onslaught of environmental disruption that so greatly threatens the ecological integrity of the Southwest.

Summary

This landscape analysis indicates that significant geological, biological and human history features and processes exist in the GGCHNM region, and additional research is likely to contribute substantial information to understanding the processes and impacts of geological, biogeographic, and global environmental change. The objects, features, and scientific opportunities mentioned herein, coupled with the overall high ecological integrity of most of the landscape, its low human population density and development, and few extractable resources, make the GGCHNM a prime opportunity for enhanced protection.

Protection of the GGCHNM region is not only a worthy undertaking in its own right, but it will help buffer Grand Canyon National Park from the impacts of rapid population expansion in southern Utah and Nevada, as well as threats just outside the Park. The region has outstanding scenic value, particularly along its eastern, southern and western escarpments. In addition, the proposed National Monument will provide better landscape linkage among the region's Wilderness Areas, protect prominent north-south migration routes, along with springs, caves, the Kanab Creek drainage, old growth forest stands on the Kaibab Plateau, and sensitive and game populations and their habitats on the northern portion of GGCHNM. Much remains to be learned about the GGCHNM region, and future inventories and studies are likely to substantially increase the list of species, identify important, as yet unrecognized, ecological processes, and how climate changes affect or are buffered in complex landscapes. Such data are only likely to further strengthen the rationale for preserving this geologically, biologically and anthropologically outstanding landscape.

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An aerial view looking north across House Rock Valley, the East Kaibab Monocline, and the Vermillion Cliffs. Photo by Kristen M. Caldon.

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Conversation Contents

Op-ed: ‘Midnight monument’? No, Utah leaders had years to make a Bears Ears deal

Jessica Kershaw <jessica_kershaw@ios.doi.gov>

From:	Jessica Kershaw <jessica_kershaw@ios.doi.gov>
Sent:	Tue Dec 20 2016 19:14:14 GMT-0700 (MST)
To:	Nikki Buffa <nicole_buffa@ios.doi.gov>, Laura Pardue <lpardue@blm.gov>, Kate Kelly <kate_kelly@ios.doi.gov>, "interior_press@ios.doi.gov" <interior_press@ios.doi.gov>, Neil Kornze <neil_kornze@blm.gov>, Sarah Neimeyer <sarah_neimeyer@ios.doi.gov>, "Mendoza, Felipe" <felipe_mendoza@ios.doi.gov>, Maria Najera <maria_najera@ios.doi.gov>, Tommy Beaudreau <tommy_beaudreau@ios.doi.gov>, Blake Androff <blake_androff@ios.doi.gov>, Neil Kornze <nkornze@blm.gov>, Janice Schneider <janice_schneider@ios.doi.gov>
Subject:	Op-ed: ‘Midnight monument’? No, Utah leaders had years to make a Bears Ears deal

Op-ed: ‘Midnight monument’? No, Utah leaders had years to make a Bears Ears deal

By Terry Tempest Williams and Bill Hedden

First Published 1 hour ago • Updated 1 hour ago

(Terry Tempest Williams . (Courtesy photo) by Ted C. Brummon)

(Terry Tempest Williams . (Courtesy photo) by Ted C. Brummon)

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In a world of fake news, the Utah delegation in step with Gov. Gary Herbert is participating in fake history when it comes to the Bears Ears National Monument proposal. They decry a "midnight monument" but, in truth, the

protection of these vulnerable lands has been in the making for several years. It is a tribal proposal supported by the conservation community and supported by the majority of Utahns and Americans.

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Utah Dine Bikeyah was founded in 2010 to push for protection of Bears Ears either through legislation or a presidential proclamation. At the same time, many conservation groups were advocating a Greater Canyonlands Monument for roughly the same area. Rep. Rob Bishop launched his Public Lands Initiative (PLI) three years later, in February 2013, with the express goal of substituting comprehensive legislation for any monument proclamation.

In July 2015 the Hopi, Navajo, Mountain Ute, Uintah and Ouray Ute and Zuni united in the Bears Ears Intertribal Coalition, and a delegation of senior administration officials from the Department of Interior and the USDA made a site visit. On Oct. 15, 2015, the Intertribal Coalition delivered to President Obama a detailed proposal for a 1.9 million-acre Bears Ears National Monument under a collaborative management model. This had the formal support of all the tribal governments, support that has been repeatedly reiterated throughout this process, up until as recently as two weeks ago.

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This summer, another site visit was made by Secretary of the Interior Sally Jewell, who convened a public hearing over the proposed Bears Ears National Monument in Bluff.

Jon Jarvis, director of the National Park Service, and Neil Kornze, the BLM director, and many other high-level government officials were in attendance to hear local concerns and meet with the Utah delegation staff. Over a thousand citizens, most of them Utahns, attended the public hearing in Bluff, where monument supporters heavily outnumbered opponents.

Bears Ears has received more scrutiny than any other monument proposal before it and dozens of opinion pieces have appeared in this paper, as well as in the New York Times, Los Angeles Times and Washington Post. It has been an open and community-building process that has emerged from the ground up led by the tribes.

It is important to know and restate that Bishop and Rep. Jason Chaffetz received extensive cooperation from conservation groups in the early phases of developing the Public Lands Initiative for eastern Utah counties. Our representatives utterly failed to seriously address the concerns of the Intertribal Coalition, which officially represents five sovereign nations with special trust relationships with the United States government.

In late 2014, Bishop and Chaffetz ceased all pretense of collaboration. It is worth emphasizing that there was never a single meeting about San Juan County with the various stakeholders. Not one. The delegation left that task entirely to the San Juan County Commission, which refused to let anyone not living in the county participate in any

way. When they solicited input from San Juan County residents, 64 percent supported the Bears Ears proposal in writing, but the county adopted a proposal that had the written support of just two people. Bishop's proposal demotes the sovereign Indian nations to mere voices in a large crowd of advisers, chops out 600,000 acres of the Bears Ears area from protection with a gerrymandered boundary that allows every kind of proposed development project in the county to go forward, gives ownership of the roads to Utah so that looting can proceed beyond any control and hands over management of energy development to the state in a breathtaking violation of existing law. This is what passes for a comprehensive legislative proposal from the county. The PLI is a dream map of development for the fossil fuel industry.

The delegation declares that there is no support for the monument beyond environmental extremists, yet 70 percent of Utahns support the monument. All of the tribal governments have reiterated their support repeatedly. Over 20 Pueblo tribes in the American Southwest have formally written of their support along with the 360 tribes of the National Congress of American Indians. Six of the seven Navajo chapters in Utah have passed resolutions in support of the Bears Ears Monument. The Bears Ears National Monument proposal is anything but a top-down act by an "imperial presidency" as Sen. Mike Lee has suggested.

As members of the Utah conservation community, we have been deeply moved and inspired by the tribal leadership of the Intertribal Commission and the Utah Dine Bikeyah. Their strength of character, integrity and grace, not to mention patience, deserves greater respect from Utah's politicians. At a time when we are witnessing the power of indigenous people's resolve to fight for their native rights all over the world from big energy companies, a presidential proclamation to establish Bears Ears National Monument could be seen as an act of justice. The protection of Utah's indigenous people's home ground on Cedar Mesa, where they perform their ceremonies and honor the graves of their ancestors that have been pillaged and desecrated for decades, and at the same time safeguard these fragile lands from oil and gas development, would mark a moment in American history of respect for this nation's first inhabitants.

The irony is apparently lost on Lee in his opinion piece in the Washington Postwhen he said, "The administration recently blocked the Dakota Access Pipeline due to strong opposition from local residents. I urge it to give the same respect to the residents of San Juan County." The local residents at Standing Rock were Indians."The frontlines are everywhere," said Eric Descheenie, former co-chair of the Intertribal Commission and newly elected legislator in the Arizona State House. "Together, tribes and the United States can innovate land management that intersects the best of western science and method with those of traditional knowledge and practice. Enough time has passed. It's been 524 years, Mr. President. Let's get it done."

Terry Tempest Williams is the author of "The Hour of Land: A Personal Topography of America's National Parks." Bill Hedden is the executive director of the Grand Canyon Trust. Both live in Grand County.

Sent from my iPhone

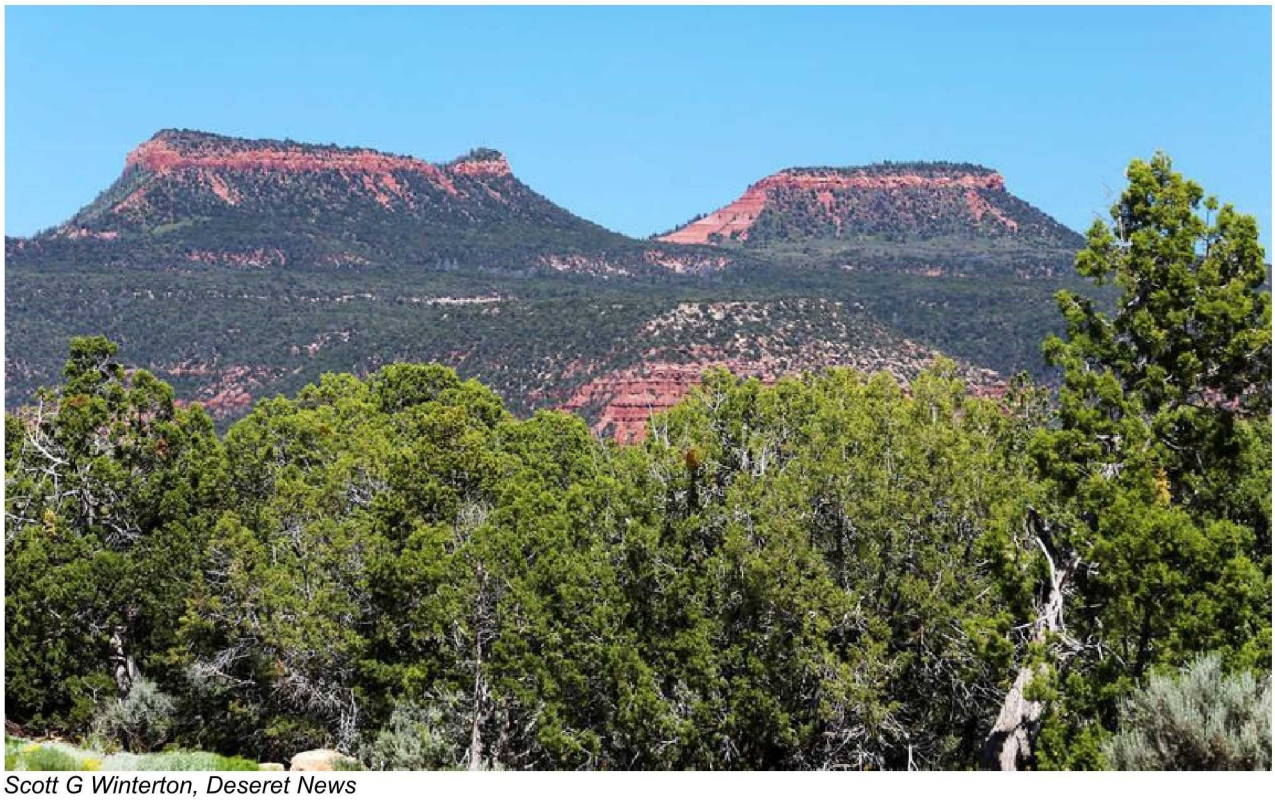
On Dec 14, 2016, at 7:07 PM, Kershaw, Jessica <jessica_kershaw@ios.doi.gov> wrote:

Deseret News: Rumors and rumblings over Bears Ears monument run rampant

By Amy Joi O'Donoghue @amyjoi16
Published: Dec. 14, 2016 2:25 p.m.
Updated: 6 minutes ago

5 Comments

1 of 1



Scott G Winterton, Deseret News

The Bears Ears area is seen as Sen. Orrin Hatch, R-Utah, joins San Juan County Commissioner Rebecca Benally and Gov. Gary Herbert at the Natural Bridges National Monument Visitor Center as they talk about the proposed Bears Ears National Monument on Thursday, June 2, 2016.

Related Links

Bears Ears named one of nation's most 'endangered' places

Jewell 'shocked' at lack of protection for Bears Ears cultural resources

Bishop staffer: Push for Bears Ears monument is 'dishonest'

SALT LAKE CITY — Members of Utah's congressional delegation and Gov. Gary Herbert took to social media Wednesday and will participate in an extended news conference Thursday over rampant rumors a Bears Ears monument designation is imminent.

"We're hearing today that President (Barack) Obama may well be moving forward with a monument designation, possibly designating a monument in the Bears Ears area as early as next week," Sen. Mike Lee, R-Utah, said Wednesday.

The designation could come as early as Tuesday or Wednesday, noted Lee's office, based on "rumblings" from the U.S. Department of the Interior.

"I want to make clear, if heaven forbid this does happen, I will work tirelessly with the incoming Trump administration to make sure that this national monument never gets off the ground; to make sure it is undone, that is defunded, unwritten, rewritten, repealed, whatever it is that we have to do to undo it," Lee said in a video he posted on Facebookand YouTube.

Herbert turned to Twitter on Wednesday to say he had asked the president to refrain from a unilateral monument designation.

On Thursday, Herbert's regularly scheduled monthly news conference on KUED will be expanded from its usual 30 minutes to a full hour.

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The first portion of that news conference will include comments from Herbert, as well as Rep. Rob Bishop, R-Utah, with time set aside specifically to discuss a Bears Ears monument designation.

Lee also wrote an opinion piece published in the Washington Post on Monday, reiterating his objection to a unilateral monument designation that goes against a statement he said Obama made over his dislike of an imperial presidency.

"We can settle this issue through democracy and compromise — unless Obama decides to cut short this debate by declaring a national monument via executive fiat," Lee wrote. "As one of his final acts as president, is Obama willing to take our great nation one step closer to the imperial presidency that he, most Americans and I rightly fear?"

Supporters of a new monument in southeast Utah, including the Bears Ears Inter-Tribal Coalition, have called on the president to designate 1.9 million acres in San Juan County to ward off threats from mining, off-road vehicle use, and destruction of cultural artifacts from looting and vandalism.

In July, several of the president's top Cabinet officials over public lands, including Interior Secretary Sally Jewell and Bureau of Land Management Director Neil Kornze, visited the region and held public hearings to solicit feedback.

Lee said it was clear from those meetings that there is no consensus on a monument, no clear local "buy-in" from residents and "honest" disagreements on how the land would best be protected.

"The administration recently blocked the Dakota Access Pipeline due to strong opposition from local residents. I urge it to give the same respect to the residents of San Juan County, Utah. They do not want this monument. They do not want outside interests from coastal urban areas dictating to them how to live their lives and manage their lands," Lee's opinion piece stated.

After Congress adjourned last week without voting on Bishop's Public Lands Initiative, environmental groups reiterated their call for protections for Bears Ears, which is a remote and rugged region named for a pair of twin buttes.

"Now that Rep. Bishop has utterly failed to deliver on years of promises to safeguard this region from looting and industrial development, it is time for President Obama to step in where Congress has failed and protect Bears Ears as a national monument," said Scott Groene, executive director of the Southern Utah Wilderness Alliance. "Protecting Bears Ears cannot wait any longer."

Bishop's massive public lands bill had a committee hearing in September but has not been acted on since. It proposes to set up twin national conservation areas in the region that offer protections, but to a lesser degree than a national monument, which would prohibit drilling and mining.

On Sun, Dec 11, 2016 at 9:09 PM, Kershaw, Jessica <jessica_kershaw@ios.doi.gov> wrote:

Salt Lake Tribune: If Obama declares a mini Bears Ears monument, would anyone in Utah be happy?

By BRIAN MAFFLY | The Salt Lake Tribune CONNECT

First Published Dec 09 2016 05:36PM • Last Updated Dec 10 2016 11:05 am

Bishop and Rep. Jason Chaffetz launched the PLI process in 2013 to forestall Obama's anticipated use of the Antiquities Act to designate a big monument in Utah. They said a legislative approach was the only way the Bears Ears Inter-Tribal Coalition could achieve two major provisions of their monument proposal: wilderness designations and tribal co-management that's on equal footing with the federal agencies.

The current version of the PLI would designate 4 million acres of new wilderness across eastern Utah, but provides nothing for Bears Ears tribal co-management — just a single seat on a 10-seat "advisory" board, basically on the same footing as motorized recreation and livestock grazers.

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The congressmen last month asked the coalition to provide legislative language reflecting the tribes' desire for management authority, but nothing has been forthcoming.

"I like the idea of co-management. The president, with or

without the Antiquities Act, cannot produce it," Bishop said in a prepared statement. "It is frustrating that efforts to work with people who claim a great interest in this area are continuously rebuffed with arguments that parrot special interest groups. Ironically, if [the inter-tribal coalition] is banking on a monument, they will never get the co-management they want. We're willing to give it to them."

The tribal coalition leaders, who hail from Navajo, Ute and Puebloan tribes, say they have tried to work legislative angles. But Bishop and Chaffetz did not take their input seriously, they said, so they took their proposal straight to the White House, where they have received a receptive ear.

Meanwhile, the wilderness and national conservation areas the Utah congressmen proposed in the PLI leave out the western reaches of Cedar Mesa, whose remote canyons harbor ancient archaeological sites — as well as uranium deposits that industry hopes to tap.

The bill also fails to safeguard White Canyon and its various drainages, Moki Canyon and Bluff Bench, according to Friends of Cedar Mesa, a pro-monument stewardship group based in Bluff.

"If the monument is any less than what the tribes proposed, there will be important archaeology that is left unprotected," said Ewing, the group's executive director. "There are very good reasons for the boundaries proposed by the coalition. A monument smaller than that is somewhat likely because [Interior Secretary Sally] Jewell came out here to listen and lot of people were saying make it smaller. I'm guessing they are taking that local input under advisement. I am hopeful they won't throw out local input from the Bluff community."

This tourism-oriented town at the southern gateway to Cedar Mesa is far more receptive to a monument than Blanding and Monticello.

Many San Juan County residents spoke out against a monument during Jewell's visit to gauge local sentiment in July. But plenty of tribal members from Utah and adjoining states told Jewell a monument is needed to keep ATVs, looters and industrial development away from places that are valued for gathering medicinal herbs and firewood, reverent spiritual practices, its awesome beauty and ancestral connections.

Tribes and conservationists are not the only ones voicing favor for a monument.

Interior has received endorsements from the outdoor industry, education groups, archaeological societies and even health professionals.

"As a family physician descended from the Anasazi, I see Bears Ears as priceless not only for its history and beauty, but also for its potential to heal and prevent disease," said Garon

Coriz, a member of the Santa Domingo Pueblo who practices in Salina. He is among the 180 medical professionals who signed a Dec. 7 letter declaring a monument would promote physical and cultural healing.

"There are the very real psychological benefits from taking an action that addresses the traumatic historical disenfranchisement of Native Americans," the letter states. "In addition, a growing body of research shows that time spent in the kind of undisturbed natural settings offered by the Bears Ears area fosters emotional health in general, decreasing anxiety, reducing physiological response to stress, and dramatically enhancing concentration, creativity and problem-solving skills."

On the other side, Utah's Wildlife Board, agricultural interest groups, the Utah School Boards Association, and the Legislature have passed resolutions condemning the proposed monument for its potential to step on state prerogatives and harm rural communities.

--
Jessica Kershaw
Deputy Director of Communications
U.S. Dept of the Interior
@DOIPressSec
202-208-6416

Conversation Contents

Seth Spackman wants to share the file Bears ears monument power point Burge.pptx with you

Seth Spackman <ssp933@sjsd.org>

From:	Seth Spackman <ssp933@sjsd.org>
Sent:	Fri Dec 16 2016 14:38:27 GMT-0700 (MST)
To:	"nkornze@blm.gov" <nkornze@blm.gov>
Subject:	Seth Spackman wants to share the file Bears ears monument power point Burge.pptx with you

To view Bears ears monument power point Burge.pptx, sign in or create an account.

Kornze, Neil <nkornze@blm.gov>

Bears ears national monument

1 message

Seth Spackman <ssp933@sjsd.org> Fri, Dec 16, 2016 at 4:38 PM
To: CEQ Chair - (b) (6) <CEQ Chair - (b) (6)>, "director@blm.gov" <director@blm.gov>, "nkornze@blm.gov" <nkornze@blm.gov>, "well@ios.doi.gov" <well@ios.doi.gov>

Seth Spackman has shared a OneDrive for Business file with you. To view it, click the link below.

Bears ears monument power point Burge.pptx

So me and my class have been doing an assignment regarding the bears ears monument, here is a powerpoint regarding some of the issues

Thanks for checking it out :) - Seth Spackman -Jerika Torgerson -Travis Black - Robin Charley

Conversation Contents

RE: National Trust for Historic Preservation's testimony on H.R. 5780, Utah Public Lands Initiative Act (this time with testimony attached)

Attachments:

/103. RE: National Trust for Historic Preservation's testimony on H.R. 5780, Utah Public Lands Initiative Act (this time with testimony attached)/1.1 PLI Hearing 9-14-16 - National Trust Testimony FINAL.pdf

Tom Cassidy <TCassidy@savingplaces.org>

From:	Tom Cassidy <TCassidy@savingplaces.org>
Sent:	Tue Sep 13 2016 14:59:57 GMT-0600 (MDT)
To:	Nicole Buffa <Nicole_buffa@ios.doi.gov>, Neil Kornze <neil_kornze@blm.gov>
Subject:	RE: National Trust for Historic Preservation's testimony on H.R. 5780, Utah Public Lands Initiative Act (this time with testimony attached)
Attachments:	PLI Hearing 9-14-16 - National Trust Testimony FINAL.pdf

From: Tom Cassidy
Sent: Tuesday, September 13, 2016 4:57 PM
To: Nicole Buffa <Nicole_buffa@ios.doi.gov>; Neil Kornze <neil_kornze@blm.gov>
Subject: National Trust for Historic Preservation's testimony on H.R. 5780, Utah Public Lands Initiative Act

Dear Nikki and Neil,

I have attached the National Trust's testimony for tomorrow's legislative hearing on the PLI bill, including our request that the President utilize his authority under the Antiquities Act to protect the nationally significant cultural and archaeological resources of the Bears Ears area this year. The testimony also opposes H.R. 5781, the "PLI Partner Act," which would limit the President's authority to proclaim national monuments in certain areas of Utah.

Thank you for all of your efforts to advance protection of this remarkable area.

Please do not hesitate to communicate with me if you have any questions concerning our testimony.

Best,

Tom

Thomas J. Cassidy, Jr. | VICE PRESIDENT FOR GOVERNMENT RELATIONS AND POLICY
P 202.588.6078 F 202.588.6462

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HOUSE NATURAL RESOURCES COMMITTEE
LEGISLATIVE HEARING ON H.R. 5780 "UTAH PUBLIC LANDS INITIATIVE ACT"
SUBCOMMITTEE ON FEDERAL LANDS
SEPTEMBER 14, 2016
TESTIMONY OF STEPHANIE K. MEEKS
PRESIDENT AND CEO
NATIONAL TRUST FOR HISTORIC PRESERVATION

Chairman McClintock and members of the Subcommittee, I appreciate the opportunity to present the National Trust for Historic Preservation's perspectives on the recently introduced Utah Public Lands Initiative Act ("PLI") and the importance of protecting the Bears Ears cultural landscape. My name is Stephanie K. Meeks, and I am the President and CEO of the National Trust.

The National Trust for Historic Preservation is a privately-funded charitable, educational and nonprofit organization chartered by Congress in 1949 in order to "facilitate public participation in historic preservation" and to further the purposes of federal historic preservation laws. The intent of Congress was for the National Trust "to mobilize and coordinate public interest, participation and resources in the preservation and interpretation of sites and buildings." With headquarters in Washington, D.C., nine field offices, 27 historic sites, more than 800,000 members and supporters and partner organizations in 50 states, territories, and the District of Columbia, the National Trust works to save America's historic places and advocates for historic preservation as a fundamental value in programs and policies at all levels of government.

We appreciate the sustained efforts of House Natural Resources Committee Chairman Rob Bishop, Congressman Jason Chaffetz, and members of the Committee to develop a legislative solution to address the long-term conservation of nationally significant lands in Utah. This is a difficult and challenging problem of public policy – ongoing for generations – that deserves an expedient and successful resolution.

We recognize that the existing legislation includes certain improvements over the previous discussion draft, but we are disappointed that H.R. 5780 does not meet our hope for legislation that would generate the broad-based bipartisan support necessary to be signed into law by the President.

Accordingly, we join the broad-based request that the President utilize his authority under the Antiquities Act to protect the nationally significant cultural and archaeological resources of the Bears Ears area this year. In addition, the National Trust opposes H.R. 5781, the "PLI Partner Act," which would limit the President's authority to proclaim national monuments in certain areas of Utah.

National Trust Participation

Bears Ears is one of the most significant cultural landscapes in the United States and a landscape that is home to more than 100,000 cultural and archaeological sites, many of which are sacred to tribal communities across the region. The 1.9 million acres of public lands south and east of Canyonlands National Park include Ice Age hunting camps, cliff dwellings, prehistoric villages, and petroglyph and pictograph panels that tell the diverse stories of 12,000 years of human habitation.

Since 2007, the National Trust has been working on legislative proposals with the Utah delegation and other stakeholders to protect this important place. We have also been actively engaged in cultural resource protection issues in Southeast Utah – working to ensure compliance with federal laws designed to avoid impacts to historic and cultural properties and supporting thoughtful planning for and interpretation of cultural resources.

In 2013, we developed and presented maps and narratives describing the National Trust's priorities for resource designations in Southeast Utah to local, state, and national partners, including the offices of Congressmen Bishop and Chaffetz. Since we named this area one of our National Treasures in 2013, we have committed our expertise and resources to seeking a preservation-friendly solution to land use conflicts in this area. Earlier this year, reflecting our long-standing commitment to the legislative process, we submitted extensive comments on the "Discussion Draft" of the PLI.

Like many Americans, I have had the pleasure of visiting and marveling at the extraordinary cultural resources of the Bears Ears region. This landscape and its resources certainly rival nearby nationally protected areas like Canyon of the Ancients National Monument (established by President Clinton in 2000), Mesa Verde National Park (established by Congress in 1906), Chimney Rock National Monument (established by President Obama in 2012) and Chaco Culture National Historical Park.

It is worth noting that the remarkable resources of Chaco Canyon were first protected by President Theodore Roosevelt as a national monument in 1907. Nearby Hovenweep National Monument was established by President Harding in 1923.

Viability of the Legislative Process

Due to our commitment to securing permanent protection for these nationally significant cultural resources, the National Trust has been hopeful that the long-awaited PLI legislation would be crafted in such a way as to gather the broad bipartisan support necessary to be adopted by Congress and signed into law by the President this year. Unfortunately, the legislation as introduced on July 14 is unlikely to generate such support and in fact has generated significant opposition by many of our conservation colleagues.

We appreciate the proposed establishment of a Bears Ears National Conservation Area, however we are concerned that neither the proposed size (857,000 acres) nor

management provisions are sufficient to protect the nationally significant resources of this area, including such archaeologically valuable lands within the White Canyon drainages and the Allen, Chippean, and Dry Wash Canyons.

We appreciate that there have been multiple improvements from the discussion draft, including, as in section 108, permitting the acquisition of lands within wilderness areas from willing sellers, the removal of language designating certain areas for recreational shooting and removing designation of specific areas for recreational shooting and certain changes restricting the ability of managers to determine grazing levels.

However, we are disappointed that many of the concerns outlined in our February 12 letter on the discussion draft were not addressed, including but not limited to the following:

- We are very concerned with the details of proposed land trades which direct the Department of the Interior to accept, without full environmental analysis, trades proposed by the state of Utah, even when they are problematic for cultural resources. In particular, the National Trust for Historic Preservation joined a protest in 2014 of oil and gas lease sales in the Bluff and Montezuma Creek areas of San Juan County – leases that were deferred to protect cultural resources. The maps submitted with the PLI suggest the Utah State Institutional Trust Lands Administration (SITLA) will request retention of ownership of surface and mineral rights within the Bears Ears NCA near Bluff – contrary to the concept of a National Conservation Area – along with significant acreage adjoining the NCA to the east. Both the retained and acquired lands contain important cultural resources deserving of protection.
- We are particularly concerned with section 1103, which would create a new program whereby the State of Utah would be granted energy permitting powers now exercised by the federal government. Our reading of this precedent setting proposal is that it would remove the federal protections currently afforded cultural resources, including the National Historic Preservation Act, Native American Graves Protection and Repatriation Act (NAGPRA) and other federal laws.
- We are also concerned that the existing and potential use of Master Leasing Plans, which have proven to be helpful collaborative tools to resolve long-standing conflicts over land use would be precluded by the legislation.
- We are concerned that the bill would permit grazing in certain areas where current restrictions protect archaeological and cultural resources and that other areas could be made available to grazing, including in Grand Gulch, Slickhorn, and other canyons on Cedar Mesa.

Additionally, the National Trust agrees with a number of our conservation colleagues who have expressed serious concerns with the sweeping and controversial changes to other long-standing federal laws protecting the nation's natural and cultural resources.

Given the numerous and significant changes necessary to redraft the bill and achieve a bi-partisan compromise, as well as the limited number of legislative days remaining prior to Congress adjourning this fall, we are skeptical that comprehensive legislation can be achieved this year.

Addressing the Urgent Need for Protection

Continued reports of looting, vandalism, and other damaging disturbances of archaeological sites lends particular urgency to the permanent protection of the Bears Ears landscape as soon as possible. In just one of over 50 recent incidents of looting, a 2009 Bureau of Land Management and FBI sting operation resulted in indictments of over 24 people for multiple violations of trafficking an estimated 40,000 stolen artifacts, government property, and Native American cultural items from the Southeast Utah area.[1]

Given the time sensitive and significant threat to priceless cultural resources and the absence of a realistic opportunity to enact bipartisan legislation during this Congress, the National Trust supports the protection of the Bears Ears landscape by the President as a National Monument before the end of this year.

We appreciate the substantial time and resources dedicated to the pursuit of a legislative solution to this critical preservation issue by local and national stakeholders, including local governments, our partners in the conservation and preservation community and the staffs of the House and Senate committees and offices of Congressmen Bishop and Chaffetz. We look forward to continuing our collaborative work to advance preservation solutions with members of the Committee, Congressmen Bishop and Chaffetz, and other stakeholders.

[1] Center for American Progress; "Bears Ears Cultural Area: The Most Vulnerable U.S. Site for Looting, Vandalism, and Grave Robbing"; https://www.americanprogress.org/issues/green/news/2016/06/13/139344/bears-ears-cultural-area-the-most-vulnerable-u-s-site-for-looting-vandalism-and-grave-robbing/; June 13, 2016 (accessed September 13, 2016)

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Conversation Contents

National Trust for Historic Preservation's testimony on H.R. 5780, Utah Public Lands Initiative Act

Tom Cassidy <TCassidy@savingplaces.org>

From:	Tom Cassidy <TCassidy@savingplaces.org>
Sent:	Tue Sep 13 2016 14:57:17 GMT-0600 (MDT)
To:	Nicole Buffa <Nicole_buffa@ios.doi.gov>, Neil Kornze <neil_kornze@blm.gov>
Subject:	National Trust for Historic Preservation's testimony on H.R. 5780, Utah Public Lands Initiative Act

Dear Nikki and Neil,

I have attached the National Trust's testimony for tomorrow's legislative hearing on the PLI bill, including our request that the President utilize his authority under the Antiquities Act to protect the nationally significant cultural and archaeological resources of the Bears Ears area this year. The testimony also opposes H.R. 5781, the "PLI Partner Act," which would limit the President's authority to proclaim national monuments in certain areas of Utah.

Thank you for all of your efforts to advance protection of this remarkable area.

Please do not hesitate to communicate with me if you have any questions concerning our testimony.

Best,

Tom

Thomas J. Cassidy, Jr. | VICE PRESIDENT FOR GOVERNMENT RELATIONS AND POLICY
P 202.588.6078 F 202.588.6462

NATIONAL TRUST FOR HISTORIC PRESERVATION
The Watergate Office Building
2600 Virginia Avenue NW Suite 1000 Washington, DC 20037
SavingPlaces.org

Conversation Contents

Thank you/Bluff Area

Attachments:

/106. Thank you/Bluff Area/1.1 BearsEars_FINAL_36x48_09122016.pdf
/106. Thank you/Bluff Area/1.2 ProposedAcquired_Bluff_11x17_09122016.pdf

John Andrews <jandrews@utah.gov>

From:	John Andrews <jandrews@utah.gov>
Sent:	Tue Sep 13 2016 14:45:02 GMT-0600 (MDT)
To:	"Buffa, Nicole" <nicole_buffa@ios.doi.gov>, <nkornze@blm.gov>
Subject:	Thank you/Bluff Area
Attachments:	BearsEars_FINAL_36x48_09122016.pdf ProposedAcquired_Bluff_11x17_09122016.pdf

Nikki;

Thank you to yourself, Neil Kornze, Tommy Boudreaux and the rest of your team for meeting with Dave Ure, Allen Freemyer and myself last week to talk over southeast Utah land exchange issues. We truly appreciate the amount of time your office has devoted to the school trust land issue.

Per your request at the meeting, we have re-done our conceptual exchange map (attached) to be more clear about where there are conflicts with the so-called "redrock" wilderness proposal. There are only two - one on the large block of lands northwest of Moab, and a much smaller one near Lisbon Valley in San Juan County. We think we can get past this fairly minor issue.

You also asked about the Bluff area, and subsequently forwarded material from Friends of Cedar Mesa about the SITLA proposal in that area. We have now mapped existing oil and gas leasing and other encumbrances (also attached) on the existing SITLA lands at Bluff, and the proposed acquisition area.

The entire existing SITLA Bluff block is leased for oil and gas (shown by the double cross-hatching). In addition, the proposed NCA boundary in the PLI that follows Highway 191 would include a sizeable existing sand and gravel operation (shown in brown), plus powerlines, a large substation, etc. that are not compatible with a conservation designation. We continue to believe that a boundary that tracks the western boundary of the SITLA block makes more sense. We would be happy to engage with FCM about perhaps creating some sort of visual buffer on the cliffs above the town that would

preclude any visual impact from the town.

As to the BLM lands proposed for exchange to SITLA, there are existing federal oil and gas leases on most of the lands, and active oil and gas wells (green dots), as well as lots of historic oil and gas wells. We think the horse is pretty much out of the barn on the leasing/development of this area. SITLA does apply a cultural resources regime equivalent to that of BLM, so there would be protection of any specific cultural resources found in the area. Finally, as we have previously noted, SITLA will be under considerable pressure from the county and the Utah legislature to acquire substantial land in southern San Juan County, and if Bluff isn't the place, it may be difficult to find anything else.

We are happy to engage further with FCM on this issue, as well as your team - I'm sure there may be some middle ground somewhere. Thanks again.

John Andrews

--
John W. Andrews
Associate Director & Chief Legal Counsel
Utah School and Institutional Trust Lands Administration
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Salt Lake City, Utah 84102

(801) 538-5180 (o)
(801) 538-5118 (fax)
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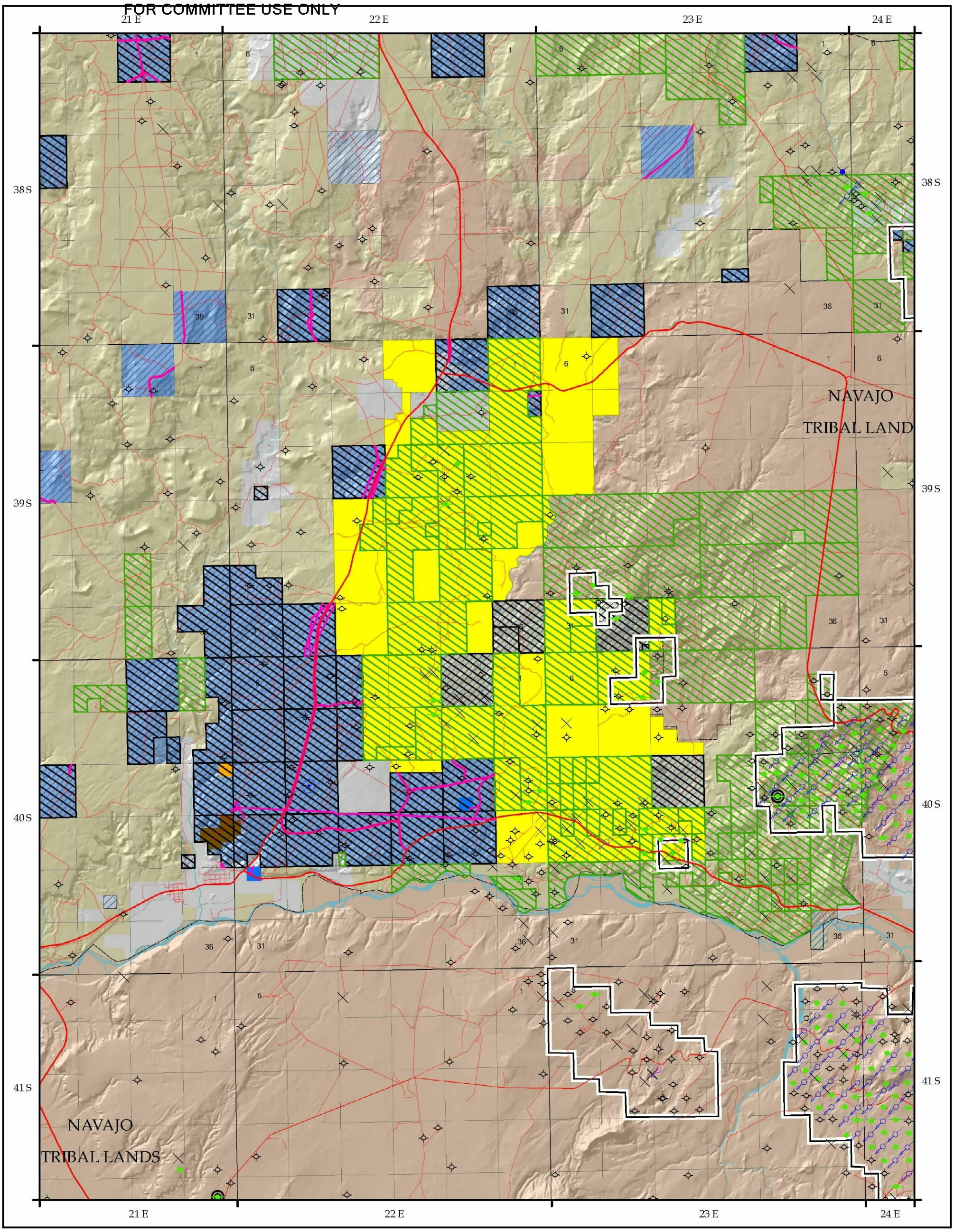

Public Lands Initiative
Bluff Block

State of Utah
School & Institutional
Trust Lands Administration

N

0 0.5 1 2 Miles

1:110,000

User: katestaley
Produced: September 12, 2016 SITLA
Coordinate System: NAD 1983 UTM Zone 12N
Projection: Transverse Mercator
Name: ProposedAcquired_Bluff_11x17

- Federal Boundary
- County Boundaries
- BLM Units
- Active BLM Oil and Gas Leases

Wells

- LA - Location Abandoned
- DRL, APD,LOC - New Location
- PA - Plugged Abandoned
- POW - Producing Oil Well
- RET - Returned APD
- SOW - Shut-in Oil Well
- TA - Temp. Abandoned
- WDW - Water Disposal
- WIW - Water Injection Well
- WSW - Water Supply Well

Trust Lands Active Contracts

- Easements
- Oil and Gas Leases
- Range Improvement Projects
- Sand and Gravel Contracts
- Special Use Lease Agreements

Status

- Federal Lands Proposed to Transfer to SITLA

Land Ownership and Administration

- Bureau of Land Management
- Private
- State Trust Lands
- Other State
- Tribal Lands

Trust Lands Mineral Ownership

- Full Mineral
- Partial Mineral

Data represented on this map is for REFERENCE USE ONLY and is not suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. SITLA provides this data in good faith and shall in no event be liable for any incorrect results, or any special, indirect or consequential damages to any party, arising out of or in connection with the use or the inability to use the data hereon.

Land parcels, lease boundaries and associated SITLA data layers may have been adjusted to allow for visual "best fit." The Surface Ownership Land Status data (if present) are maintained by SITLA to reflect current trust land status and surface ownership. Lakes, rivers, streams, highways, roads, county and state boundaries are distributed by the Utah Automated Geographic Reference Center and/or other sources as specified. Contour lines (if present) were generated from USGS 10 meter DEM.

Please Note: While SITLA seeks to verify data for accuracy and content, discrepancies may exist within the data. Acquiring the most updated SITLA ownership GIS data may require contacting the GIS staff directly 801-538-5100 or TLA-GIS@utah.gov. The SITLA GIS department welcomes your comments and concerns regarding the data and will attempt to resolve issues as they are brought to our attention.

Conversation Contents

Fwd: Memo: Problematic SITLA trades proposed in PLI

Attachments:

/113. Fwd: Memo: Problematic SITLA trades proposed in PLI/1.1 Introduced PLI-SITLA trade problems V4-lowrez.pdf
/113. Fwd: Memo: Problematic SITLA trades proposed in PLI/1.2 land trades memo vF.pdf

Neil Kornze <nkornze@blm.gov>

From:	Neil Kornze <nkornze@blm.gov>
Sent:	Fri Sep 09 2016 20:25:08 GMT-0600 (MDT)
To:	"Liz (Liz) Pardue" <lpardue@blm.gov>
Subject:	Fwd: Memo: Problematic SITLA trades proposed in PLI
Attachments:	Introduced PLI-SITLA trade problems V4-lowrez.pdf land trades memo vF.pdf

Begin forwarded message:

From: Josh Ewing <josh@cedarmesafriends.org>
To: "Buffa, Nicole" <nicole_buffa@ios.doi.gov>
Cc: David Ure <dure@utah.gov>, Kim Christy <kimchristy@utah.gov>, "nkornze@blm.gov" <nkornze@blm.gov>, WhitlockJenna <jwhitloc@blm.gov>, Ferguson Fred <Fred.Ferguson@mail.house.gov>, "Snider, Casey" <Casey.Snider@mail.house.gov>, "ryan_wilcox@lee.senate.gov" <ryan_wilcox@lee.senate.gov>
Subject: Memo: Problematic SITLA trades proposed in PLI

Dear Ms. Buffa: I have attached a memo for consideration by the Secretary regarding a significant issue raised by the Public Lands Initiative legislation (although not limited to the PLI) regarding proposed SITLA trades that would likely accompany any conservation designation in southeastern Utah.

Please let me know if you have any questions or need any further information on this important issue.

Sincerely,

Josh Ewing
***Executive Director,* Friends of Cedar Mesa**
(o) 435.414.0343 (m) 801.410.0773
300 E. Main Street, PO Box 338 | Bluff, UT 84512
web:CedarMesaFriends.org twitter: @joshewing facebook: @cedarmesafriends

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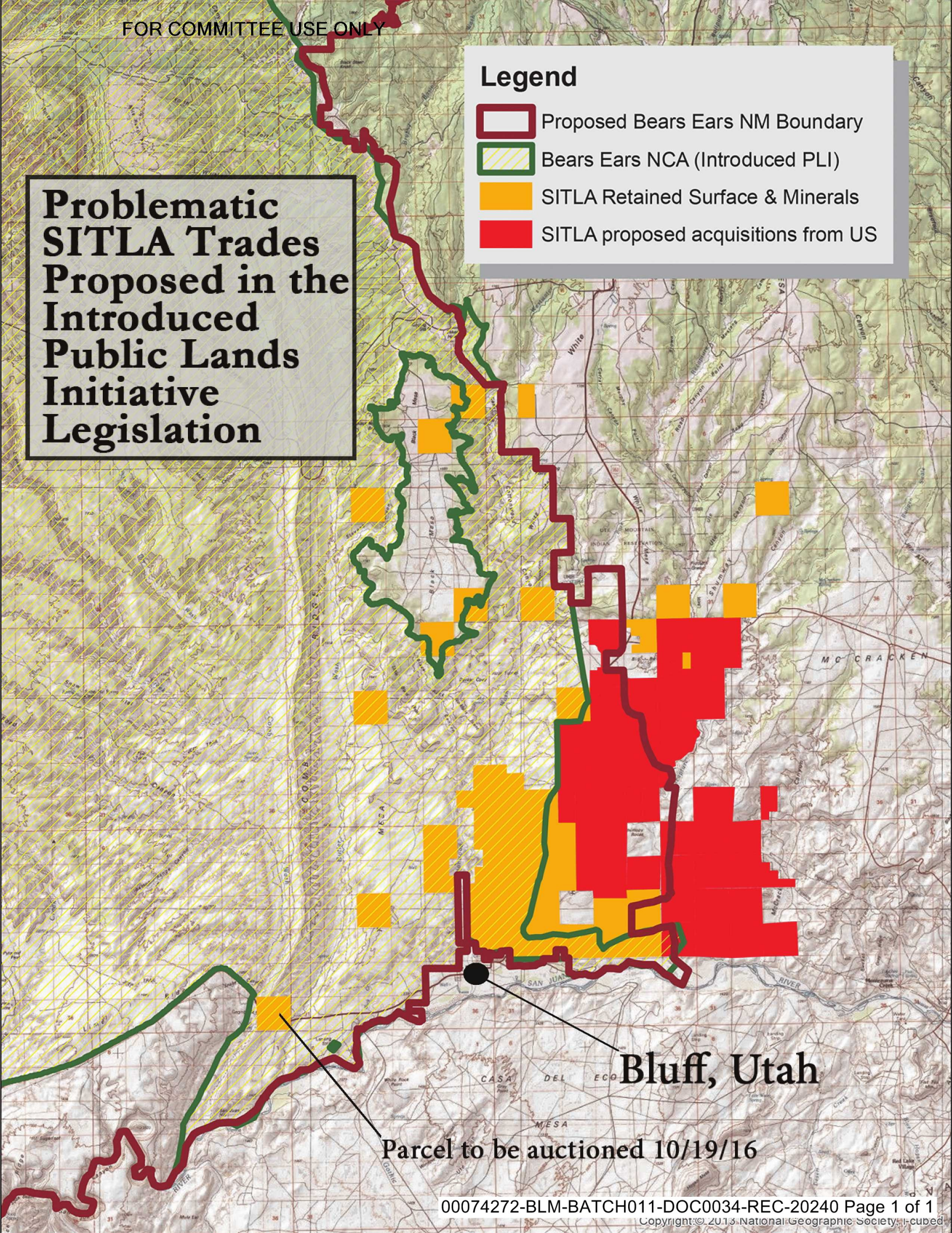
Problematic SITLA Trades Proposed in the Introduced Public Lands Initiative Legislation



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Friends of Cedar Mesa

PO Box 338, Bluff, UT 84512

MEMORANDUM

To: *Secretary Sally Jewell, US Department of the Interior*

From: *Josh Ewing, Executive Director*

Subject: *Problematic land trades near Bluff, Utah proposed by SITLA in connection with conservation proposals in southeastern Utah*

Date: *September 9, 2016*

Background

Friends of Cedar Mesa has previously shared with your office our concerns about the proposed Public Lands Initiative (PLI) Legislation, which would impact DOI administered lands in San Juan County, Utah. This memo focuses on an important but little publicized portion of that legislation with new information.

The PLI proposes a very large land trade between the State of Utah and the United States government, exchanging SITLA lands for DOI lands. A similar land trade would likely be triggered by any use of the Antiquities Act to designate a National Monument in the Bears Ears region.

This memo highlights a specific geography of problematic trades proposed by SITLA, overlapping both the Bears Ears National Conservation Area that would be created by the passage of the PLI and the footprint of the National Monument proposed by the Bears Ears Inter-Tribal Coalition. The trades discussed are visualized on the attached map.

In general, the principle of consolidating land ownership is an excellent idea. Conservation areas are best managed when small dispersed Trust Land holdings are removed, providing continuity of management. Likewise, the Utah State Institutional Trust Lands Administration (SITLA) can accomplish its mission of maximizing returns for beneficiaries far more efficiently when lands under the Trust's management are consolidated away from sensitive cultural and natural resources.

Unfortunately, trades proposed in the Bluff area are highly problematic for the reasons outlined below. We have shared these concerns directly, in person, with SITLA leadership.

Conservation and scenic values of the area

Many of the lands proposed to be retained or acquired by SITLA in the Bluff area are highly scenic and contain important cultural resources. The Bluff Bench is a viewshed prized by the people of Bluff and the surrounding lands provide the gateway for tourists from around the world who come to Bluff to visit nearby Monument Valley, Valley of the Gods, Comb Ridge, and Hovenweep National Monument.

Although little of the area has been documented by rigorous professional surveys, local archaeologists have identified many unique archaeological sites, including ancient Ancestral Pueblo roads, shrines and pueblos. Importantly, this area contains what may be Utah's highest concentration of Navajo and Ute archaeology, including rare petroglyph panels.

This area has been involved in significant controversy over possible oil and gas leases, which were protested by the Hopi Tribe in the early 2000s and most recently by the National Trust for Historic Preservation and Friends of Cedar Mesa in 2014. The Bureau of Land Management deferred leasing in this area in 2015 after this most recent protest. Significantly, this area is covered in the upcoming San Juan Master Leasing Plan boundaries, which will seek to balance cultural resource protection and oil and gas development.

Potential for development, privatization and extraction within proposed conservation areas

As one can see from inspecting the attached map, SITLA is proposing to retain ownership of surface and mineral rights on significant lands within the Bears Ears National Conservation Area. This creates the very real scenario of oil drilling, residential/commercial development, or privatization of lands that are specifically proposed for conservation in the PLI. Even more lands are proposed to be acquired by SITLA within the boundaries of a National Monument proposed by the Bears Ears Inter-Tribal Coalition.

Combined, the retention by SITLA of lands within the two proposed conservation areas and their proposed acquisition in the area creates the scenario of a major block of SITLA land in Bluff's backyard. The residents of Bluff are very concerned with the possibility of mass industrialization or even large-scale tourism development in this region. While perhaps not imminent due to current market conditions, future industrialization could dramatically impact Bluff's tourism-based economy and devastate the way of life enjoyed by residents. Such industrialization could also have significant impacts on cultural resources in the area. Despite best efforts, subtle archaeology, such as many of the Ute sites in the area, are easily missed and damaged by work crews. And the "setting" of these sites, which is protected by the National Historic Preservation Act, would change forever.

Recommendations and conclusion

If a conservation designation is created in the area, be it NCA or Monument, Friends of Cedar Mesa recommends that federal land managers and SITLA work with local residents and conservation experts to identify lands more suitable for SITLA ownership outside of any designated areas. Proper thought should be given to not creating the scenario for development just outside of a designated area, which would certainly engender significant future controversy.

CC:

Dave Ure, Director, Utah State Institutional Trust Lands Administration
Kim Christy, Deputy Director, Utah State Institutional Trust Lands Administration
Neil Kornze, Director, Bureau of Land Management
Jenna Whitlock, UT Acting State Director, Bureau of Land Management
Rep. Jason Chaffetz
Rep. Rob Bishop
Senator Mike Lee

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Gary R. Herbert
Governor of the State of Utah

Testimony before the

U.S. Senate Committee on Energy and Natural Resources

Oversight hearing on

"Potential Impacts of Large-Scale Monument Designations"

Wednesday, July 27, 2016

Good morning. I am Gary R. Herbert, Governor of the great state of Utah.

Please allow me to thank you, Senator Lee, and my esteemed colleagues in Utah's congressional delegation, for holding this important hearing.

I appreciate you inviting me to share with you and the good people of San Juan County some thoughts on national monuments, and for the chance to discuss what I think is the best way to protect and preserve one of the most beautiful areas of Utah and the world.

Having served in public office for a number of years, I've noticed that politics is often portrayed as a never-ending conflict. Media coverage of politics – of debates on legitimate differences of opinion the appropriate ends and means to achieve policy goals – tends to emphasize the areas where we differ rather than where we agree. This can lead us to lose sight of the big picture.

For example, while there is meaningful disagreement about *how* to protect the Bears Ears region, there is virtually zero opposition to the idea that this precious area *should* be protected. Everyone in this room believes that the Bears Ears region has natural wonders and scenic vistas that need to be protected. Everyone in this room acknowledges that this region contains resources, remains, and artifacts with immeasurable historic, cultural, and religious significance that must be preserved for future generations. Let's not lose sight of this consensus.

Let's not lose sight of the fact that we share a common goal. The only difference you'll find here today is how best to achieve the shared goal of conservation and preservation. Let's hope that our mutual commitment to the protection of this area is the media headline tomorrow, and not an undue or exaggerated focus on a disagreement over tactics.

Before I get into detail about my vision of how this area should be protected, let me take a brief moment to explain the key principle that forms the foundation for my thoughts on this matter. I firmly believe that states can and should find their own solutions – tailored to their unique circumstances. This principle applies to nearly all policy issues, including those of national importance like healthcare, education, environmental protection, and, yes, public lands.

No one understands the challenges that confront a state, and the opportunities available to a state, better than the people who reside there. No one is more committed to the most effective use of limited resources for the best possible outcomes, for both our lands and our citizens, than those who will directly live with the consequences of those decisions.

This principle of federalism, or of self-determination, is at the core of my policies. Indeed, the idea of "States Finding Solutions" was the theme I chose to highlight as my Chair's Initiative this past year while I served as the Chairman of the National Governor's Association.

I believe that decisions are best when they are made at the lowest level possible. I believe that local, ground-up solutions are nearly always superior to decisions made from the top-down or by people far from the problem at hand.

I also believe that accountability is critical for good public policy. The elected officials in this room – county commissioners, legislators, congressmen, senators, governors – were all elected by the citizens of Utah and are accountable to them in a much more real and tangible way than an unelected bureaucrat in Washington.

One of the biggest lessons learned in land management policy over the past several decades has to do with the importance of local input. There is an enormous difference between something being done *to* you, and something being done *with* you. The Grand Staircase Escalante National Monument designation in 1996 is an example of something that was done *to* the people of Utah. They were not involved in the decision-making process. They were excluded from any meetings and discussions. They were even lied to about its pending designation.

The results of this exclusionary, top-down process? 20 years later there is still a deep-seated, heartfelt, even visceral anger, about the Grand Staircase Monument. To this day, it divides local communities and has helped breed animosity and a sense of disenfranchisement amongst local residents. The Grand Staircase is a perfect example of how **not** to make a land management decision. Doing things *to* people rarely results in a positive outcome.

To that point, while we all agree the Bears Ears region should be protected, there is disagreement about how to do so. There are some you will hear from today who believe that a national monument designation is the best way to protect this area. You will hear from others who attest that a legislative solution is a superior mechanism to protect the Bears Ears. Let me be clear: I am strongly in the latter camp.

I've always been a strong believe that process matters. Some people, my staff included, have joked about how I seem to be one of those rare individuals who actually enjoys meetings. It is not that I love meetings per se, but it is because I recognize that meeting together – bringing people around the table to work toward a consensus – is typically the process by which good decisions are made.

It would certainly be easier to make decisions on my own without consulting anyone else. Monarchies are efficient. But decisions made alone or in small groups often miss out on important perspectives and information that is available to larger groups. An open, public process is more difficult. It takes more time. It is messier than a unitary decision making process. An open and inclusive decision-making process is more difficult. A deliberative, public process takes more time and effort, but it leads to better, more accepted, and more durable outcomes.

This principle applies to the Bears Ears and the discussion we're having today about the best mechanism to protect this area. It certainly would be easier for an unknown federal official to draft a monument declaration behind closed doors and for the President to sign it. No one doubts that would be the quickest way to move forward. But I believe that a quick and exclusionary process to declare a monument would lead to a host of negative consequences that will be borne by the people of Utah for decades.

On the other hand, a legislative solution, one that has support both locally and nationally, is a clearly superior model to reach consensus. Congressman Bishop has been undertaking such an approach with the Public Lands Initiative for the past three years. This process to find common ground has included over 1,200 meetings. It has taken input from a wide array of stakeholders. It has been an open, inclusive, collaborative, and public process.

It has also been a little messy, and not without controversy and accusations of bad faith. But I think the bill that was unveiled July 14, 2016, represents a closer articulation of what the public actually wants than a unilateral monument designation ever could.

Congressman Bishop's bill is the culmination of an open and deliberative effort to gather the best ideas from all sides. It is the result of a transparent and public process to get input from local citizens and stakeholders, and not from media, editorial, and lobbying campaigns by out-of-state interest groups.

The PLI incorporates meaningful and appropriate environmental protections, including conservation and wilderness designations that protect fragile and pristine areas for future generations. It also promotes local economic benefits, including increased opportunities for heritage, cultural, and eco-tourism, outdoor recreation, SITLA land exchanges, land conveyances, responsible energy development, and local infrastructure needs.
The PLI also allows for continued access for traditional tribal cultural and religious activities, and sets up a mechanism for ongoing local and tribal input in management decisions. To be clear, and despite much of the rhetoric we have heard, these issues of access and management can only be truly guaranteed through legislative action.

The current version of the bill is likely not a final product. There is still work to be done. But I, along with Congressman Bishop and many others, believe the timing is right for a deal to be brokered. Events have converged to provide Utah a unique opportunity to accomplish something truly remarkable – protect Utah's wild places and cultural resources, while at the same time, strengthening Utah's economy, enhancing outdoor recreation opportunities, and increasing much needed school funding. The PLI represents our best chance to find the messy middle ground and will result in a protection of this area that is defensible, inclusive, and durable.

Problems of Monuments

I have already mentioned a few of the numerous negatives consequences that would accompany a unilateral monument designation. Let me take a moment to focus on another.

In all this, one important thing to keep in mind is that a monument designation does not, in and of itself, equate to greater protections of environmental and cultural resources, as previous monument declarations have shown.

Historical and cultural resources – including archeological and historical sites, pictographs and petroglyphs, human remains and funerary objects – are already protected under various federal laws. However, enforcement of these existing laws on federal lands is inconsistent, at best.

The Grand Staircase-Escalante, for example, only has one law enforcement ranger to patrol its 1.9 million acres. Nationwide the BLM only has a total of 200 rangers to patrol 245 million acres. That is one ranger per 1.2 million acres, on average.

While increased protections and law enforcement do not flow from monument designations, the record shows that monument designations do bring an increase in visitation, which can then further endanger the resources.

In the Grand Staircase-Escalante National Monument Manager Report for 2014, we read, "Grand Staircase-Escalante National Monument is experiencing constantly increasing recreational use as a result of national and international advertising promoting it as iconic canyon country destination. This presents management challenges balancing use with adequate protections of [the monument's] objects and values. Increased backcountry visitor impacts include increased graffiti, human waste issues, water quality concerns, and parking congestions. Dispersed campsites are proliferating. Planning efforts are needed to insure adequate use management and resource protection."

In 2015, the Grand Staircase-Escalante had 1,400 reported cases of vandalism. According to the BLM, there have only been 25 cases of vandalism reported in the Bears Ears region since 2011. That means the Grand Staircase, with its monument designation, currently experiences 140 times the rate of vandalism as does Bears Ears region.

Please do not misunderstand me: a single case of vandalism in this area is too much. But the point remains, if we wish to protect and preserve this area, drawing lines on a map that will encourage increased visitation without a corresponding increase in law enforcement and land management resources is not a solution to vandalism and desecration problems. Indeed, it will like worsen them.

Let me use a comparison to further illustrate this point:

- The Bears Ears region being considered today is approximately 1.9 million acres. This is the equivalent of just under 3000 square miles.
- For comparison, the entire state of Rhode Island is just over 1200 square miles.
- Rhode Island currently has 93 state troopers to patrol an area that is, again, about 40% of the Bears Ears region being considered, and that number does not include administrators, or special agents or units.
- The BLM currently has **two** full-time officers assigned to patrol and protect the entire Bears Ears region.
- The police department of the capital of Rhode Island, Providence, is responsible for an area that comprises 20.5 square miles. The Providence Police Department had a budget of $**69 million** in 2015.
- Meanwhile, the entire budget for BLM National Conservation Lands system nationwide, which is responsible for 50,000 square miles protected lands, was only $**64 million**.

Proper protection of historical and cultural resources on federal lands requires adequate federal resources, yes, but it also requires the cooperation of local citizens, local law enforcement, local conservation and research groups, and more. A unilateral monument designation – doing something *to* the people of the Bears Ears region instead of *with* them – will provide a disincentive for local cooperation.

Conclusion

To summarize - it is my belief that a unilateral monument designation will divide the people. It will create anger and division. It will provoke protest and may inhibit our ability to resolve tough public land management decisions for decades to come. Even worse, a unilateral monument designation of the Bears Ears will not protect irreplaceable resources, and will, in fact, likely result in the same kinds of increases in vandalism, looting, and environmental degradation that has been documented in the Grand Staircase.

On the other hand, a legislated, consensus solution like the PLI has the potential to bring people together, ensure local cooperation, and put in place a durable solution. Furthermore, congressional action is the only way to guarantee traditional tribal uses of the land, guarantee local input into land management decisions, and to provide the funding resources and tools needed to properly protect this precious region of our state.

It is my strong belief that a legislative solution – one built from the ground up with real involvement from local residents, tribal representatives, county officials, the state legislature, recreation and environmental advocates, energy and access interests – will inevitably create a

better outcome, one with more buy-in and with more lasting power, than a decision made behind closed-doors in Washington D.C.

There is a right way and a wrong way to preserve the Bears Ears for future generations. It is my sincere hope that the President and his administration will learn from history and take the time needed to work with the people of Utah, our state legislature, and the congressional delegation to do it the right way. Please, do this with us, not to us.

Thank you for the chance to share my thoughts with you today.

FOR COMMITTEE USE ONLY

Gary R. Herbert
Governor of the State of Utah

Testimony before the

U.S. Senate Committee on Energy and Natural Resources

Oversight hearing on

"Potential Impacts of Large-Scale Monument Designations"

Wednesday, July 27, 2016

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Please allow me to thank you, Senator Lee, and my esteemed colleagues in Utah's congressional delegation, for holding this important hearing.

I appreciate you inviting me to share with you and the good people of San Juan County some thoughts on national monuments, and for the chance to discuss what I think is the best way to protect and preserve one of the most beautiful areas of Utah and the world.

Having served in public office for a number of years, I've noticed that politics is often portrayed as a never-ending conflict. Media coverage of politics – of debates on legitimate differences of opinion the appropriate ends and means to achieve policy goals – tends to emphasize the areas where we differ rather than where we agree. This can lead us to lose sight of the big picture.

For example, while there is meaningful disagreement about *how* to protect the Bears Ears region, there is virtually zero opposition to the idea that this precious area *should* be protected. Everyone in this room believes that the Bears Ears region has natural wonders and scenic vistas that need to be protected. Everyone in this room acknowledges that this region contains resources, remains, and artifacts with immeasurable historic, cultural, and religious significance that must be preserved for future generations. Let's not lose sight of this consensus.

Let's not lose sight of the fact that we share a common goal. The only difference you'll find here today is how best to achieve the shared goal of conservation and preservation. Let's hope that our mutual commitment to the protection of this area is the media headline tomorrow, and not an undue or exaggerated focus on a disagreement over tactics.

Before I get into detail about my vision of how this area should be protected, let me take a brief moment to explain the key principle that forms the foundation for my thoughts on this matter. I firmly believe that states can and should find their own solutions – tailored to their unique circumstances. This principle applies to nearly all policy issues, including those of national importance like healthcare, education, environmental protection, and, yes, public lands.

No one understands the challenges that confront a state, and the opportunities available to a state, better than the people who reside there. No one is more committed to the most effective use of limited resources for the best possible outcomes, for both our lands and our citizens, than those who will directly live with the consequences of those decisions.

This principle of federalism, or of self-determination, is at the core of my policies. Indeed, the idea of "States Finding Solutions" was the theme I chose to highlight as my Chair's Initiative this past year while I served as the Chairman of the National Governor's Association.

I believe that decisions are best when they are made at the lowest level possible. I believe that local, ground-up solutions are nearly always superior to decisions made from the top-down or by people far from the problem at hand.

I also believe that accountability is critical for good public policy. The elected officials in this room – county commissioners, legislators, congressmen, senators, governors – were all elected by the citizens of Utah and are accountable to them in a much more real and tangible way than an unelected bureaucrat in Washington.

One of the biggest lessons learned in land management policy over the past several decades has to do with the importance of local input. There is an enormous difference between something being done *to* you, and something being done *with* you. The Grand Staircase Escalante National Monument designation in 1996 is an example of something that was done *to* the people of Utah. They were not involved in the decision-making process. They were excluded from any meetings and discussions. They were even lied to about its pending designation.

The results of this exclusionary, top-down process? 20 years later there is still a deep-seated, heartfelt, even visceral anger, about the Grand Staircase Monument. To this day, it divides local communities and has helped breed animosity and a sense of disenfranchisement amongst local residents. The Grand Staircase is a perfect example of how **not** to make a land management decision. Doing things *to* people rarely results in a positive outcome.

To that point, while we all agree the Bears Ears region should be protected, there is disagreement about how to do so. There are some you will hear from today who believe that a national monument designation is the best way to protect this area. You will hear from others who attest that a legislative solution is a superior mechanism to protect the Bears Ears. Let me be clear: I am strongly in the latter camp.

I've always been a strong believe that process matters. Some people, my staff included, have joked about how I seem to be one of those rare individuals who actually enjoys meetings. It is not that I love meetings per se, but it is because I recognize that meeting together – bringing people around the table to work toward a consensus – is typically the process by which good decisions are made.

It would certainly be easier to make decisions on my own without consulting anyone else. Monarchies are efficient. But decisions made alone or in small groups often miss out on important perspectives and information that is available to larger groups. An open, public process is more difficult. It takes more time. It is messier than a unitary decision making process. An open and inclusive decision-making process is more difficult. A deliberative, public process takes more time and effort, but it leads to better, more accepted, and more durable outcomes.

This principle applies to the Bears Ears and the discussion we're having today about the best mechanism to protect this area. It certainly would be easier for an unknown federal official to draft a monument declaration behind closed doors and for the President to sign it. No one doubts that would be the quickest way to move forward. But I believe that a quick and exclusionary process to declare a monument would lead to a host of negative consequences that will be borne by the people of Utah for decades.

On the other hand, a legislative solution, one that has support both locally and nationally, is a clearly superior model to reach consensus. Congressman Bishop has been undertaking such an approach with the Public Lands Initiative for the past three years. This process to find common ground has included over 1,200 meetings. It has taken input from a wide array of stakeholders. It has been an open, inclusive, collaborative, and public process.

It has also been a little messy, and not without controversy and accusations of bad faith. But I think the bill that was unveiled July 14, 2016, represents a closer articulation of what the public actually wants than a unilateral monument designation ever could.

Congressman Bishop's bill is the culmination of an open and deliberative effort to gather the best ideas from all sides. It is the result of a transparent and public process to get input from local citizens and stakeholders, and not from media, editorial, and lobbying campaigns by out-of-state interest groups.

The PLI incorporates meaningful and appropriate environmental protections, including conservation and wilderness designations that protect fragile and pristine areas for future generations. It also promotes local economic benefits, including increased opportunities for heritage, cultural, and eco-tourism, outdoor recreation, SITLA land exchanges, land conveyances, responsible energy development, and local infrastructure needs.
The PLI also allows for continued access for traditional tribal cultural and religious activities, and sets up a mechanism for ongoing local and tribal input in management decisions. To be clear, and despite much of the rhetoric we have heard, these issues of access and management can only be truly guaranteed through legislative action.

The current version of the bill is likely not a final product. There is still work to be done. But I, along with Congressman Bishop and many others, believe the timing is right for a deal to be brokered. Events have converged to provide Utah a unique opportunity to accomplish something truly remarkable – protect Utah's wild places and cultural resources, while at the same time, strengthening Utah's economy, enhancing outdoor recreation opportunities, and increasing much needed school funding. The PLI represents our best chance to find the messy middle ground and will result in a protection of this area that is defensible, inclusive, and durable.

Problems of Monuments

I have already mentioned a few of the numerous negatives consequences that would accompany a unilateral monument designation. Let me take a moment to focus on another.

In all this, one important thing to keep in mind is that a monument designation does not, in and of itself, equate to greater protections of environmental and cultural resources, as previous monument declarations have shown.

Historical and cultural resources – including archeological and historical sites, pictographs and petroglyphs, human remains and funerary objects – are already protected under various federal laws. However, enforcement of these existing laws on federal lands is inconsistent, at best.

The Grand Staircase-Escalante, for example, only has one law enforcement ranger to patrol its 1.9 million acres. Nationwide the BLM only has a total of 200 rangers to patrol 245 million acres. That is one ranger per 1.2 million acres, on average.

While increased protections and law enforcement do not flow from monument designations, the record shows that monument designations do bring an increase in visitation, which can then further endanger the resources.

In the Grand Staircase-Escalante National Monument Manager Report for 2014, we read, "Grand Staircase-Escalante National Monument is experiencing constantly increasing recreational use as a result of national and international advertising promoting it as iconic canyon country destination. This presents management challenges balancing use with adequate protections of [the monument's] objects and values. Increased backcountry visitor impacts include increased graffiti, human waste issues, water quality concerns, and parking congestions. Dispersed campsites are proliferating. Planning efforts are needed to insure adequate use management and resource protection."

In 2015, the Grand Staircase-Escalante had 1,400 reported cases of vandalism. According to the BLM, there have only been 25 cases of vandalism reported in the Bears Ears region since 2011. That means the Grand Staircase, with its monument designation, currently experiences 140 times the rate of vandalism as does Bears Ears region.

Please do not misunderstand me: a single case of vandalism in this area is too much. But the point remains, if we wish to protect and preserve this area, drawing lines on a map that will encourage increased visitation without a corresponding increase in law enforcement and land management resources is not a solution to vandalism and desecration problems. Indeed, it will like worsen them.

Let me use a comparison to further illustrate this point:

- The Bears Ears region being considered today is approximately 1.9 million acres. This is the equivalent of just under 3000 square miles.
- For comparison, the entire state of Rhode Island is just over 1200 square miles.
- Rhode Island currently has 93 state troopers to patrol an area that is, again, about 40% of the Bears Ears region being considered, and that number does not include administrators, or special agents or units.
- The BLM currently has **two** full-time officers assigned to patrol and protect the entire Bears Ears region.
- The police department of the capital of Rhode Island, Providence, is responsible for an area that comprises 20.5 square miles. The Providence Police Department had a budget of $**69 million** in 2015.
- Meanwhile, the entire budget for BLM National Conservation Lands system nationwide, which is responsible for 50,000 square miles protected lands, was only $**64 million**.

Proper protection of historical and cultural resources on federal lands requires adequate federal resources, yes, but it also requires the cooperation of local citizens, local law enforcement, local conservation and research groups, and more. A unilateral monument designation – doing something *to* the people of the Bears Ears region instead of *with* them – will provide a disincentive for local cooperation.

Conclusion

To summarize - it is my belief that a unilateral monument designation will divide the people. It will create anger and division. It will provoke protest and may inhibit our ability to resolve tough public land management decisions for decades to come. Even worse, a unilateral monument designation of the Bears Ears will not protect irreplaceable resources, and will, in fact, likely result in the same kinds of increases in vandalism, looting, and environmental degradation that has been documented in the Grand Staircase.

On the other hand, a legislated, consensus solution like the PLI has the potential to bring people together, ensure local cooperation, and put in place a durable solution. Furthermore, congressional action is the only way to guarantee traditional tribal uses of the land, guarantee local input into land management decisions, and to provide the funding resources and tools needed to properly protect this precious region of our state.

It is my strong belief that a legislative solution – one built from the ground up with real involvement from local residents, tribal representatives, county officials, the state legislature, recreation and environmental advocates, energy and access interests – will inevitably create a

better outcome, one with more buy-in and with more lasting power, than a decision made behind closed-doors in Washington D.C.

There is a right way and a wrong way to preserve the Bears Ears for future generations. It is my sincere hope that the President and his administration will learn from history and take the time needed to work with the people of Utah, our state legislature, and the congressional delegation to do it the right way. Please, do this with us, not to us.

Thank you for the chance to share my thoughts with you today.

FOR COMMITTEE USE ONLY

Gary R. Herbert
Governor of the State of Utah

Testimony before the

U.S. Senate Committee on Energy and Natural Resources

Oversight hearing on

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